PHILIPS

HALFGELEIDERS
ELEKTRONENBUIZEN

PHILIPS NEDERLAND N.V.

ZAKBOEKJE

1966/1967

Elektronenbuizen
Halfgeleiders

De hierin opgenomen gegevens dienen slechts ter oriëntatie en kunnen zonder kennisgeving gewijzigd worden. Op verzoek kunnen de laatste gedetailleerde gegevens verstrekt worden.
De fabrikant behoudt zich het recht voor zo nodig artikelen te laten vervallen.

JAARKALENDER 1966

	JANUARI	FEBRUARI	MAART
Z	2 9 16 23 30	6 13 20 27	6 13 20 27
M	3 10 17 24 31	7 14 21 28	7 14 21 28
D	4 11 18 25	1 8 15 22	1 8 15 22 29
W	5 12 19 26	2 9 16 23	2 9 16 23 30
D	6 13 20 27	3 10 17 24	3 10 17 24 31
V	7 14 21 28	4 11 18 25	4 11 18 25
Z	1 8 15 22 29	5 12 19 26	5 12 19 26
	APRIL	**MEI**	**JUNI**
Z	3 10 17 24	1 8 15 22 29	5 12 19 26
M	4 11 18 25	2 9 16 23 30	6 13 20 27
D	5 12 19 26	3 10 17 24 31	7 14 21 28
W	6 13 20 27	4 11 18 25	1 8 15 22 29
D	7 14 21 28	5 12 19 26	2 9 16 23 30
V	1 8 15 22 29	6 13 20 27	3 10 17 24
Z	2 9 16 23 30	7 14 21 28	4 11 18 25
	JULI	**AUGUSTUS**	**SEPTEMBER**
Z	3 10 17 24 31	7 14 21 28	4 11 18 25
M	4 11 18 25	1 8 15 22 29	5 12 19 26
D	5 12 19 26	2 9 16 23 30	6 13 20 27
W	6 13 20 27	3 10 17 24 31	7 14 21 28
D	7 14 21 28	4 11 18 25	1 8 15 22 29
V	1 8 15 22 29	5 12 19 26	2 9 16 23 30
Z	2 9 16 23 30	6 13 20 27	3 10 17 24
	OKTOBER	**NOVEMBER**	**DECEMBER**
Z	2 9 16 23 30	6 13 20 27	4 11 18 25
M	3 10 17 24 31	7 14 21 28	5 12 19 26
D	4 11 18 25	1 8 15 22 29	6 13 20 27
W	5 12 19 26	2 9 16 23 30	7 14 21 28
D	6 13 20 27	3 10 17 24	1 8 15 22 29
V	7 14 21 28	4 11 18 25	2 9 16 23 30
Z	1 8 15 22 29	5 12 19 26	3 10 17 24 31

JAARKALENDER 1967

	JANUARI	FEBRUARI	MAART
Z	1 8 15 22 29	5 12 19 26	5 12 19 26
M	2 9 16 23 30	6 13 20 27	6 13 20 27
D	3 10 17 24 31	7 14 21 28	7 14 21 28
W	4 11 18 25	1 8 15 22	1 8 15 22 29
D	5 12 19 26	2 9 16 23	2 9 16 23 30
V	6 13 20 27	3 10 17 24	3 10 17 24 31
Z	7 14 21 28	4 11 18 25	4 11 18 25

	APRIL	MEI	JUNI
Z	2 9 16 23 30	7 14 21 28	4 11 18 25
M	3 10 17 24	1 8 15 22 29	5 12 19 26
D	4 11 18 25	2 9 16 23 30	6 13 20 27
W	5 12 19 26	3 10 17 24 31	7 14 21 28
D	6 13 20 27	4 11 18 25	1 8 15 22 29
V	7 14 21 28	5 12 19 26	2 9 16 23 30
Z	1 8 15 22 29	6 13 20 27	3 10 17 24

	JULI	AUGUSTUS	SEPTEMBER
Z	2 9 16 23 30	6 13 20 27	3 10 17 24
M	3 10 17 24 31	7 14 21 28	4 11 18 25
D	4 11 18 25	1 8 15 22 29	5 12 19 26
W	5 12 19 26	2 9 16 23 30	6 13 20 27
D	6 13 20 27	3 10 17 24 31	7 14 21 28
V	7 14 21 28	4 11 18 25	1 8 15 22 29
Z	1 8 15 22 29	5 12 19 26	2 9 16 23 30

	OKTOBER	NOVEMBER	DECEMBER
Z	1 8 15 22 29	5 12 19 26	3 10 17 24 31
M	2 9 16 23 30	6 13 20 27	4 11 18 25
D	3 10 17 24 31	7 14 21 28	5 12 19 26
W	4 11 18 25	1 8 15 22 29	6 13 20 27
D	5 12 19 26	2 9 16 23 30	7 14 21 28
V	6 13 20 27	3 10 17 24	1 8 15 22 29
Z	7 14 21 28	4 11 18 25	2 9 16 23 30

INHOUD

ELEKTRONENBUIZEN

LIJST VAN ELEKTRONENBUIZEN EN HALFGELEIDERS

VOLGENS TYPENUMMER

*) Balansparen dioden of transistors volgen onmiddellijk op de vermelde enkele typen,
b.v.: AA119 en AC132
2-AA119 2-AC132

LIJST VAN BESCHIKBARE JEDEC-HALFGELEIDERS

De lijst bevat een aantal van de meest gangbare Jedec-typen halfgeleiders die op aanvraag geleverd kunnen worden. Voor het gemak zijn onze vergelijkbare typen, aanbevolen voor ontwikkeling van nieuwe apparatuur, in dit overzicht opgenomen. Opgemerkt wordt dat deze lijst geen lijst met vervangingstypen is.

Jedec type	*Aanbevolen type*	*pag.*	*Jedec type*	*Aanbevolen type*	*pag.*
1N87A	**OA90**	362	1N4885	**BAY96**	400
1N277	**AAZ15/17**	362	1N4886	**BAY96**	400
1N476	**OA81**	362	2N174	**ADZ12**	388
1N476A	**OA91**	362	2N174A	**ADZ12**	388
1N478	**OA85**	362	2N337	**BSY10**	390
1N478A	**OA95**	362	2N338	**BSY11**	390
1N480	**OA86**	362	2N441	**ADZ11**	388
1N541	**OA79**	362	2N442	**ADZ11**	388
1N542	**2-OA79**	362	2N683	**BTY91/100R**	376
1N617	**OA91**	362	2N685	**BTY 91/200R**	376
1N618	**OA95**	362	2N687	**BTY91/300R**	376
1N698	**AAZ16**		2N688	**BTY91/400R**	376
1N904	**BAY38**	364	2N706	**BSY38/39**	390
1N914	**BAY38**	364	2N706A	**BSY38/39**	390
1N914A	**BAY38**	364	2N706B	**BSY38/39**	390
1N914B	**BAY38**	364	2N706C	**BSY38/39**	390
1N916A	**BAY38**	364	2N708	**BSY38/39**	390
1N916B	**BAY38**	364	2N709	**BSX44**	398
1N921	**BAY39**	364	2N711	**ASZ21**	386
1N922	**BAY39**	364	2N743	**BSY38/39**	390
1N3121	**AAZ17**	362	2N744	**BSY38/39**	390
1N3122	**AAZ18**	362	2N753	**BSY38/39**	390
1N3182	**BA102**	364	2N914	**BSX19/20**	398
1N3483	**AAZ13**	362	2N919	**BSY38/39**	390
1N3484	**AAZ15**	362	2N920	**BSY38/39**	390
1N3604	**BAY38**	364	2N929	**2N929**	392
1N3944	**AAY21**	362	2N930	**2N930**	392
1N4009	**BAY38**	364	2N990	**AF124**	382

2N991	**AF125**	382	2N2369A	**BSX20**	398
2N992	**AF126**	382	2N2411	**BSY40**	398
2N993	**AF127**	382	2N2412	**BSY41**	398
2N1100	**2N1100**	388	2N2428	**AC125**	384
2N1302	**ASY28/29**	386	2N2429	**AC126**	384
2N1303	**ASY26/27**	386	2N2430	**AC127**	384
2N1304	**ASY28/29**	386	2N2431	**AC128**	384
2N1305	**ASY26/27**	386	2N2475	**BSX44**	398
2N1306	**ASY28/29**	386	2N2494	**AF102**	382
2N1307	**ASY26/27**	386	2N2495	**AF178**	382
2N1308	**ASY28/29**	386	2N2496	**AFZ12**	386
2N1309	**ASY26/27**	386	2N2569	**2N2569**	390
2N1358	**ADZ11**	388	2N2570	**2N2570**	390
2N1613	**BFY67**	390	2N2836	**AD149**	384
2N1666	**ASZ15**	388	2N2857	**BFY90**	398
2N1667	**ASZ16**	388	2N3074	**AF180**	382
2N1668	**ASZ17**	388	2N3075	**AF181**	382
2N1669	**ASZ18**	388	2N3399	**AF139**	382
2N1711	**BFY68**	390	2N3588	**AF121**	382
2N1773	**BTY79**	376	2N2617	**BCZ11**	392
2N1844	**BTY87/100R**	376	2N2654	**AF179**	382
2N1846	**BTY87/200R**	376	2N2706	**AC132**	384
2N1848	**BTY87/300R**	376	2N2707	**AC127/132**	385
2N1849	**BTY87/400R**	376	2N2717	**ASZ21**	386
2N1911	**BTY99/100R**	379	2N2786	**AFY19**	386
2N1913	**BTY99/200R**	379	2N2835	**AD139**	384
2N1915	**BTY99/300R**	379			
2N1916	**BTY99/400R**	379			
2N2207	**AF118**	382			
2N2297	**BFY55**	390			
2N2368	**BSX19**	398			
2N2369	**BSX20**	398			

ELECTRON TUBES

TYPE DESIGNATION CODES AND SYMBOLS OF ELECTRON TUBES

TYPE-NUMMERSYSTEEM VOOR RADIO- EN TELEVISIE-ONTVANGBUIZEN

De type-aanduiding heeft betrekking op buizen die voornamelijk bestemd zijn voor niet-professionele opname- en weergaveapparaten, zoals: radio- en televisieontvangers, platenspelers, bandrecorders en l.f.-versterkers, smalfilmprojectoren, hoorapparaten e.d.

Deze type-aanduiding bestaat uit: TWEE OF MEER LETTERS, GEVOLGD DOOR EEN SERIENUMMER

Voorbeeld en verklaring:

PL500

De eerste letter duidt op de gloeispanning of -stroom	De tweede en volgende letters duiden op de constructie en/of toepassing van de buis (indien er meer dan een elektrodensysteem is, staan deze letters in alfabetische volgorde).	Het serienummer bestaat uit drie cijfers, waarvan het eerste het buisvoettype aanduidt:[1])
D $\leq$ 1,4 V; serie- of parallelvoeding **E** 6,3 V; serie- of parallelvoeding **G** diversen; parallelvoeding **H** 150 mA; serievoeding **L** 450 mA; serievoeding **P** 300 mA; serievoeding **U** 100 mA; serievoeding **X** 600 mA; serievoeding De letters A (4 V), B (180 mA), C (200 mA), F (12,6 V), K (2 V), V (50 mA), en Y (450 mA) worden niet meer gebruikt	**A** diode (gelijkrichters uitgezonderd) **B** dubbele diode met gemeenschappelijke katode (gelijkrichters uitgezonderd) **C** triode (eindtrioden uitgezonderd) **D** eindtriode **E** tetrode (eindtrioden uitgezonderd) **F** pentode (eindpentoden uitgezonderd) **L** eindtetrode of eindpentode **H** hexode of heptode (van het hexode-type) **K** octode of heptode (van het octode-type) **M** afstemindicator **Y** enkelvoudige gelijkrichter **Z** dubbele gelijkrichter	Serienummer **1** diverse buisvoettypen **2** 10-pens miniatuurvoet **3** octalvoet **5** magnovalvoet **8** novalvoet **9** 7-pens miniatuurvoet Bij tetroden en pentoden (behalve eindbuizen) heeft het laatste cijfer een indicatie van de karakteristiek. even cijfer: lineaire karakteristiek oneven: karakteristiek met variabele steilheid

1) De overige cijfers voor andere buisvoettypen worden evenals serienummers van een of twee cijfers niet meer gebruikt.

TYPE-NUMMERSYSTEEM VOOR PROFESSIONELE ONTVANGBUIZEN

Dit type-nummersysteem heeft betrekking op professionele vacuümbuizen van het ontvangtype, die voornamelijk bestemd zijn voor telecommunicatieapparatuur, gegevensverwerkende machines of andere industriële toepassingen.

De type-aanduiding bestaat uit: TWEE OF MEER LETTERS, GEVOLGD DOOR EEN SERIENUMMER

Voorbeeld en verklaring:

ECC2000

De eerste letter duidt op de gloeispanning	De tweede en volgende letters duiden op de constructie en/of toepassing van de buis. (Indien er meer dan een elektrodensysteem is, staan deze letters in alfabetische volgorde.)	Serienummer
E 6,3 V; parallel- of serievoeding	**A** diode **C** triode (eindtrioden uitgezonderd) **D** eindtriode **E** tetrode (eindtetroden uitgezonderd) **F** pentode (eindpentoden uitgezonderd) **L** eindtetrode of eindpentode **H** heptode **M** afstemindicator	Het serienummer bestaat uit vier cijfers, waarvan het eerste het buisvoettype aanduidt:[1]) **1** diverse buisvoettypen **2** 10-pens miniatuurvoet **3** octalvoet **5** magnovalvoet **8** novalvoet **9** 7-pens miniatuurvoet

[1]) Serienummers voor prototypen eindigen altijd op nul, voor varianten op een van de cijfers 1 tot 9. Voor nieuwe buisvoettypen zullen desgewenst andere eerste cijfers gebruikt worden.

TYPE-NUMMERSYSTEEM VOOR KATODESTRAALBUIZEN

Dit type-nummersysteem heeft betrekking op katodestraalbuizen voor alle toepassingen, zoals: televisie- en radarbeeldbuizen, oscilloscoopbuizen, monitorbuizen en beeldzoekers.

De type-aanduiding bestaat uit: EEN LETTER GEVOLGD DOOR TWEE DOOR EEN STREEPJE VERBONDEN CIJFERGROEPEN EN EEN OF TWEE LETTERS

Voorbeeld en verklaring:

D10-11GH
A59-11W

De eerste letter duidt op de toepassing en/of constructie van de buis	Het eerste cijfer of de eerste cijfergroep duidt op de schermafmetingen	Tweede cijfer of cijfergroep	De laatste letters duiden op de schermeigenschappen
A Niet-professionele TV-beeldbuis **D** Enkelschrijvende Oscilloscoopbuis **E** Meervoudig schrijvende oscilloscoopbuis **F** Radarbeeldbuis, direct zicht **L** Beeldbuis met extra lange nalichttijd **M** Professionele TV-beeldbuis, direct zicht **P** Professionele beeldbuis, projectie **Q** Lichtpuntaftastbuis	Voor rechthoekige schermen de schermdiagonaal in cm Voor ronde schermen de schermdiameter	Serienummer	De eerste letter duidt op de kleur van de fluorescentie (of bij schermen met lange of zeer lange persistentie: van de fosforescentie) voor zover van toepassing volgens de sectoren van de Kelly-kaart voor kleuraanduidingen van lampen. **A** Roodachtig-paars, paars, blauwachtig-paars **B** Paarsachtig-blauw, blaus, groenachtig-blauw **D** Blauw-groen **G** Blauwachtig-groen, groen, geelachtig-groen **K** Geel-groen **L** Oranje, oranje-rose **R** Roodachtig-oranje, rood, rose, paarsachtig-rose, paarsachtig-rood, rood-paars **Y** Groenachtig-geel, geel, geelachtig-oranje **W** ,,standaard-wit-fosfor'' van de televisiebeeldbuis **X** driekleurenschermen De tweede letter is een serieletter waarmee andere specifieke verschillen in de schermeigenschappen worden aangegeven. Woordaanduiding voor de persistentie (Vervaltijd tot 10% van de oorspronkelijke lichtopbrengst) kleiner dan 1 μsec. zeer kort — 1 msec. tot 100 msec. middelmatig 1 μsec. tot 10 μsec. kort — 100 msec. tot 1 sec. lang 10 μsec tot 1000 μsec. semi-kort — meer dan 1 sec. zeer lang

AAN DE BESTAANDE FOSFOREN TOEGEWEZEN LETTERGROEPEN

Aanduiding		*E.I.A. nummer*	*Kleur*		*Persistentie (10%)*
Nieuw	*Oud*		*Fluorescentie*	*Fosforescentie*	
BA	C		paarsachtig-blauw		zeer kort
BC	V		paarsachtig-blauw		
BD	A		blauw		zeer kort
BE	B	P11	blauw	blauw	semi-kort
BF	U		blauw		semi-kort
GB	M	P32	paarsachtig-blauw	geelachtig-groen	lang
GE	K	P24	groen	groen	kort
GH	H	P31	groen	groen	semi-kort
GJ	H	P1	geelachtig-groen	geelachtig-groen	middelmatig
GK	G[1]		geelachtig-groen	geelachtig-groen	middelmatig
GL	N	P2	geelachtig-groen	geelachtig-groen	semi-kort
GM	P	P7	paarsachtig-blauw	geelachtig-groen	lang
GN	J		blauw	groen	[2]
GP			blauwachtig-groen/ groen	groen	semi-kort
LA	D		oranje	oranje	middelmatig
LB	E		oranje	oranje	lang
LC	F		oranje	oranje	zeer lang
LD	L	P33	oranje	oranje	zeer lang
RA			roodachtig-oranje		middelmatig
YA	Y		geelachtig-oranje	geelachtig-oranje	middelmatig
W	W		wit voor TV-beeldbuis		
X	X		drie kleuren voor TV-beeldbuis		

[1]) Voor kleurentelevisie
[2]) Afhankelijk van uitwendige stimuli

TYPE-NUMMERSYSTEEM VOOR PROFESSIONELE BUIZEN

Dit type-nummersysteem heeft betrekking op buizen die voornamelijk bestemd zijn voor radio- of televisiezendapparatuur, navigatie- of telecommunicatieapparatuur of andere industriële toepassingen.

De type-aanduiding bestaat uit: TWEE LETTERS, GEVOLGD DOOR EEN SERIENUMMER

Voorbeeld en verklaring:

YK1000

De eerste letter geefs de categorie aan	De tweede letter geeft de constructie en/of toepassing aan	Serienummer
X Buizen die met lichtgevoelige materialen werken **Y** Vacuümbuizen voor zend-, microgolf- of industriële toepassingen **Z** Met gas gevulde buizen (uitgezonderd buizen die met lichtgevoelige materialen werken)	**A** diode **C** relaisbuis **D** triode (dubbele trioden inbegrepen) **H** lopende golfbuis **J** magnetron **K** klystron **L** tetrode of pentode (dubbele tetroden of dubbele pentoden inbegrepen) **M** koude-katode-indicator of -telbuis **P** fotomultiplicator, stralingstelbuis **Q** camerabuis **T** thyratron **X** ignitron, beeldversterker of beeldomvormer **Y** gelijkrichter **Z** spanningsstabilisator **G** diversen	Het serienummer bestaat uit vier cijfers, Serienummers voor prototypen eindigen altijd op nul, voor varianten op een van de cijfers 1 tot 9.

KATODESTRAALBUIZEN (oud systeem)

Het typenummer bestaat uit twee hoofdletters, gevolgd door twee cijfergroepen (b.v. DG13-2, MW31-16).

Eerste letter: duidt op de focusseer- en afbuigmethode.
Tweede letter: duidt op de schermeigenschappen.
Eerste cijfergroep: geeft de schermafmetingen aan.
Tweede cijfergroep: geeft een serienummer aan.

De sleutel tot het systeem wordt in de volgende tabellen gegeven:

Eerste letter

A – Elektrostatische focussering en elektromagnetische afbuiging.
D – Elektrostatische focussering en elektrostatische afbuiging in twee richtingen.
M – Elektromagnetische focussering en elektromagnetische afbuiging.

Tweede letter

Duidt op de eigenschappen van het fosforscherm.

Eerste cijfergroep

Voor ronde buizen: schermdiameter in cm
Voor rechthoekige buizen: schermdiagonaal in cm

Tweede cijfergroep

Serienummer

ZENDBUIZEN (oud systeem)

Het typenummer bestaat uit twee of drie hoofdletters gevolgd door twee cijfergroepen, voor sommige typen wordt een lettergroep toegevoegd (b.v. TAL12/10, DCG4/1000G).

Eerste letter: duidt op de buisclassificatie.
Tweede letter: duidt op gloeidraad- of katodetype.
Eerste cijfergroep: geeft de werkspanning aan.
Tweede cijfergroep: geeft het vermogen aan.
Toegevoegde letters: duiden op de buisvoet.

De sleutel tot dit systeem wordt in de volgende tabellen gegeven.

Eerste letter

D – Gelijkrichtbuis (stuurroosterbuizen inbegrepen)
M – Triode (l.f.-versterkbuis of modulator)
P – Pentode
Q – Tetrode
T – Triode (h.f.-, m.f.- of oscillatorbuis)

Voor buizen met een dubbel systeem worden twee van bovengenoemde letters gebruikt (b.v. QQC04/15).

Tweede letter

(derde letter voor buizen met een dubbel systeem)
A – Direct verhitte wolfraamgloeidraad
B – Direct verhitte wolfraam-thoriumgloeidraad
C – Direct verhitte gloeidraad met oxidehuid
E – Indirect verhitte katode met oxidehuid

Derde letter

(vierde letter voor buizen met een dubbel systeem)
G – Met kwikdampvulling
H – Koelspiraal of andere geïntegreerde koeler
L – Geforceerde-luchtkoeling
W – Waterkoeling
X – Xenonvulling

Als het typenummer geen letter bevat die de koeling aangeeft, wordt de buis door straling gekoeld.

Eerste cijfergroep

Gelijkrichtbuizen:	Benaderde uitgangsgelijkspanning in kilovolt voor een enkelvoudige driefazengelijkrichtschakeling.
Zendbuizen:	Benaderde maximale anodespanning in kilovolt.

Tweede cijfergroep

Gelijkrichtbuizen:	Benaderd uitgangsvermogen van de gelijkstroom in watt of kilowatt per buis in een enkelvoudige driefazengelijkrichtschakeling.
HF-buizen	Benaderd uitgangsvermogen in watt of kilowatt voor klasse-C-telegrafie.
Modulatoren:	Benaderde anodedissipatie in watt of kilowatt.

Toegevoegde letters:

B – Aansluitdioden of -kabels
E – Middelgrote 7-pens voet
ED – Edisonvoet
EG – Goliathvoet
G – Middelgrote 4-pens voet
GB – 4-pens Jumbovoet
GS – 4-pens Super-Jumbovoet
N – Middelgrote 5-pens voet
P – P-voet

FOTOBUIZEN EN FOTOMULTIPLICATOREN (oud systeem)

Het typenummer bestaat uit twee cijfers, gevolgd door twee letters (b.v. 90AV).

Eerste cijfer: geeft de buisvoet aan.
Tweede cijfer: geeft een serienummer aan.
Eerste letter: duidt op het katodetype.
Tweede letter: duidt op de fotobuisklasse.
Derde letter: alleen voor fotomultiplicatoren de letter P.

De sleutel tot dit systeem wordt in de volgende tabellen gegeven.

Eerste cijfer

2 – 8-pens Loctalvoet
3 – 8-pens Octalvoet
5 – Speciale voet
8 – 9-pens Novalvoet
9 – 7-pens Miniatuurvoet
Tweede cijfer – Serienummer

Eerste letter

A – Cesium-antimoonkatode (blauwgevoelig)
C – Katode van cesium op geoxideerd zilver (roodgevoelig)
U – Cesium-antimoonkatode met kwartsvenster
T – Tialkalikatode

Tweede letter

G – Met gas gevuld
V – Hoogvacuüm

SPANNINGSTABILISATOREN (oud systeem)

Het typenummer bestaat uit een nummer, gevolgd door een hoofdletter, een cijfer en soms een tweede hoofdletter (b.v. 85A2, 150C1K).

Nummer: geeft de werkspanning aan.
Eerste letter: geeft het stroomgebied aan.
Cijfer: geeft een serienummer aan.
Tweede letter: geeft de buisvoet aan.

De sleutel tot dit systeem wordt in de volgende tabellen gegeven.

Nummer

Gemiddelde brandspanning in volt.

Eerste letter

A – maximaal 10 mA
B – maximaal 20 mA
C – maximaal 40 mA
D – maximaal 100 mA
E – max. 200 mA

Cijfer

Serienummer

Tweede letter

E – Edison-voet
K – 8-pens Octalvoet
P – P-voet

SYMBOLEN

Elektroden

a	Anode
ah	Hulpanode
a_{ign}	Ontsteekanode
d	Anode van detectiediode
D	Afbuigplaat of -staaf
f	Gloeidraad of weerstandsdraad
fc	Gloeidraadaftakking of sterpunt van drie gloeidraden in sterschakeling
g	Rooster
$i.c.$	Inwendig verbonden (mag uitwendig niet worden aangesloten)
k	Katode
$k_{(i)}$	Ingangskatodeaansluiting van UHF-buis
$k_{(o)}$	Uitgangskatodeaansluiting van UHF-buis
l	Fluorescerend scherm
m	Geleidende uitwendige bedekking
pr	Waakelektrode (hulpelektrode voor het betrouwbare ontsteken van koudekatodebuizen)
s	Inwendige afscherming
S	Schakelaar
st	Starter of poortelektrode van koude-katodebuizen

Elektrodesystemen

D	Diode
H	Hexode of heptode
P	Pentode
T	Triode
V_k	Spanning tussen katode en chassis
V_{kf}	Spanning tussen katode en gloeidraad
V_{kfp}	Piekspanning tussen katode en gloeidraad
V_l	Spanning van het fluorescerend scherm
V_{nv}	Minimale werkspanning
V_o	Uitgangswisselspanning: uitgangsgelijkspanning
V_{osc}	Oscillatorspanning
V_{pr}	Waakelektrodespanning van een koude-katodebuis
V_r	Reguleerspanning

V_{st}	Starterspanning van een koude-katodebuis
V_{tr}	Secundaire transformatorspanning (onbelast)

Stromen

I_a	Anodestroom
$I_{a\max}$	Anodestroom bij vollast
$I_{a\min}$	Anodestroom bij nullast
I_{ap}	Anodepiekstroom
I_b	Voedingsstroom
I_{contr}	Stroomgebied van spanningsstabilisator
I_d	Anodestroom van detectiediode
I_{dp}	Anodepiekstroom van detectiediode
I_f	Gloeistroom
I_g	Roosterstroom
$I_{g\max}$	Roosterstroom bij vollast
$I_{g\min}$	Roosterstroom bij nullast
I_{gp}	Roosterpiekstroom
I_k	Katodestroom

Spanningen

V_a	Anodespanning Brandspanning van spanningsstabilisator
ΔV_a	Brandspanningsvariatie in het stabilisatiegebied van spanningsstabilisator
V_{arms}	Anodewisselspanning (effectieve waarde)
V_{ainvp}	Anodepiekspanning in tegenrichting
V_{ap}	Anodepiekspanning
V_{arc}	Boogspanning
V_b	Voedingsspanning
V_{bd}	Anodevoedingsspanning
V_{bg2}	Schermroostervoedingsspanning
V_{contr}	Spanningsgebied van stroomregelbuis
V_d	Anodespanning van detectiediode
V_{dinv}	Anodespanning van detectiediode in tegenrichting
V_{dinvp}	Anodepiekspanning van detectiediode in tegenrichting
V_{eff}	Effectieve waarde van de spanning
V_{ext}	Doofspanning
V_f	Gloeispanning
V_{fwd}	Spanning in doorlaatrichting

V_g Roosterspanning

$V_{g(\mathrm{arc})}$ Roosterspanning van geleidende buis

$V_{a\,\mathrm{invp}}$ Roosterpiekspanning in tegenrichting

$V_{g\mathrm{p}}$ Roosterpiekspanning

V_G Ingangswisselspanning per buis

V_{ign} Noodzakelijke spanning voor doorslag naar betrokken elektrode

V_{invp} Piekspanning in tegenrichting

I_l Stroom naar fluorescerend scherm

I_o Uitgangsgelijkstroom per buis

I_{pr} Waakelektrodestroom van een koude-katodebuis

I_{rec} Aanbevolen stroomwaarde

I_{reg} Gestabiliseerde stroom van een stroomregelbuis

I_{st} Starterstroom

$I_{\mathrm{st\,transf}}$ Noodzakelijke starterstroom voor het inleiden van de hoofdontlading

I_{surge} Overloopstroom

Vermogens

W_a Anodedissipatie

W_{ig} Stuurvermogen

W_o Maximaal uitgangsvermogen

Weerstanden

R_a Uitwendige anodeweerstand; Aanpasweerstand
Totale anodeweerstand van gelijkrichtbuis

R_{aa} Aanpassingsweerstand van balansversterker (anode tot anode)

R_{damping} Dempingsweerstand

R_{eq} Equivalente ruisweerstand

R_E Weerstand van thermo-element

R_f Gloeidraadweerstand

R_g Uitwendige weerstand tussen rooster en katode

R_g' Uitwendige weerstand tussen rooster en katode van de volgende buis

R_i Inwendige weerstand

R_{id} Inwendige weerstand van detectiediode

R_k Weerstand tussen katode en chassis

R_{kf} Uitwendige weerstand tussen katode en gloeidraad

R_{st}	Uitwendige weerstand in starterleiding van een koudekatodebuis	
R_t	Totale anodeweerstand van gelijkrichtbuis	
R_1	Uitwendige weerstand tussen $+V_b$ en g_2	potentiometer
R_2	Uitwendige weerstand tussen g_2 en chassis	potentiometer
R_3	Uitwendige weerstand tussen g_2 en k	potentiometer
R_4	Uitwendige weerstand tussen k en chassis	potentiometer

Capaciteiten

C_a	Anode ten opzichte van alle andere elementen met uitzondering van het stuurrooster
C_{ag}	Anode ten opzichte van rooster, alle andere elementen geaard
C_{ak}	Anode ten opzichte van katode, alle andere elementen geaard
C_{dl}	Anode ten opzichte van katode van detectiediode
C_{x1x2}	Afbuigplaat x_1 ten opzichte van afbuigplaat x_2, alle andere elementen geaard
C_{y1y2}	Afbuigplaat y_1 ten opzichte van afbuigplaat y_2
C_{filt}	Ingangscondensator van afvlakfilter
C_g	Rooster ten opzichte van alle andere elementen met uitzondering van anode

Diversen

d_{tot}	Totale vervorming
freq.	Frequentie
g	Spanningsversterking per trap
G	Stroomversterking (versterking)
m	Aantal anoden van gelijkrichtbuizen
M	Afbuigfaktor
N	Gevoeligheid
N	Anodelichtgevoeligheid
N	Katodelichtgevoeligheid
S	Steilheid
S_c	Conversiesteilheid
S_{eff}	Effectieve steilheid van oscillatorbuis
S_o	Steilheid van oscillatorbuis bij ... en ...
tamb	Omgevingstemperatuur

t_{Hg}	Temperatuur van gecondenseerd kwik (bij de katode)
t_{rec}	Aanbevolen temperatuur
T_{av}	Middelingstijd
T_{dion}	Deïonisatietijd
T_h	Opwarmtijd van de buis
T_{ion}	Ionisatietijd
T_{imp}	Pulstijd
T_w	Wachttijd voor een buis: tijd die moet verlopen tussen het inschakelen van de gloeispanning en het inschakelen van de spanningen op de andere elektroden
α	Schaduwsector op fluorescerend scherm
β	Lichtsector op fluorescerend scherm
η	Rendement
μ	Versterkingsfaktor
μ_{g2g1}	Versterkingsfaktor van schermrooster ten opzichte van stuurrooster

VOORKEURTYPEN ELEKTRONENBUIZEN

1966

INLEIDING

Dit overzicht van voorkeurbuizen is bestemd als leidraad voor de keuze van buistypen bij de voorbereiding van toekomstige ontwerpen van apparaten. De selectie is het resultaat van een nauwgezette bestudering van de wensen en eisen in diverse sectoren van de elektronentechniek.

Deze lijst van voorkeurbuizen sluit de verkrijgbaarheid van andere buizen voor bestaande ontwerpen niet uit en wil evenmin enig ontwikkelingswerk op het gebied van elektronische toepassingen belemmeren of beperken. In die gevallen echter waarin voor een toepassing grotere series van een niet in deze lijst opgenomen type vereist zijn wordt aanbevolen vooraf overleg te plegen. Eventuele wijzigingen als gevolg van de technologische vooruitgang op het gebied van constructies of toepassingen van buizen zullen in de volgende uitgave opgenomen worden.

INHOUD

RECEIVING AND AMPLIFYING TUBES

FM/AM RADIO AND AUDIO

FM tuner	ECC85 UCC85
AM mixer	ECH81 UCH81
(Detection and) IF amplification	EBF89 EF89 UBF89 UF89
AM detection Audio amplification	EBC81 UBC81
AM/FM detection Audio amplification	EABC80 UABC80
AF amplification Phase inverter	ECC82 ECC83 EF86
Audio output	ECL86 EL84 EL86 EL503 UCL82 UL84
Rectification	EZ80 EZ81 GZ34 UY89
Tuning and level indicator	EM87

TELEVISION

UHF amplification	EC88	PC88
VHF amplification	EC900 ECC189	PC900 PCC189
Mixer UHF VHF	EC86 ECF801	PC86 PCF801
IF amplification (and miscellaneous)	ECF200 ECF201 EF183	PCF200 PCF201 EF184
Video output and miscellaneous	EFL200	PFL200
AF output and ampl.	ECL86	PCL86
Vertical output and oscillator Colour TV	ECL85 EL508	PCL85 PL508
Horizontal output Colour TV	EL81 EL500 EL505	PL81 PL500 PL505
Booster Colour TV	 EY88 EY500	PY81 PY88 PY500
EHT rectification Colour TV	DY51 GY501	DY87
Pulse circuits	ECC82 ECF80	PCF80
Horizontal oscillator	ECF802	PCF802
Sync separator	ECH200	PCH200
Ballast triode	ED500	PD500

CATHODE-RAY TUBES

TELEVISION PICTURE TUBES

Screen diameter	*Type number*
28 cm (11")	A28-13W
47 cm (19")	A47-11W
59 cm (23")	A59-11W
65 cm (25")	A65-11W

RADAR CATHODE-RAY TUBES

Screen diameter	*Focusing*	
16 cm (6")	electrostatic	F16-10LD
21 cm (8")	electrostatic	F21-10LD
31 cm (12")	electrostatic	F31-10LC
41 cm (16")	electrostatic	F41-10LC
	magnetic	F41-11LC

TELEVISION STUDIO TUBES

Flying spot scanners		MC13-16
		MK13-16
Monitor tubes		AW17-20
		AW43-48
		M21-11W
		M21-12W
		M36-11W
		M36-13W
Camera tubes	Vidicons	55850
		55850AM
		55850F
		55850N
		55850S
		55850SR
	Plumbicons	55875
		55876
		55875R,G,B
		55875R,G,B-IG

CATHODE-RAY TUBES

PROJECTION TUBES

White	*Blue*	*Red*	*Green*
	MU6-2	MY6-2	MG6-2
MW13-38	MU13-38	MY13-38	MG13-38

INSTRUMENT CATHODE-RAY TUBES

Screen diameter	persistance			
	short	medium	long	very long
3 cm (1″)		DH3-91		
7 cm (3″)	DB7-11	DH7-11	DN7-11	DP7-11
		DG7-31		
		DG7-32		
	DB7-78	DH7-78	DN7-78	DP7-78
10 cm (4″)	D10-11BE	D10-11GH	D10-11GP	D10-11GM
	D10-12BE	D10-12GH	D10-12GP	D10-12GM
	E10-12BE	E10-12GH	E10-12GP	E10-12GM
13 cm (5″)	D13-16BE	D13-16GH	D13-16GP	D13-16GM
	D13-17BE	D13-17GH	D13-17GP	D13-17GM
	D13-21BE	D13-21GH	D13-21GP	D13-21GM
		D13-23GH		
	D13-24BE			
		D13-26GH	D13-26GP	
		D13-27GH		
14 cm ($5\frac{1}{2}$″)		D14-10GH		

PHOTOELECTRIC TUBES

PHOTOTUBE	
vacuum	92AV 90CV 150AV 150CV 150UV
gasfilled	92AG 90CG 155UG

PHOTO CONDUCTIVE CELL		
indium antimonide	ORP10	ORP13
lead sulphide	61SV	
cadmium sulphide	ORP12 ORP50 ORP60 ORP61 ORP62 ORP90	RPY17 RPY18 RPY19 RPY20 RPY27

COLD-CATHODE TUBES

VOLTAGE STABILIZING AND REFERENCE TUBES

mA	*2-4(8)*	*3.5-6*	*1-10*	*5-15*	*5-30*	*1-40*	*2-60*
75 V							75C 1
81 V	ZZ1000[1])						
83 V		83A1[1])					
85 V			85A2[1])				
90 V						90C1	
108 V					OB2 OB2WA		
150 V				150B2	OA2 OA2WA		

[1]) *Voltage reference tube*

TRIGGER TUBES		
ZC1030	Z70W/7709	Z803U
Z70U/7710	Z71U/7711	5823/Z900T

DIODES			
ZA1001	ZA1002	ZA1004	ZA1005

COLD-CATHODE TUBES

CHARACTER INDICATOR/DECIMAL COUNTER TUBES[1])

figures or signs	*figure size (mm)*	*viewing*		*type number*
		top	*side*	
0-9	15	X		ZM1020 ZM1022*
V, A, Ω, %, +, —, ~	15	X		ZM1021 ZM1023*
Mc/s, kc/s, c/s, s, ms, μs, ns	15	X		ZM1024 ZM1025*
0-9	15		X	ZM1030 ZM1032*
+, —	13		X	ZM1031 ZM1033*
0-9	30		X	ZM1040 ZM1042
+, —	20		X	ZM1041 ZM1043
0-9	3	X		ZM1050*
0-9	13		X	ZM1080
+, —, ~	8		X	ZM1081
0-9	—	X X		Z504S/ZM1070[1]) Z505S/ZM1060[1])

*) *A circular polarised filter (neutral or orange) is recommended instead of the red contrast filter of the unmarked types*

[1]) *Decimal counter*

SPECIAL QUALITY TUBES

main use			*diode*
high voltage rectifier	10 kV	0.25 mA	5642
			double diode
detector	360 V	9 mA	5726
	Ia (mA)	S (mA/V)	*triode*
UHF amplifier	12.5	13.5	E88C*
Subminiature high impedance input tube	1.4	14.5	EC1000
UHF amplifier	26	24	5842
			double triode
AF and d.c. amplifier	6	2.7	E80CC*
Switching type	5.6	–	E90CC*
Computer applications	8.5	6.4	E180CC*
	50	15	E182CC*
Low microphony	15	12.5	E188CC*
Cascade VHF aerial ampl.	27	–	ECC2000*
AF amplifier (12AU7WA)	1.2	1.6	12AX7S
	10.5	2.2	6189
HF amplifier (12AT7WA)	10	5.5	6201
			low power pentode
AF ampl. electrometer type	3	1.85	E80F*
Telephone circuits	10	9	E83F*
HF amplifier	13	16.5	E180F*
HF ampl., low microphony	13	16.5	E186F*
HF amplifier, low noise	35	50	E810F*
Wide band amplifier	7.5	5	5654
HF amplifier	5.2	3.2	5725

*) *10.000 hours of factory life test*

SPECIAL QUALITY TUBES

main use	Ia (mA)	S (mA/V)	Wa (W)	*power pentode*
AF output amplifier	50	45	10	E55L*
	30	9	8	E80L*
	20	11	4.5	E81L*
	100	27.5	27.5	E130L*
				triode pentode
Mixer	14	5		E80CF*
	10	6.2		
				indicator
Green fluorescence, diam. 5.5 mm, position indication flip flop circuits	drive <3 V/30 μA			DM160*

*) *10.000 hours of factory life test*

MISCELLANEOUS TYPES

ELECTROMETER TUBES		
4065	4067	4069
4066	4068	

THYRATRONS

XENON FILLED TYPES[1])

Max. anode current (A) avg/peak	*Max. peak anode voltage (V) inverse/forward* 500	1300/650	650/650	1250/900	1250/1000	1500/1500
0.025	5696	–	–	–	–	–
0.1/0.5	–	PL5727 PL2D21	–	–	–	–
0.3/2.—	–	PL6574	–	–	–	–
0.5/2.—	–	–	PL1607	–	–	–
2.5/30	–	–	–	PL5632/C3J	PL5684/C3JA	–
3.2/40	–	–	–	–	–	PL5544
6.4/80.—	–	–	–	–	–	PL5545

MERCURY VAPOUR FILLED TYPES[2])

	5000/2500	*1000/1000*	*2500/1500*	*2500/2000*
0.5/2.—	PL5557	–	–	–
2.5/15.—	–	PL5559	–	–
12.5/80.—	–	–	PL255	–
25/160.—	–	–	–	PL260

MERCURY VAPOUR + XENON FILLED TYPES[3])

	1500/1500	*1500/1000*	*2000/2000*
1.6/6.4	PL3C23A	–	–
3.2-3.6/20-15	–	PL6755A	–
6.4/80.—	–	–	PL106

Features: [1]) *low ambient temperature; higher frequency* [2]) *high voltage; long life* [3]) *low ambient temperature; long life*

IGNITRONS

A.C. WELDING CONTROL SERVICE-ONE PHASE

(2 tubes connected in inverse-parallel)

Mains voltage[1]) (V_{rms})	*Max. power demand* (*kVA*)	*Max. average current* (*A*)	*Type*
250–600	600	30.2	PL5551A
	200	56	
	1200	75.6	PL5552A
	400	140	
	2400	192	PL5553B
	800	355	
	2280	180	ZX1060 ZX1061
220–500	200	13	ZX1000[2])

FREQUENCY CHANGER, RESISTANCE WELDING SERVICE, INTERMITTENT RECTIFIER SERVICE

(3 tubes in three phase connection)

Max. peak voltage (*V*)	*Max. peak current* (*A*)	[3])	[4])	*Max. average current* (*A*)	*Type*
1200	600	5	135	22.5	PL5551A
1500	480	4	108	18	
1200	1500	20	420	70	PL5822A
1500	1200	16	336	56	
600	4000	54	1140	190	PL5553B
1200	3000	40	840	140	
1500	2400	32	672	112	
900	1800	200	400	300	PL5555
2100	1200	150	300	225	

[1]) *at 220V reduced ratings*

[2]) *water or air cooling*

[3]) *max. average current at max. peak current*

[4]) *max. peak current at max. average current*

TUBES FOR MICROWAVE EQUIPMENT

Tube type	*Application*				
	Radar	*RF heating*	*Link equipment* *frequency (Mc/s)*	*Link equipment* *type*	*Measuring equipment*
diodes noise diode 3 cm	K50A	–	–	–	K50A
diodes noise diode 10 cm	K51A	–	–	–	K51A
high voltage (surge limiting)	8020				
measuring diodes up to 1000 *Mc/s*				–	EA52 EA53
disc seal triodes	–	–	up to 5000	EC157 EC158	–
travelling-wave tubes	–	–	5925-6425 4400-5000 3800-4200	LB6-10 7537 55340	–
backward-wave oscillators	YH1100 [1]	–			YH1100 [1]
klystrons	2K25 6975 KS9-40 KS9-40D 55335 KS9-20B KS9-20D	–			*frequency (Mc/s)* 67000-74000 YK1010 31000-36000 55335 *TV transmitter* band IV, V YK1001 YK1002
hydrogen thyratrons (see also below)	3C45 4C35A 5C22 5949	5949			
cathode ray tubes (see also page 22)	F16-10LD F21-10LD F31-10LC F41-10LC F41-11LC	–			

[1]) 8000-12400 *Mc/s*

HYDROGEN THYRATRONS

max. forward anode voltage (kV)	*max. anode current (A)* 35	90	325	500
3	3C45	–	–	–
8	–	4C35A	–	–
16	–	–	5C22	–
25	–	–	–	5949

TUBES FOR MICROWAVE EQUIPMENT

Pulse magnetrons (radar)	*Frequency (Mc/s)*	*Output peak power (kW)*	*Type number*
tunable	1220-1350	450	5J26
	8500-9600	60	2J51 A
		225	YJ1010
	8700-9500	205	YJ1180
fixed	9255 ± 65	3	YJ1000
	9375 ± 30	10	JP9-7D
		22	JP9-15
		22	JP9-15D
	9445 ± 30	3	JP9-2.5D
		3	JP9-2.5E
		22	JP9-15B
	33050 ± 350	25	YJ1020
		30	YJ1021
C.W. magn. (micr. heating)		*c.w. output* (kW)	
fixed	2450 ± 25	0.2	7090
		1.2	DX206
		2.5	YJ1160
			YJ1162
		5	55125
Klystrons (radar)		*c.w. output* (mW)	
	8500-9660	50	2K25
	8500-9600	40	6975
	9300-9500	40	KS9-40
	9380-9510	35	KS9-40D
	31000-36000	100	55335
	X band	40	KS9-20B
		40	KS9-20D

TRANSMITTING TUBES

FOR COMMUNICATION			
Triodes	*Double tetrodes*	*Tetrodes*	*Pentodes*
TB2.5/400	QQC03/14	PE1/100	YL1000
TB3/750	QQE02/5	QB3/200	YL1010
TBL2/500	QQE03/12	QB3/300	YL1011
TBL6/20	QQE03/20	QB3.5/750	YL1012
TBW6/20	QQE04/5	QB4/1100	YL1090
TBL6/6000	QQE06/40	QB5/1750	YL1091
TBW6/6000	YL1020	QB5/2000	YL1100
TBL7/8000	YL1030	QBL3.5/2000	YL1101
TBW7/8000	YL1060	QBL4/800	YL1102
TBL12/40	YL1070	QBL5/3500	YL1103
TBL12/100	YL1071	QBW5/3500	YL1110
TBW12/100	YL1080	QC05/35	YL1121
YD1012	YL1130	QE05/40	YL1122
YD1140	YL1190	QE05/40F	YL1150
YD1141	YL1210	QE05/40H	YL1200
	YL1220	QE05/40K	YL1230
	YL1240	QE08/200	YL1250
		QE08/200H	YL1280
		QEL2/200	YL1290
		QEL2/275	

FOR RF HEATING			
TB2.5/400	TBH7/8000	TBH12/100	YD1170
TB3/750	TBL7/8000	TBL12/100	YD1171
TB4/1500	TBW7/8000	TBW12/100	YD1172
TB5/2500	TBH7/9000	YD1010	YD1220
TBL2/300	TBL7/9000	YD1140	
TBL2/400	TBW7/9000	YD1141	
TBH6/14	TBH12/25	YD1142	
TBL6/14	TBL12/25	YD1150	
TBW6/14	TBW12/25	YD1152	
TBL6/4000	TBH12/38	YD1160	
TBH6/6000	TBL12/38	YD1161	
	TBW12/38	YD1162	

TRANSMITTING TUBES

HIGH TENSION RECTIFYING TUBES

Max. peak	*Max. D.C. output current*					
inverse voltage	*0.25 A*	*1.25 A*	*1.5 A*	*2.5 A*	*3 A*	*15 A*
10 kV	DCG4/1000G (866A) DCX4/1000 (3B28)	DCX4/5000 (4B32)	–	–	–	–
13 kV	–	–	DCG5/5000GB (872A) DCG5/5000GS (8008) ZY1000 ZY1001 ZY1002	–	–	–
15 kV	–	–	–	–	DCG6/18 (6693)	DCG7/100[1]) DCG7/100B[1]) (6786)
21 kV	–	–	–	DCG9/20 (6508) ZT1000[1]) (8270) ZT1001	–	–
27 kV	–	–	–	DCG12/30[1]) (5870)	–	–

[1]) *Grid controlled*

DEVICES FOR NUCLEAR EQUIPMENT

PHOTOMULTIPLIERS

Spectral response	*Number of stages*	*Cathode diameter (mm)*							
		14	*20*	*32*	*42*	*44*	*63.5*	*110*	*200*
C(S1)	10	XP1116		150CVP	56CVP	XP1005			
S4	6				XP1140 (6×25 mm)				
A(S11)	4	XP1114							
	6	XP1113							
	7				XP1141				
	10	XP1110 XP1111 XP1115	52AVP	150AVP XP1010 XP1011 XP1015		XP1000 XP1001	XP1030 XP1031		
	11					53AVP 153AVP		54AVP	57AVP
	12				XP1020 XP1021				60AVP
	14				56AVP 56AVP/03 56AVP/05			58AVP XP1040	
U(S13)	10	XP1118		150UVP		XP1004	XP1032 XP1033		
	11					53UVP		54UVP	
	12				XP1023				
	14				56UVP			58UVP	
T(S20)	9	XP1117							
	10					XP1002			
	14				56TVP				
TU	10					XP1003			
	14				56TUVP				

DEVICES FOR NUCLEAR EQUIPMENT

WINDOWLESS PHOTOMULTIPLIERS						
application	*cathode*	*vacuum during operation (mm Hg)*	*mounting*	*envelope*	*screen*	*type n*
X-rays ($\lambda > 2$ A) uv photons ($\lambda < 1500$ A)	Ni	10^{-5}-10^{-6}	flange O-ring	glass	nickel plated iron	XP1120
ions (>10 keV) electrons (0.1-10 keV)	Cu Be	10^{-5}-10^{-6}	flange O-ring	glass	nickel plated iron	XP1121
X-rays ($\lambda > 2$ A) uv photons ($\lambda < 1500$ A)	Ni	10^{-5}-10^{-6}	cap nut O-ring	glass	nickel plated iron	XP1122
ions (>10 keV) electrons (0.1-10 keV)	Cu Be	10^{-5}-10^{-6}	cap nut O-ring	glass	nickel plated iron	XP1123
uh vac. X-rays ($\lambda > 2$ A) uv photons ($\lambda < 1500$ A)	Ni	10^{-5}-10^{-10}	heavy flange gold foil	stainless steel		XP1130
uh vac. ions (>10 keV) electrons (0.1-10 keV)	Cu Be	10^{-5}-10^{-10}	heavy flange gold foil	stainless steel		XP1131

DEVICES FOR NUCLEAR EQUIPMENT

RADIATION COUNTER TUBES

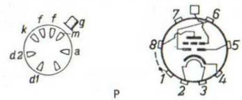
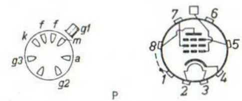
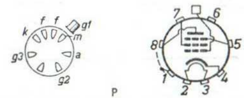
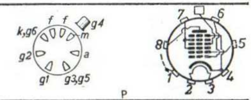
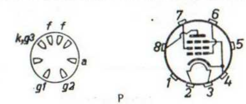
Type of tube	*Radiation*	*Type of tube*	*Radiation*
18505	$\alpha\ \beta\ \gamma$	18507	X-rays
18526		18511	
18515	$\alpha\ \beta$	18537	
18536		18538	
ZP1080	$\beta\ \gamma$	18503	γ
ZP1081		18508	
ZP1083		18520	
18504		18522	
18506		18545	
18509		18517	Cosmic rays
18524		18518	
18525		18548	
18529			
18550		ZP1000	Thermal neutrons
18552		ZP1001	
18553		ZP1010	
		ZP1020	
18510	β		
18516			
18546			

NEUTRON GENERATOR TUBE

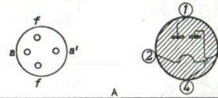
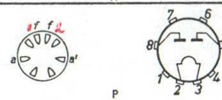
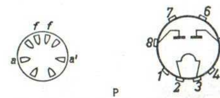
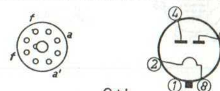
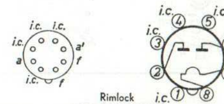
18600

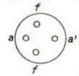
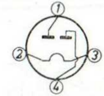
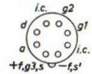
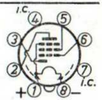
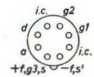
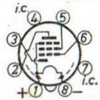
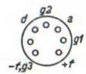
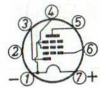
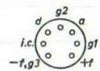
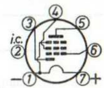
RECEIVING
AND AMPLIFYING TUBES

RECEIVING AND AMPLIFYING TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
ABC1 Double diode triode Typical characteristics	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_g = —7 V	I_a = 4	S = 2.0 mA/V R_i = 13.5 kΩ	
AF3 Variable mu pentode R.F. or I.F. amplifier	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g2} = 100 V V_{g1} = —3 V V_{g3} = 0 V	I_a = 8 I_{g2} = 2.6	S = 1.8 mA/V R_i = 1.2 MΩ $C_{ag1} <$ 3 mpF	
AF7 R.F. pentode R.F. amplifier	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g2} = 100 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 3 I_{g2} = 1.1	S = 2.1 mA/V R_i = 2 MΩ $C_{ag1} <$ 3 mpF	
AK2 Octode Frequency changer	V_f = 4 V I_f = 0.65 A	V_a = 250 V V_{g3+g5} = 70 V V_{g4} = —1.5 V V_{g2} = 90 V R_{g1} = 50kΩ	I_a = 1.6 I_{g3+g5} = 3.8 I_{g2} = 2.0 I_{g1} = 0.19	S_c = 0.6 mA/V R_i = 1.6 MΩ	
AL4 Output pentode Class A final amplifier	V_f = 4 V I_f = 1.75 A	V_a = 250 V V_{g2} = 250 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = max. 9 W	

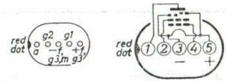
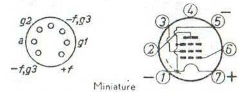
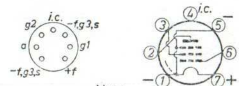
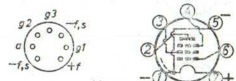
RECEIVING AND AMPLIFYING TUBES

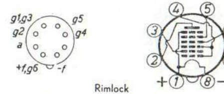
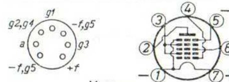
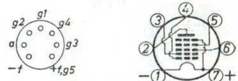
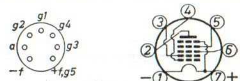
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
AX50 Gasfilled full-wave rectifying tube Rectifier	V_f = 4 V I_f = 3.75 A	V_{tr} = 2 × 500 V V_{arc} = max. 15 V	I_o = max. 275	R_t = min. 2 × 200 Ω C_{filt} = max. 64 μF	 A
AZ1 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 1.1 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 300 V	I_o = max. 60 I_o = max. 100	R_t = min. 2 × 100 Ω R_t = min. 2 × 60 Ω C_{filt} = max. 60 μF	 P
AZ4 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 2.3 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 300 V	I_o = max. 120 I_o = max. 200	R_t = min. 2 × 100 Ω R_t = min. 2 × 60 Ω C_{filt} = max. 60 μF	 P
AZ31 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 1.1 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 300 V	I_o = max. 60 I_o = max. 100	R_t = min. 2 × 100 Ω R_t = min. 2 × 60 Ω C_{filt} = max. 60 μF	 Octal
AZ41 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 0.72 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 300 V	I_o = max. 60 I_o = max. 70	R_t = min. 2 × 200 Ω R_t = min. 2 × 100 Ω C_{filt} = max. 50 μF	 Rimlock

AZ50 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 3 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 300 V	I_o = max. 250 I_o = max. 300	R_t = min. 2 × 150 Ω C_{filt} = max. 32 μF		A 
DAF40 Diode pentode R.F. or I.F. amplifier	V_f = 1.4 V I_f = 25 mA	V_a = 67.5 V V_{g2} = 67.5 V V_{g1} = 0 V	I_a = 0.85 I_{g2} = 0.20	S = 0.7 mA/V R_i = 1.6 MΩ C_{ag1} < 7 mpF		Rimlock 
DAF41 Diode pentode A.F. amplifier	V_f = 1.4 V I_f = 25 mA	V_b = 67.5 V R_a = 0.22 MΩ R_{g2} = 0.82 MΩ V_{g1} = 0 V	I_a = 0.17 I_{g2} = 0.04	g = 60		Rimlock 
DAF91 Diode pentode Typ. char. pentode	V_f = 1.4 V I_f = 50 mA	V_a = 67.5 V V_{g2} = 67.5 V V_{g1} = 0 V	I_a = 1.6 I_{g2} = 0.4	S = 0.62 mA/V R_i = 0.6 MΩ		Miniature 
AF amplifier		V_b = 67.5 V R_a = 1 MΩ R_{g2} = 3.9 MΩ V_{g1} = 0 V R_{g1} = 10 MΩ[1])	I_b = 0.06	g = 55		
DAF96 Diode pentode A.F. amplifier	V_f = 1.4 V I_f = 25 mA	V_b = 85 V R_a = 1 MΩ R_{g2} = 2.7 MΩ R_{g1} = 10 MΩ R_{g1}' = 2.2 MΩ	I_a = 0.064 I_{g2} = 0.021	g = 70		Miniature 

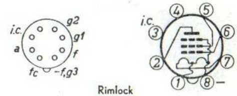
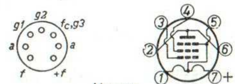
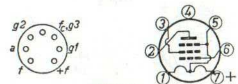
1) R_{g1} connected to $-f$.

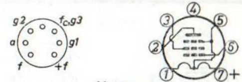
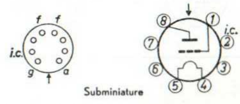
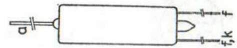
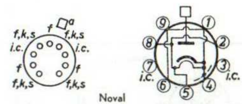
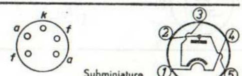
RECEIVING AND AMPLIFYING TUBES

Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
DF60	See 5678				
DF61N Pentode Typical charact.	$V_f = 1.25$ V $I_f = 25$ mA	$V_a = 67.5$ V $V_{g2} = 67.5$ V $V_{g1} = 0$ V	$I_a = 1.7$ $I_{g2} = 0.45$	$S = 0.95$ mA/V $R_i = 1$ MΩ $\mu_{g2g1} = 21$	
DF91 Variable mu pentode R.F. or I.F. amplifier	$V_f = 1.4$ V $I_f = 50$ mA	$V_a = 90$ V $V_{g2} = 45$ V $V_{g1} = 0$ V	$I_a = 1.8$ $I_{g2} = 0.65$	$S = 0.75$ mA/V $R_i = 0.8$ MΩ $C_{ag1} < 0.01$ pF	 Miniature
DF96 R.F. pentode R.F. or I.F. amplifier	$V_f = 1.4$ V $I_f = 25$ mA	$V_a = 45$ V $V_{g2} = 45$ V $V_{g1} = 0$ V	$I_a = 0.85$ $I_{g2} = 0.28$	$S = 0.65$ mA/V $R_i = 1$ MΩ	 Miniature
		$V_a = 85$ V $V_{g2} = 64$ V $V_{g1} = 0$ V	$I_a = 1.65$ $I_{g2} = 0.55$	$S = 0.85$ mA/V $R_i = 1.0$ MΩ	
DF97 Variable mu pentode I.F. amplifier	$V_f = 1.4$ V $I_f = 25$ mA Typ. char.	$V_a = V_b = 85$ V $R_{g2} = 33$ kΩ $V_{g1} = 0$ V $V_{g3} = 0$ V	$I_a = 1.7$ $I_{g2} = 0.7$	$S = 0.94$ mA/V $R_i = 0.45$ MΩ $C_{ag1} < 10$ mpF	 Miniature
Freq. changer (Oscillator voltage on g_3)		$V_a = V_b = 85$ V $R_{g2} = 47$ kΩ $R_{g3} = 0.3$ MΩ $V_{g1} = 0$ V	$I_a = 0.54$ $I_{g2} = 0.8$	$S_c = 0.265$ mA/V $R_i = 0.5$ MΩ $V_{osc} = 12\ V_{eff}$	

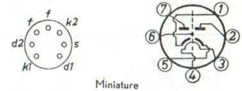
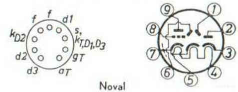
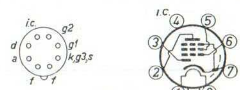
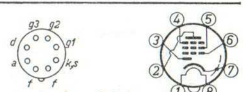
DK40[1] Octode Frequency changer	V_f = 1.4 V I_f = 50 mA	$V_a = V_b$ = 67.5 V V_{g5} = 67.5 V V_{g4} = 0 V V_{g2} = 67.5 V R_{g1+g3} = 35 kΩ	I_a = 1.0 I_{g5} = 0.25 I_{g2} = 2.6	S_c = 0.42 mA/V R_i = 0.9 mΩ V_{osc} = 8 V_{eff}	Rimlock
DK91 Heptode Frequency changer	V_f = 1.4 V I_f = 50 mA	V_a = 90 V V_{g2+g4} = 67.5 V V_{g3} = 0 V R_{g1} = 0.1 MΩ	I_a = 1.6 I_{g2+g4} = 3.2 I_{g1} = 0.25	S_c = 0.30 mA/V R_i = 0.6 MΩ	Miniature
		V_a = 45 V V_{g2+g4} = 45 V V_{g3} = 0 V R_{g1} = 0.1 MΩ	I_a = 0.7 I_{g2+g4} = 1.9 I_{g1} = 0.15	S_c = 0.23 mA/V R_i = 0.6 MΩ	
DK92 Heptode Frequency changer	V_f = 1.4 V I_f = 50 mA	$V_a = V_b$ = 85 V V_{g3} = 0 V R_{g4} = 0.18 MΩ R_{g2} = 33 kΩ R_{g1} = 27 kΩ	I_a = 0.65 I_{g4} = 0.14 I_{g2} = 1.65 I_{g1} = 0.13	S_c = 0.32 mA/V S_{eff} = 0.4 mA/V R_i = 1 MΩ R_{eq} = 100 kΩ V_{osc} = 4 V_{eff}	Miniature
		$V_a = V_b$ = 41 V V_{g4} = 41 V V_{g3} = 0 V R_{g2} = 6.8 kΩ R_{g1} = 27 kΩ	I_a = 0.25 I_{g4} = 0.09 I_{g2} = 1.75 I_{g1} = 0.08	S_c = 0.18 mA/V S_{eff} = 0.7 mA/V R_i = 0.75 MΩ R_{eq} = 115 kΩ V_{osc} = 2.5 V_{eff}	
DK96 Heptode Frequency changer	V_f = 1.4 V I_f = 25 mA	$V_a = V_b$ = 85 V V_{g3} = 0 V R_{g4} = 0.12 MΩ R_{g2} = 33 kΩ R_{g1} = 27 kΩ	I_a = 0.6 I_{g4} = 0.14 I_{g2} = 1.5 I_{g1} = 0.085	S_c = 0.3 mA/V R_i = 0.8 MΩ R_{eq} = 100 kΩ V_{osc} = 4 V_{eff}	Miniature

1) R_{g1+g3} connected to $+f$.

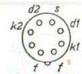
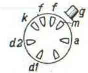
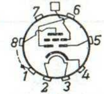
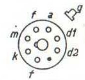
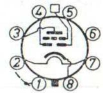
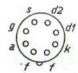
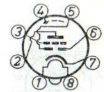
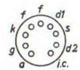
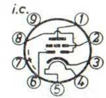
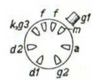
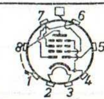
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
DK 96 (continued)		$V_a = V_b = 45$ V $V_{g4} = 45$ V $V_{g3} = 0$ V $R_{g2} = 12$ kΩ $R_{g1} = 27$ kΩ	$I_a = 0.56$ $I_{g4} = 0.15$ $I_{g2} = 1.3$ $I_{g1} = 0.085$	$S_c = 0.325$ mA/V $R_i = 0.55$ MΩ $V_{osc} = 4\ V_{eff}$	
DL41 Output pentode Class A final amplifier	$V_f = 1.4$ V $I_f = 0.1$ A Pins 1-(7+8)	$V_a = 90$ V $V_{g2} = 90$ V $V_{g1} = -3.6$ V	$I_a = 8$ $I_{g2} = 1.3$	$S = 2.45$ mA/V $R_i = 90$ kΩ $R_a = 11$ kΩ $W_o = 0.36$ W $W_a =$ max. 1.2 W	 Rimlock
DL92 Output pentode Class A final amplifier	$V_f = 1.4$ V $I_f = 0.1$ A Pins 5-(1+7)	$V_a = V_b = 84$ V $V_{g1} = -6.5$ V $R_{g2} = 10$ kΩ	$I_a = 8$ $I_{g2} = 1.7$	$S = 1.55$ mA/V $R_i = 0.1$ MΩ $R_a = 7$ kΩ $W_o = 190$ mW $W_a =$ max. 0.7 W	 Miniature
		$V_a = V_b = 61$ V $V_{g2} = 61$ V $V_{g1} = -6$ V	$I_a = 6.6$ $I_{g2} = 1.4$	$S = 1.5$ mA/V $R_i = 0.1$ MΩ $R_a = 7$ kΩ $W_o = 125$ mW	
DL94 Output pentode Class A final amplifier	$V_f = 1.4$ V $I_f = 0.1$ A Pins 5-(1+7)	$V_a = 86$ V $V_{g2} = 86$ V $V_{g1} = -4.5$ V	$I_a = 8$ $I_{g2} = 1.8$	S 2.0 mA/V $R_i = 0.11$ MΩ $R_a = 8$ kΩ $W_o = 0.29$ W $W_a =$ max. 1.2 W	 Miniature
	$V_f = 2.8$ V $I_f = 50$ mA Pins 1-7	$V_a = 86$ V $V_{g2} = 86$ V $V_{g1} = -4.3$ V	$I_a = 7.0$ $I_{g2} = 1.5$	$S = 1.9$ mA/V $R_i = 10$ kΩ $R_a = 0.12$ MΩ $W_o = 0.27$ W	

DL96 Output pentode Class A	V_f = 1.4 V I_f = 50 mA Pins 5-(1+7)	V_a = 85 V V_{g2} = 85 V V_{g1} = —5.2 V	I_a = 5 I_{g2} = 0.9	S = 1.4 mA/V R_i = 150 kΩ R_a = 13 kΩ W_o = 0.2 W W_a = max. 0.6 W	 Miniature
Class A half filament	V_f = 1.4 V I_f = 25 mA Pins 5-7 or 1-5	V_a = 85 V V_{g2} = 85 V V_{g1} = —5.2 V	I_a = 2.5 I_{g2} = 0.45	R_a = 15 kΩ W_o = 0.1 W	
Class A	V_f = 2.8 V I_f = 25 mA Pins 1-7	V_a = 90 V V_{g2} = 90 V V_{g1} = —6.3 V	I_a = 3.7 I_{g2} = 0.7	R_a = 20 kΩ W_o = 0.15 W	
DM70 Tuning indicator	V_f = 1.4 V I_f = 25 mA	V_f = 1.4 V (Pin 5 positive) V_a = 85 V	I_a = 0.17 (V_g = 0 V)	V_g = —10 V for complete extinction	 Subminiature
DM71 ≑ DM70 with short leads		V_f = 1.4 V V_a = 60 V (Pin 4 positive)	I_a = 0.105 (V_g = 0 V)	V_g = —7 V for complete extinction	
DY51 Half-wave rectifier for T.V. receivers	V_f = 1.4 V I_f = 0.55 A	—V_{ap} = max. 15 kV	I_a = max. 0.35 I_{ap} = max. 40	C_a = 0.8 pF	
DY86	See DY87				
DY87 Half wave rectifier for T.V. receivers	V_f = 1.4 V I_f = 0.55 A	V_o = 18 kV	I_o = 0.15 I_o = max. 0.5	C_a = 1.55 pF	 Noval
EA76 Diode	V_f = 6.3 V I_f = 0.15 A	$V_{d\,invp}$ = max. 420 V	I_d = max. 9 I_{dp} = max. 54	C_d = 2.5 pF	 Subminiature

RECEIVING AND AMPLIFYING TUBES

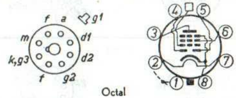
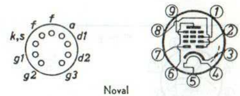
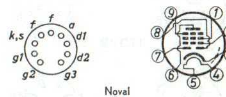
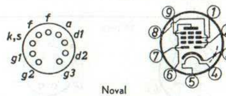
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
EAA91 Double diode Detector and A.G.C. (each section)	V_f = 6.3 V I_f = 0.3 A	$V_{d\mathrm{invp}}$ = max. 420 V	I_d = max. 9 $I_{d\mathrm{p}}$ = max. 54	$V_{kf\mathrm{p}}(k_{\mathrm{neg}})$ = max. 150 V[1]) $V_{kf\mathrm{p}}(k_{\mathrm{pos}})$ max. 330 V[1])	 Miniature
EABC80 Triple diode high mu triode Typical characteristics diodes	V_f = 6.3 V I_f = 0.48 A	$V_{d1\mathrm{invp}}$ = max. 350 V $V_{d2\mathrm{invp}}$ = max. 350 V $V_{d3\mathrm{invp}}$ = max. 350 V	I_{d1} = max. 1 $I_{d1\mathrm{p}}$ = max. 6 I_{d2} = max. 10 $I_{d2\mathrm{p}}$ = max. 75 I_{d3} = max. 10 $I_{d3\mathrm{p}}$ = max. 75	R_{id1} = 5 kΩ (V_{d1} = 10 V) R_{id2} = 200 Ω (V_{d2} = 5 V) R_{id3} = 200 Ω (V_{d3} = 5 V)	 Noval
Typ. char. triode section		V_a = 250 V V_g = —3 V	I_a = 1.0	S = 1.4 mA/V R_i = 50 kΩ	
		V_a = 100 V V_g = —1 V	I_a = 0.8	S = 1.45 mA/V R_i = 48 kΩ	
EAF41 Diode variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 95 kΩ V_{g1} = —2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.2 MΩ C_{ag1} < 2 mpF	 Rimlock
EAF42 Diode variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 110 kΩ V_{g1} = —2 V V_{g3} = 0 V	I_a = 5 I_{g2} = 1.5	S = 2.0 mA/V R_i = 1.4 MΩ C_{ag1} = 2 mpF	 Rimlock

[1]) D.C. component max. 200 V, A.C. component max. 165 V (rms value)

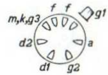
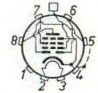
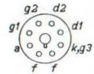
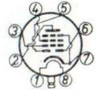
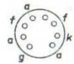
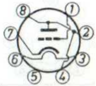
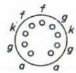
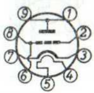
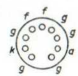
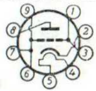
EB41 Double diode Detector and A.G.C.	V_f = 6.3 V I_f = 0.3 A	$V_{d\,\mathrm{invp}}$ = max. 420 V	I_d = max. 9 $I_{dp'}$ = max. 54	$V_{kfp}(k_{pos})$ = max. 330 V[1])	 Rimlock 
EBC3 **EBC33** Double diode triode	V_f = 6.3 V I_f = 0.2 A Typ. char.	V_a = 100 V V_g = —2.1 V	I_a = 2	S = 1.6 mA/V R_i = 19 kΩ	 **EBC3** P 
A.F. amplifier		V_b = 250 V R_a = 0.2 MΩ R_k = 4 kΩ	I_a = 0.75	g = 26	 **EBC33** Octal 
EBC41 Double diode high mu triode Typical characteristics	V_f = 6.3 V I_f = 0.23 A	V_a = 250 V V_g = —3 V	I_a = 1	S = 1.2 mA/V R_i = 58 kΩ μ = 70	 Rimlock 
EBC81 Double diode high mu triode Typical charact.	V_f = 6.3 V I_f = 0.23 A	V_a = 250 V V_g = —3 V	I_a = 1	S = 1.2 mA/V R_i = 58 kΩ μ = 70	
A.F. amplifier		V_b = 250 V R_a = 22 kΩ R_k = 1.8 kΩ	I_a = 0.7	g = 51	 Noval 
EBF2 Double diode variable mu pentode I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b$ = 250 V R_{g2} = 95 kΩ V_{g1} = —2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.3 MΩ C_{ag1} < 2 mpF	 P 

1) D.C. component max. 200 V, A.C. component max. 165 V (rms value)

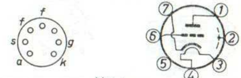
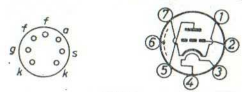
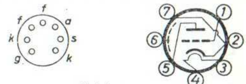
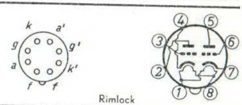
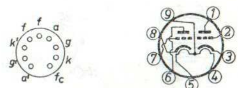
RECEIVING AND AMPLIFYING TUBES

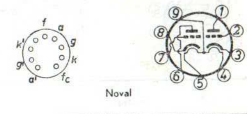
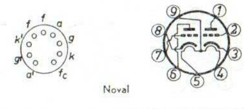
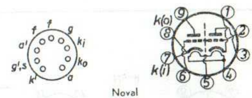
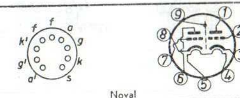
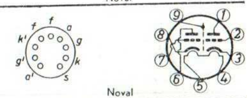
Type *Application*	*Filament* *data*	*Voltages* *Resistances*	*Currents (mA)*	*Characteristic* *data*	*Base connections*
EBF32 Double diode variable mu pentode I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b = 250$ V R_{g2} = 95 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.3 MΩ C_{ag1} < 2 mpF	 Octal
EBF80 Double diode variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	$V_a = V_b = 250$ V V_{g3} = 0 V R_{g2} = 95 kΩ R_k = 295 Ω	I_a = 5.0 I_{g2} = 1.75	S = 2.2 mA/V R_i = 1.4 MΩ C_{ag1} < 2.5 mpF	 Noval
A.F. amplifier		V_b = 250 V R_a = 0.22 MΩ R_{g2} = 0.82 MΩ R_k = 1.8 kΩ V_{g3} = 0 V	I_a = 0.75 I_{g2} = 0.30	g = 110	
EBF83 Double diode variable mu pentode I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 12.6 V V_{g2} = 12.6 V V_{g3} = 0 V V_{g1} = [1]) V	I_a = 0.45 I_{g2} = 0.14	S = 1 mA/V R_i = 1 MΩ C_{ag1} < 2.5 mpF	 Noval
		V_a = 6.3 V V_{g2} = 6.3 V V_{g3} = 0 V V_{g1} = [1]) V	I_a = 0.12 I_{g2} = 0.04	S = 0.45 mA/V R_i = 0.65 MΩ	
EBF89 Double diode variable mu pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 100 V V_{g3} = 0 V V_{g1} = −2 V	I_a = 9 I_{g2} = 2.7	S = 3.8 mA/V R_i = 1 MΩ μ_{g2g1} = 20 C_{ag1} < 2.5 mpF	 Noval

1) Obtained by grid current biasing $R_{g1} = 2.2$ MΩ

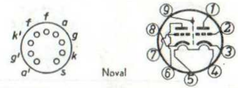
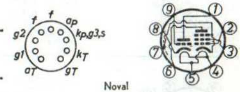
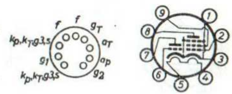
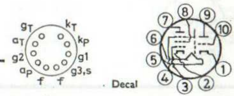
EBL1 Double diode output pentode Class A final amplifier	V_f = 6.3 V I_f = 1.18 A	V_a = 250 V V_{g2} = 250 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 8 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = max. 9 W	 P	
EBL21 Double diode output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.8 A	V_a = 250 V V_{g2} = 250 V R_k = 150 Ω	I_a = 36 I_{g2} = 4.5	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = max. 11 W	 Loctal 8p.	
EC70 R.F. triode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_g = —2 V	I_a = 13	S = 5.5 mA/V R_i = 3.6 kΩ	 Subminiature	
EC86 Grounded-grid triode Typical charact.	V_f = 6.3 V I_f = 0.2 A	V_a = 175 V V_g = —1.5 V	I_a = 12	S = 14 mA/V μ = 68 R_{eq} = 230 Ω	 Noval	
EC88 Grounded-grid triode Typical charact.	V_f == 6.3 V I_f = 0.165 A	V_a = 160 V V_g = —1.25 V	I_a = 12.5	S = 13.5 mA/V μ = 65 R_{eq} = 240 Ω	 Noval	

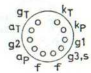
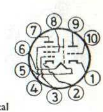
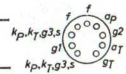
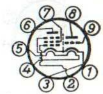
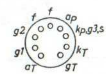
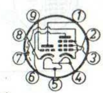
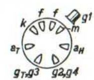
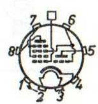
RECEIVING AND AMPLIFYING TUBES

Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
EC92 R.F. triode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 250 V V_g = —2 V	I_a = 10	S = 5.5 mA/V R_i = 11 kΩ freq. = max. 300 Mc/s	 Miniature
		V_a = 170 V V_g = —1 V	I_a = 8.5	S = 5.9 mA/V R_i = 11 kΩ	
EC97 Triode Typical charact.	V_f = 6.3 V I_f = 0.215 A	V_a = 135 V V_g = —1 V	I_a = 11	S = 13 mA/V μ = 65	 Miniature
EC900 V.H.F. triode Typical charact.	V_f = 6.3 V I_f = 0.18 A	V_a = 135 V V_s = 0 V V_g = —1 V	I_a = 11.5	S = 14.5 mA/V μ = 76	 Miniature
ECC40 Double triode for A.F. applications Typical charact.	V_f = 6.3 V I_f = 0.6 A	V_a = 160 V V_g = —5.6 V	I_a = 6	S = 2.9 mA/V R_i = 11 kΩ	 Rimlock
ECC81 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5)	V_a = 100 V V_g = —1 V	I_a = 3.0	S = 3.75 mA/V R_i = 16.5 kΩ	 Noval
	V_f = 12.6 V I_f = 0.15 A Pins 4—5	V_a = 250 V V_g = —2 V	I_a = 10	S = 5.5 mA/V R_i = 11 kΩ	

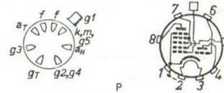
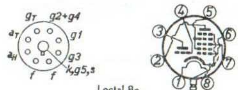
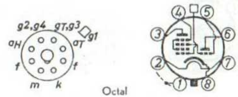
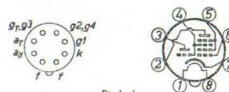
ECC82 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5)	V_a = 250 V V_g = —8.5 V	I_a = 10.5	S = 2.2 mA/V R_i = 7.7 kΩ	 Noval
	V_f = 12.6 V I_f = 0.15 A Pins 4—5	V_a = 100 V V_g = 0 V	I_a = 11.8	S = 3.1 mA/V R_i = 6.25 kΩ	
ECC83 Double high mu triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5)	V_a = 250 V V_g = —2 V	I_a = 1.2	S = 1.6 mA/V R_i = 62.5 kΩ μ = 100	 Noval
	V_f = 12.6 V I_f = 0.15 A Pins 4—5	V_a = 100 V V_g = —1 V	I_a = 0.5	S = 1.25 mA/V R_i = 80 kΩ	
ECC84 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.33 A	V_a = 90 V V_g = —1.5 V	I_a = 12	S = 6 mA/V R_i = 4 kΩ	 Noval
ECC85 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.435 A	V_a = 250 V V_g = —2.7 V	I_a = 10	S = 6.1 mA/V R_i = 9 kΩ	 Noval
ECC86 Double triode for use in carradio	V_f = 6.3 V I_f = 0.33 A	V_a = 6.3 V V_g = —0.4 V	I_a = 0.9	S = 2.6 mA/V μ = 14	 Noval
ECC88 Double triode	V_f = 6.3 V I_f = 0.365 A	See PCC88 (except for heater rating)			

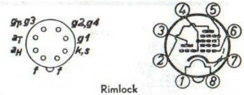
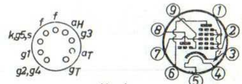
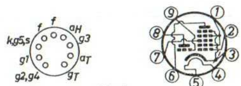
RECEIVING AND AMPLIFYING TUBES

Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
ECC189 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.365 A	V_a = 90 V V_g = —1.4 V	I_a = 15	S = 12.5 mA/V μ = 32	 Noval
ECF80 Triode pentode Typ. char. pentode	V_f = 6.3 V I_f = 0.43 A	V_a = 170 V V_{g2} = 170 V V_{g1} = —2 V	I_a = 10 I_{g2} = 2.8	S = 6.2 mA/V R_i = 0.4 MΩ R_{eq} = 1.5 kΩ	 Noval
Typ. char. triode		V_a = 100 V V_g = —2 V	I_a = 14	S = 5 mA/V R_i = 4 kΩ	
Freq. changer		V_a = 170 V V_{g2} = 170 V R_{g1} = 0.1 MΩ R_k = 330 Ω	I_a = 6.5 I_{g2} = 2 I_{g1} = 0.02	S_c = 2.2 mA/V R_i = 800 kΩ V_{osc} = 3.5 V_{eff}	
ECF86 V.H.F. triode pentode Typ. char. pentode	V_f = 6.3 V I_f = 0.39 A	V_a = 170 V V_{g2} = 150 V V_{g1} = 1.2 V	I_a = 10 I_{g2} = 3.3	S = 12 mA/V R_i = > 350 kΩ R_{eq} = 1 kΩ	 Noval
Typ. char. triode		V_a = 100 V V_g = —3 V	I_a = 14	S = 5.7 mA/V μ = 17	
Freq. changer		V_{ba} = 190 V V_{bg2} = 190 V R_{g2} = 18 kΩ R_{g1} = 100 kΩ	I_a = 8.5 I_{g2} = 2.7	S_c = 4.5 mA/V V_{osc} = 2.3 V_{eff}	
ECF200 Triode-pentode for T.V.-I.F. Typ. charact. pentode	V_f = 6.3 V I_f = 0.41 A	V_a = 160 V V_{g2} = 135 V V_{g1} = —1.7 V V_{g3} = 0 V	I_a = 13 I_{g2} = 5.3	S = 14 mA/V μ_{g2g1} = 53	 Decal
Typ. charact. triode		V_a = 170 V_g = —1 V	I_a = 8.5	S = 5.2 mA/V μ = 57	

ECF201 Triode pentode for T.V.-I.F. Typ. charact. pentode	$V_f = 6.3$ V $I_f = 0.41$ A	$V_a = 160$ V $V_{g2} = 110$ V $V_{g1} = -1.4$ V $V_{g3} = 0$ V	$I_a = 13$ $I_{g2} = 5.3$	$S = 12.6$ mA/V $\mu_{g2g1} = 45$	  Decal
Typ. charact. triode		$V_a = 100$ V $V_g = -2$ V	$I_a = 14$	$S = 4.8$ mA/V $\mu = 17.5$	
ECF801 V.H.F. triode-pentode Typ. char. pentode	$V_f = 6.3$ V $I_f = 0.41$ A	$V_a = 170$ V $V_{g2} = 120$ V $V_{g1} = -1.4$ V	$I_a = 10$ $I_{g2} = 3$	$S = 11$ mA/V $R_i = > 350$ kΩ $\mu_{g2g1} = 55$	  Noval
Typ. char. triode		$V_a = 100$ V $V_g = -3$ V	$I_a = 15$	$S = 9$ mA/V $\mu = 20$	
Freq. changer		$V_{ba} = 200$ V $V_{bg2} = 200$ V $R_a = 2.7$ kΩ $R_{g2} = 27$ kΩ $V_{bg1} = -1.4$ V	$I_a = 10$ $I_{g2} = 3$ $I_{g1} = 0.008$	$S_c = 5$ mA/V $R_{g1} = 0.1$ MΩ $V_{osc} = 1.6\ V_{eff}$	
ECF802 Triode pentode Typ. char. pentode	$V_f = 6.3$ V $I_f = 0.43$ A	$V_a = 100$ V $V_{g2} = 100$ V $V_{g1} = -1$ V	$I_a = 6$ $I_{g2} = 1.7$	$S = 5.5$ mA/V $R_i = 0.4$ MΩ $\mu_{g2g1} = 47$	  Noval
Typ. char. triode		$V_a = 200$ V $V_g = -2$ V	$I_a = 3.5$	$S = 3.5$ mA/V $R_i = 20$ kΩ	
ECH3 Triode hexode Frequency changer (hexode)	$V_f = 6.3$ V $I_f = 0.2$ A	$V_a = V_b = 250$ V $R_1 = 24$ kΩ $R_2 = 33$ kΩ $R_{g3+gT} = 50$ kΩ $V_{g1} = -2$ V	$I_a = 3$ $I_{g2+g4} = 3$ $I_{g3+gT} = 0.2$	$S_c = 0.65$ mA/V $R_i = 1.3$ MΩ	  P
Oscillator (triode section)		$V_b = 250$ V $R_a = 45$ kΩ $R_{g3+gT} = 50$ kΩ	$I_a = 3.3$ $I_{g3+gT} = 0.2$	$S_o = 2.8$ mA/V $\mu = 24$	

RECEIVING AND AMPLIFYING TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
ECH4 Triode heptode Freq. changer (heptode)	V_f = 6.3 V I_f = 0.35 A	$V_a = V_b = 250$ V R_{g2+g4} = 24 kΩ R_{g3+gT} = 50 kΩ V_{g1} = —2 V	I_a = 3.0 I_{g2+g4} = 6.2 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.4 MΩ	 P
Oscillator (triode section)		V_b = 250 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.5 I_{g3+gT} = 0.19	S_{eff} = 0.55 mA/V	
ECH21 Triode heptode Freq. changer (heptode)	V_f = 6.3 V I_f = 0.33 A	$V_a = V_b = 250$ V R_{g2+g4} = 24 kΩ R_{g3+gT} = 50 kΩ V_{g1} = —2 V	I_a = 3.0 I_{g2+g4} = 6.2 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.4 MΩ	 Loctal 8p.
Oscillator (triode section)		V_b = 250 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.5 I_{g3+gT} = 0.19	S_{eff} = 0.55 mA/V	
ECH35 Triode hexode Frequency changer (hexode)	V_f = 6.3 V I_f = 0.2 A	$V_a = V_b = 250$ V R_1 = 24 kΩ R_2 = 33 kΩ R_{g3+gT} = 50 kΩ V_{g1} = —2 V	I_a = 3.0 I_{g2+g4} = 3.0 I_{g3+gT} = 0.2	S_c = 0.65 mA/V R_i = 1.3 MΩ	 Octal
Oscillator (triode section)		V_b = 250 V R_a = 45 kΩ R_{g3+gT} = 50 kΩ	I_a = 3.3 I_{g3+gT} = 0.2	S_o = 2.8 mA/V μ = 24	
ECH41 Triode hexode Frequency changer (hexode)	V_f = 6.3 V I_f = 0.23 A	$V_a = V_b = 250$ V R_1 = 33 kΩ R_2 = 47 kΩ R_{g3+gT} = 20 kΩ V_{g1} = —2 V	I_a = 3.0 I_{g2+g4} = 2.2 I_{g3+gT} = 0.35	S_c = 0.5 mA/V R_i = 2 MΩ V_{osc} = 8 V_{eff} R_{eq} = 170 kΩ	 Rimlock
Oscillator (triode section)		V_b = 250 V R_a = 30 kΩ R_{g3+gT} = 20 kΩ	I_a = 4.9 I_{g3+gT} = 0.35	S_o = 1.9 mA/V S_{eff} = 0.55 mA/V μ = 19	

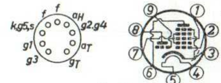
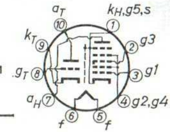
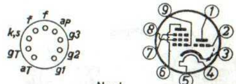
ECH42 Triode hexode Frequency changer (hexode section)	V_f = 6.3 V I_f = 0.23 A	V_a = V_b = 250 V R_1 = 27 kΩ R_2 = 27 kΩ R_{g3+gT} = 22 kΩ V_{g1} = —2 V	I_a = 3.0 I_{g2+g4} = 3.0 I_{g3+gT} = 0.35	S_c = 0.75 mA/V R_i = 1.7 MΩ R_{eq} = 100 kΩ	 Rimlock
Oscillator (triode section)		V_b = 250 V R_a = 33 kΩ R_{g3+gT} = 22 kΩ V_{osc} = 8 V	I_a = 5.1 I_{g3+gT} = 0.35	S_o = 2.8 mA/V S_{eff} = 0.6 mA/V μ = 22	
ECH81 Triode heptode Freq. changer (heptode)	V_f = 6.3 V I_f = 0.3 A	V_b = 250 V R_a = 8.2 kΩ R_{g2+g4} = 22 kΩ R_{gT+g3} = 47 kΩ V_{g1} = 0.5 V [3]	I_a = 3.3 I_{g2+g4} = 7.8 I_{gT+g3} = 0.2 I_{g1} = 0.0005	S_c = 1.1 mA/V R_i = 0.8 MΩ R_{eq} = 30 kΩ	
R.F. or I.F. amplifier (heptode)		V_b = 250 V R_a = 8.2 kΩ R_{g2+g4} = 22 kΩ V_{g1} = 0.5 V [3] V_{g3} = 0 V	I_a = 11 I_{g2+g4} = 7 I_{g1} = 0.0005	S = 4.5 mA/V R_i = 0.24 MΩ μ_{g2g1} = 25 R_{eq} = 4.5 kΩ	 Noval
Typ. char. triode		V_a = 100 V V_g = 0 V	I_a = 13.5	S = 3.7 mA/V μ = 22	
Oscillator (triode)		V_b = 250 V R_a = 33 kΩ R_{gT+g3} = 47 kΩ	I_a = 4.5 I_{gT+g3} = 0.2	S_{eff} = 0.65 mA/V	
ECH83 Triode heptode	V_f = 6.3 V I_f = 0.3 A	V_a = 12.6 V V_{g2+4} = 12.6 V V_{g1} = [1] V V_{g3} = 1.7 V_{eff} R_{g3} = 47 kΩ [2]	I_a = 0.17 I_{g2+4} = 0.3 I_{g3} = 0.018	S_c = 220 μA/V R_i = 1.5 MΩ C_{ag1} < 6 mpF	 Noval
Freq. changer (heptode)		V_a = 6.3 V V_{g2+4} = 6.3 V V_{g1} = [1] V V_{g3} = 1.1 V_{eff} R_{g3} = 47 kΩ [2]	I_a = 0.05 I_{g2+4} = 0.08 I_{g3} = 0.007	S_c = 90 μA/V R_i = 1.3 MΩ	

[1]) Obtained by grid-current biasing, R_{g1} = 1 MΩ

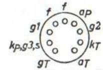
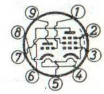
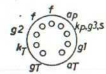
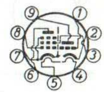
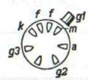
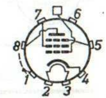
[2]) Grid no. 3 capacitively coupled to oscillator

[3]) Grid current biasing obtained with R_{g1-k} = 1 MΩ and zero volt a.g.c. voltage; resulting V_{g1}: —0.5 V

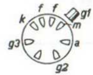
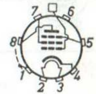
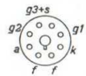
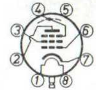
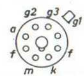
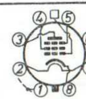
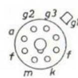
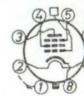
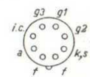
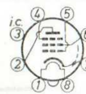
RECEIVING AND AMPLIFYING TUBES

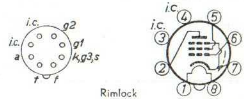
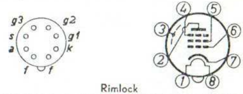
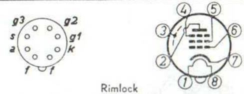
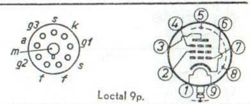
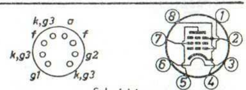
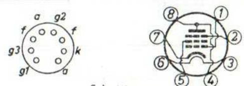
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
ECH83 (continued)		V_a = 12.6 V V_g = 1) V	I_a = 0.75	S = 1.4 mA/V μ = 18.3	
Typ. char. (triode)		V_a = 6.3 V V_g = 1) V	I_a = 0.3	S = 0.8 mA/V μ = 14.6	
ECH84 Triode heptode for sync sep. Typ. char. heptode	V_f = 6.3 V I_f = 0.3 A	V_a = 135 V V_{g2+4} = 14 V V_{g1} = 0 V V_{g3} = 0 V	I_a = 1.7 I_{g2+4} = 0.9	S_{g1} = 2.2 mA/V	 Noval
Typ. char. triode		V_a = 50 V V_g = 0 V	I_a = 3	S = 3.7 mA/V μ = 50	
ECH200 Triode-heptode for sync sep. Typical charact. heptode	V_f = 6.3 V I_f = 0.435 A	V_a = 14 V V_{g2+4} = 14 V V_{g1} = 0 V V_{g3} = 0 V	I_a = 1.5 I_{g2+4} = 1.3		Decal 
Typical charact. triode		V_a = 100 V V_g = −1 V	I_a = 9	S = 8.8 mA/V μ = 50	
ECL80 Triode output pentode Class A final amplifier (pentode)	V_f = 6.3 V I_f = 0.3 A	V_a = 170 V V_{g3} = 0 V V_{g2} = 170 V V_{g1} = −6.7 V	I_a = 15 I_{g2} = 2.8	S = 3.2 mA/V R_i = 0.15 MΩ R_a = 11 kΩ W_o = 1.0 W W_a = max. 3.5 W	
Sync. separator (pentode)		V_a = 20 V V_{g3} = 0 V V_{g2} = 12 V V_{g1} = 0 V	I_a = 2		 Noval
Typ. char. triode		V_a = 100 V V_g = 0 V	I_a = 8	S = 1.9 mA/V μ = 20	

1) Obtained by grid-current biasing, R_{g1} = 47 MΩ

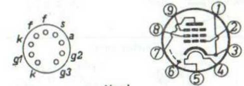
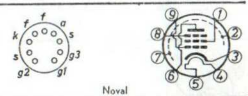
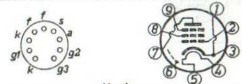
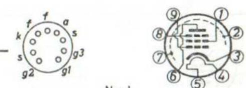
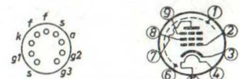
ECL80 (continued) A.F. ampl. (triode)		V_b = 170 V R_a = 0.22 MΩ V_g = —3.5 V R_{g1} = 0.68 MΩ V_{g3} = 0 V	I_a = 0.5	g = 11	
ECL82 Triode output pentode Class A final amplifier (pentode)	V_f = 6.3 V I_f = 0.78 A	V_a = 200 V V_{g2} = 200 V V_{g1} = —16 V	I_a = 35 I_{g2} = 7.8	S = 6.4 mA/V R_i = 20 kΩ R_a = 5.6 kΩ W_o = 3.5 W W_a = max. 7 W	 
Typ. char. triode		V_a = 100 V V_g = 0 V	I_a = 3.5	S = 2.2 mA/V μ = 70	Noval
ECL84	V_f = 6.3 V I_f = 0.72 A	See PCL84 (except for heater rating)			
ECL85	V_f = 6.3 V I_f = 0.875 A	See PCL85 (except for heater rating)			
ECL86 Triode output pentode Class A audio amplifier (pentode)	= 6.3 V = 0.66 A	V_a = 250 V V_{g2} = 250 V R_k = 170 Ω	I_a = 36 I_{g2} = 6	S = 10 mA/V R_i = 48 kΩ R_a = 7 kΩ W_o = 4 W W_a = max. 9 W	 
Typ. char. triode		V_a = 250 V V_g = —1.9 V	I_a = 1.2	S = 1.6 mA/V μ = 100 W_a = max. 0.5 W	Noval
EF6 Pentode R.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 100 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 2.5 MΩ C_{ag1} < 3 mpF	  P

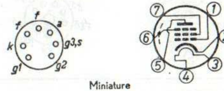
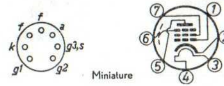
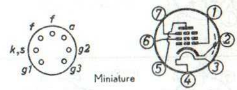
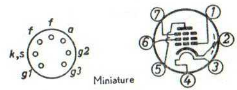
RECEIVING AND AMPLIFYING TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	**Base connections**
EF9 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = V_b = 250 V R_{g2} = 90 kΩ V_{g1} = —2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.25 MΩ C_{ag1} < 2 mpF	 P 
EF22 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V R_{g2} = 90 kΩ V_{g1} = —2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.2 MΩ C_{ag1} < 2 mpF	 Loctal 8p. 
EF37A Low microphony pentode R.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 100 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.8	S = 1.8 mA/V R_i = 2.5 MΩ C_{ag1} < 20 mpF	 Octal 
EF39 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0:2 A	V_a = 250 V R_{g2} = 90 kΩ V_{g1} = —2.5 V V_{g3} = 0 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.2 MΩ C_{ag1} < 3 mpF	 Octal 
EF40 Low noise preamplifier pentode characteristics	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 140 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 3.0 I_{g2} = 0.55	S = 1.85 mA/V R_i = 2.5 MΩ C_{ag1} < 0.04 pF	 Rimlock 

EF41 variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = V_b = 250 V R_{g2} = 90 kΩ V_{g1} = —2.5 V	I_a = 6 I_{g2} = 1.7	S = 2.2 mA/V R_i = 1.0 MΩ C_{ag1} < 2 mpF	 Rimlock
EF42 R.F. pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.33 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 10 I_{g2} = 2.4	S = 9 mA/V R_i = 0.5 MΩ μ_{g2g1} = 83 R_{eq} = 840 Ω C_{ag1} < 6 mpF	 Rimlock
EF43 Variable mu pentode Wide-band amplifier	V_f = 6.3 V I_f = 0.33 A	V_a = V_b = 250 V R_{g2} = 33 kΩ V_{g3} = 0 V V_{g1} = —2 V	I_a = 15 I_{g2} = 3.5	S = 6.4 mA/V R_i = 0.5 MΩ R_{eq} = 1.7 kΩ C_{ag1} < 6 mpF	 Rimlock
EF50 R.F. pentode Wide-band amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 10 I_{g2} = 3	S = 6.5 mA/V R_i = 1 MΩ μ_{g2g1} = 75 R_{eq} = 1.4 kΩ C_{ag1} < 7 mpF	 Loctal 9p.
EF72 R.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_{g2} = 100 V V_{g1} = —1.4 V	I_a = 7 I_{g2} = 2.2	S = 5 mA/V R_i = 250 kΩ μ_{g2g1} = 36 R_{eq} = 1.6 kΩ	 Subminiature
EF73 A.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.2 A	V_a = 100 V V_{g2} = 100 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 7.5 I_{g2} = 2.5	S = 5.25 mA/V R_i = 250 kΩ μ_{g2g1} = 28	 Subminiature

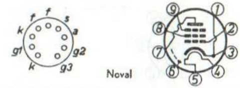
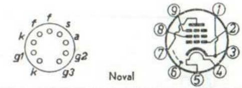
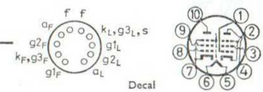
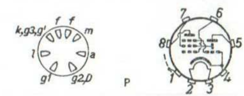
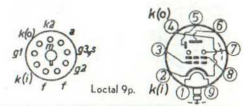
RECEIVING AND AMPLIFYING TUBES

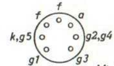
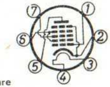
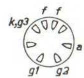
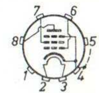
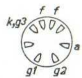
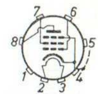
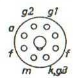
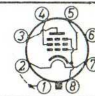
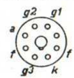
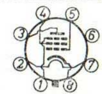
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
EF80 R.F. pentode R.F. or I.F. amplifier	$V_f = 6.3$ V $I_f = 0.3$ A	$V_a = 170$ V $V_{g3} = 0$ V $V_{g2} = 170$ V $V_{g1} = -2$ V	$I_a = 10$ $I_{g2} = 2.5$	$S = 7.4$ mA/V $R_i = 0.5$ MΩ $C_{ag1} < 7$ mpF $R_{eq} = 1$ kΩ	 Noval
EF83 Variable mu pentode Typical characteristics	$V_f = 6.3$ V $I_f = 0.2$ A	$V_a = 250$ V $V_{g2} = 50$ V $V_{g3} = 0$ V $V_{g1} = -1.6$ V	$I_a = 4$ $I_{g2} = 1.15$	$S = 1.6$ mA/V $R_i = 1.6$ MΩ $\mu_{g2g1} = 10$ $C_{ag1} < 0.05$ pF	 Noval
EF85 R.F. variable mu pentode R.F. or I.F. amplifier	$V_f = 6.3$ V $I_f = 0.3$ A	$V_a = V_b = 250$ V $R_{g2} = 60$ kΩ $V_{g1} = -2$ V $V_{g3} = 0$ V	$I_a = 10$ $I_{g2} = 2.5$	$S = 6$ mA/V $R_i = 0.6$ MΩ $R_{eq} = 1.4$ kΩ $C_{ag1} < 7$ mpF	 Noval
EF86 Low noise preamplifier pentode	$V_f = 6.3$ V $I_f = 0.2$ A Typ. char.	$V_a = 250$ V $V_{g2} = 140$ V $V_{g3} = 0$ V $V_{g1} = -2.2$ V	$I_a = 3$ $I_{g2} = 0.6$	$S = 2.2$ mA/V $R_i = 2.5$ MΩ $\mu_{g2g1} = 38$	 Noval
A.F. amplifier		$V_b = 250$ V $R_a = 0.1$ MΩ $R_{g2} = 0.39$ MΩ $R_k = 1$ kΩ $V_{g3} = 0$ V	$I_a = 2.1$	$g = 112$	
EF89 Variable mu pentode R.F. or I.F. amplifier	$V_f = 6.3$ V $I_f = 0.2$ A	$V_a = V_b = 250$ V $R_{g2} = 50$ kΩ $R_k = 160$ Ω $V_{g3} = 0$ V	$I_a = 9$ $I_{g2} = 3$	$S = 3.5$ mA/V $R_i = 0.9$ MΩ $C_{ag1} < 2$ mpF $R_{eq} = 4.2$ kΩ	 Noval

EF91 R.F. pentode Wide-band amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g3} = 0 V V_{g2} = 250 V V_{g1} = —2 V	I_a = 10 I_{g2} = 2.55	S = 7.65 mA/V R_i = 1 MΩ R_{eq} = 1.2 kΩ C_{ag1} < 10 mpF	 Miniature
EF92 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g3} = 0 V V_{g2} = 150 V V_{g1} = —0.65 V	I_a = 8 I_{g2} = 2	S = 2.5 mA/V C_{ag1} < 7 mpF	 Miniature
EF97 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 12.6 V V_{g2} = 6.3 V V_{g3} = 0 V V_{g1} = —0.85 V[1])	I_a = 2.5 I_{g2} = 0.9	S = 1.8 mA/V R_i = 120 kΩ C_{ag1} = 15 mpF	 Miniature
Frequency changer		V_a = 6.3 V V_{g2} = 3.2 V V_{g3} = 0 V V_{g1} = —0.85 V[1])	I_a = 0.8 I_{g2} = 0.3	S = 0.9 mA/V R_i = 60 kΩ	
EF98 I.F. - A.F. amplifier and oscillator	V_f = 6.3 V I_f = 0.3 A	V_a = 12.6 V V_{g2} = 6.3 V V_{g3} = 0 V V_{g1} = 0.75 V[1])	I_a = 2 I_{g2} = 0.7	S = 2 mA/V R_i = 0.2 MΩ μ_{g2g1} = 4.1 C_{ag1} = 15 mpF	 Miniature
I.F. amplifier A.F. driver		V_a = 6.3 V V_{g2} = 3.2 V V_{g3} = 0 V V_{g1} = —0.8 V[1])	I_a = 0.6 I_{g2} = 0.2	S = 1 mA/V R_i = 0.1 MΩ μ_{g2g1} = 3.2	

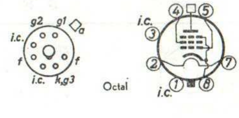
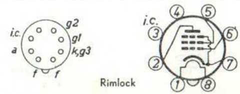
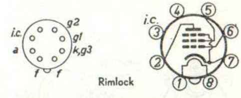
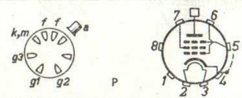
[1]) Nearly the same results can be obtained, when the neg. grid nr. 1 voltage is obtained by means of grid biasing with R_{g1} = 10 MΩ

RECEIVING AND AMPLIFYING TUBES

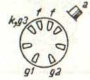
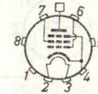
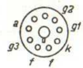
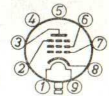
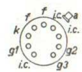
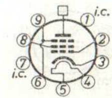
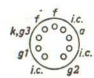
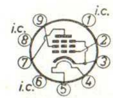
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
EF183 Variable mu pentode for TV-I.F. Typical characteristics	$V_f = 6.3$ V $I_f = 0.3$ A	$V_a = 200$ V $V_{g2} = 90$ V $V_{g3} = 0$ V $V_{g1} = -2$ V	$I_a = 12$ $I_{g2} = 4.5$	$S = 12.5$ mA/V $R_i = 0.5$ MΩ r_{g1}(40 Mc/s) $= 13$ kΩ	 Noval
EF184 Sharp cut-off pentode for TV-I.F. Typical characteristics	$V_f = 6.3$ V $I_f = 0.3$ A	$V_a = 200$ V $V_{g2} = 200$ V $V_{g3} = 0$ V $V_{g1} = -2.5$ V	$I_a = 10$ $I_{g2} = 4.1$	$S = 15$ mA/V $R_i = 0.38$ MΩ $\mu_{g2g1} = 60$ r_{g1}(40 Mc/s) $= 11$ kΩ	 Noval
EFL200 Double pentode for T.V. Typ. char. L section	$V_f = 6.3$ V $I_f = 0.85$ A	$V_a = 170$ V $V_{g2} = 170$ V $V_{g1} = 2.7$ V	$I_a = 30$ $I_{g2} = 7$	$S = 22$ mA/V $R_i = 33$ kΩ $\mu_{g2g1} = 38$	 Decal
Typ. char. F section		$V_a = 150$ V $V_{g2} = 150$ V $V_{g1} = -2.1$ V	$I_a = 10$ $I_{g2} = 3$	$S = 8.5$ mA/V $R_i = 150$ kΩ $\mu_{g2g1} = 38$	
EFM1 A.F. pentode and tuning indicator	$V_f = 6.3$ V $I_f = 0.2$ A	$V_b = V_l = 250$ V $R_a = 0.13$ MΩ $R_{g2} = 0.35$ MΩ $V_{g1} = -2/-20$ V	$I_a = 0.8/0.5$ $I_{g2} = 0.6/0.2$ $I_l = 0.65/0.8$	$g = 60/13$ $\alpha = 70°/5°$	 P
EFP60 Secondary emission pentode R.F. or I.F. amplifier	$V_f = 6.3$ V $I_f = 0.37$ A	$V_a = 250$ V $V_{g2} = 250$ V $V_{k2} = 150$ V $V_{g1} = -2$ V $V_{g3} = 0$ V	$I_a = 20$ $I_{g2} = 1.5$ $I_{k2} = -15.6$	$S = 25$ mA/V $R_i = 70$ kΩ $C_{ag1} < 4$ mpF	 Loctal 9p.

EH90 Dual control heptode for television service	V_f = 6.3 V I_f = 0.3 A	V_a = 100 V V_{g2+4} = 30 V V_{g1} = 0 V V_{g3} = —1 V	I_a = 0.8 I_{g2+4} = 4	S_{g3} = 1.25 mA/V R_i = 0.7 MΩ	 Miniature	
Operating characteristics		V_a = 100 V V_{g2+4} = 30 V V_{g1} = —1 V V_{g3} = 0 V	I_a = 0.75 I_{g2+4} = 1.1	S_{g1} = 0.95 mA/V R_i = 1 MΩ		
		V_a = 10 V V_{g2+4} = 30 V V_{g1} = V_{g3} = 0 V	I_a = 1.2 I_{g2+4} ≐ 4.1			
EL3N Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.9 A	V_a = 250 V V_{g2} = 250 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = max. 9 W	 P	
EL6 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 1.35 A	V_a = 250 V V_{g2} = 250 V R_k = 90 Ω	I_a = 72 I_{g2} = 8	S = 14.5 mA/V R_i = 20 kΩ R_a = 3.5 kΩ W_o = 8 W W_a = max. 18 W	 P	
EL33 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.9 A	V_a = 250 V V_{g2} = 250 V R_k = 150 Ω	I_a = 36 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ R_a = 7 kΩ W_o = 4.5 W W_a = max. 9 W	 Octal	
EL34 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 250 V V_{g2} = 265 V V_{g1} = —13.5 V V_{g3} = 0 V	I_a = 100 I_{g2} = 15	S = 11 mA/V R_i = 15 kΩ R_a = 2 kΩ W_o = 11 W W_a = max. 25 W	 Octal	

RECEIVING AND AMPLIFYING TUBES

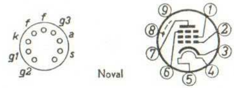
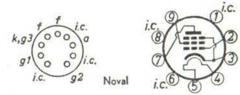
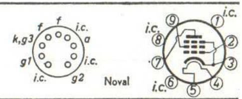
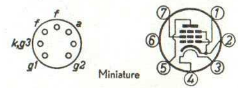
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
EL34 (continued) Class AB push-pull amplifier		V_b = 375 V R_{g2}[1]) = 470 Ω R_k[2]) = 130 Ω V_{g3} = 0 V	I_{amin} = 2 × 75 I_{amax} = 2 × 95 I_{g2min} = 2 × 11.5 I_{g2max} = 2 × 22.5	R_{aa} = 3.4 kΩ W_o = 35 W	
EL36 Line-output pentode Typ. char.	V_f = 6.3 V I_f = 1.27 A	V_a = 100 V V_{g2} = 100 V V_{g1} = —8.2 V	I_a = 100 I_{g2} = 7	S = 14 mA/V R_i = 5 kΩ μ_{g2g1} = 5.6	 Octal
Class B amplifier		V_a = 300 V V_{g2} = 150 V V_{g1} = —29 V	I_{amin} = 2 × 18 I_{amax} = 2 × 100 I_{g2min} = 2 × 0.5 I_{g2max} = 2 × 19	R_{aa} = 3.5 kΩ W_o = 44.5 W W_a = max. 12 W	
EL41 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.71 A	V_a = 250 V V_{g2} = 250 V R_k = 170 Ω	I_a = 36 I_{g2} = 5.2	S = 10 mA/V R_i = 40 kΩ R_a = 7 kΩ W_o = 4.8 W W_a = max. 9 W	 Rimlock
EL42 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 225 V V_{g2} = 225 V R_k = 360 Ω	I_a = 26 I_{g2} = 4.1	S = 3.2 mA/V R_i = 90 kΩ R_a = 9 kΩ W_o = 2.8 W W_a = max. 6 W	 Rimlock
EL50 Output pentode Class B push-pull amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 800 V V_{g2} = 400 V V_{g1} = —40 V V_{g3} = 0 V	I_a = 2 × 15 I_a = 2 × 70 I_{g2} = 2 × 1 I_{g2} = 2 × 24	R_{aa} = 18 kΩ W_o = 80 W W_a = max. 18 W	 P

1) Common screen grid resistor; non-decoupled   2) Common cathode bias resistor

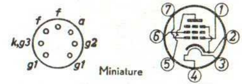
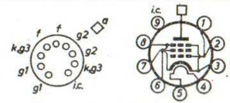
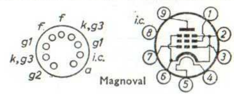
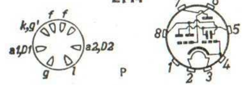
EL51 Output pentode Typical characteristics	V_f = 6.3 V I_f = 1.9 A	V_a = 750 V V_{g2} = 750 V V_{g1} = —37.5 V	I_a = 60 I_{g2} = 10	S = 8 mA/V R_i = 50 kΩ W_a = max. 45 W	 P	
EL60	= EL34 with different base				 Enné-al	
EL81 Line output pentode Typical characteristics	V_f = 6.3 V I_f = 1.05 A	V_a = 250 V V_{g2} = 250 V V_{g3} = 0 V V_{g1} = —38.5 V	I_a = 32 I_{g2} = 2.4	S = 4.6 mA/V W_a = max. 8 W V_{ap} = max. 7 kV[1])	 Noval	
EL82 Frame and sound output pentode Class A	V_f = 6.3 V I_f = 0.8 A	V_a = 170 V V_{g2} = 170 V V_{g1} = —10.4 V	I_a = 53 I_{g2} = 10	S = 10.2 mA/V R_i = 20 kΩ R_a = 3 kΩ W_o = 4 W W_a = max. 9 W	 Noval	
Sound output Class A push-pull (two tubes)		V_a = 170 V V_{g2} = 170 V R_k[2]) = 100 Ω	$I_{a\min}$ = 2 × 46 $I_{a\max}$ = 2 × 50 $I_{g2\min}$ = 2 × 8.7 $I_{g2\max}$ = 2 × 17	R_{aa} = 4 kΩ W_o = 9 W		

1) Max. pulse time 18% of one cycle with a max. of 18 μsec. 2) Common cathode bias resistor

RECEIVING AND AMPLIFYING TUBES

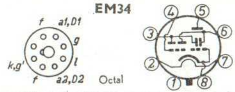
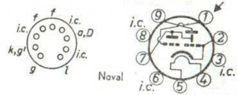
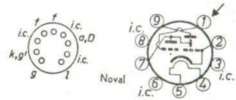
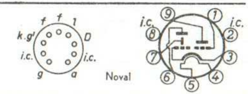
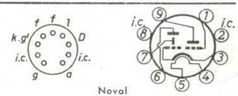
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
EL83 Video amplifying pentode Typical characteristics	V_f = 6.3 V I_f = 0.71 A	V_a = 250 V V_{g2} = 250 V V_{g3} = 0 V V_{g1} = —5.5 V	I_a = 36 I_{g2} = 5.0	S = 10 mA/V R_i = 0.13 MΩ W_a = max. 9 W C_{g1} = 10.8 pF C_a = 6.6 pF	 Noval
EL84 Output pentode Class A	V_f = 6.3 V I_f = 0.76 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —7.3 V	I_a = 48 I_{g2} = 5.5	S = 11.3 mA/V R_i = 38 kΩ R_a = 5.2 kΩ W_o = 6 W W_a = max. 12 W	
Class B (two tubes)		V_a = 300 V V_{g2} = 300 V V_{g1} = —14.7 V	I_{amin} = 2 × 7.5 I_{amax} = 2 × 46 I_{g2min} = 2 × 0.8 I_{g2max} = 2 × 11	R_{aa} = 8 kΩ W_o = 17 W	 Noval
Class AB (two tubes)		V_a = 250 V V_{g2} = 250 V R_k1) = 130 Ω	I_{amin} = 2 × 31 I_{amax} = 2 × 37.5 I_{g2min} = 2 × 3.5 I_{g2max} = 2 × 7.5	R_{aa} = 8 kΩ W_o = 11 W	
EL86 Output pentode Class A	V_f = 6.3 V I_f = 0.76 A	V_a = 170 V V_{g2} = 170 V V_{g1} = —12.5 V	I_a = 70 I_{g2} = 3.5	S = 11 mA/V R_i = 26 kΩ R_a = 2.4 kΩ W_o = 5.6 W W_a = max. 12 W	 Noval
EL91 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 250 V R_k = 740 Ω	I_a = 16 I_{g2} = 2.4	S = 2.6 mA/V R_i = 130 kΩ R_a = 16 kΩ W_o = 1.4 W W_a = max. 4 W	 Miniature

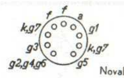
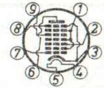
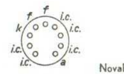
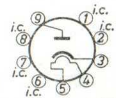
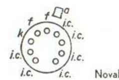
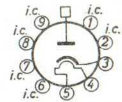
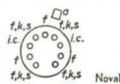
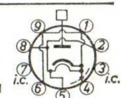
1) Common cathode bias resistor

EL95 Output pentode Class A	V_f = 6.3 V I_f = 0.2 A	V_a = 250 V V_{g2} = 250 V R_k = 320 Ω	I_a = 24 I_{g2} = 4.5	S = 5 mA/V R_i = 80 kΩ R_a = 10 kΩ W_o = 3 W W_a = max. 6 W	 Miniature
Class AB (two tubes)		V_a = 250 V V_{g2} = 250 V R_k[1]) = 180 Ω	$I_{a\min}$ = 2 × 22 $I_{a\max}$ = 2 × 26 $I_{g2\min}$ = 2 × 4 $I_{g2\max}$ = 2 × 7.5	R_{aa} = 10 kΩ W_o = 7 W	
EL500 Output pentode for hor. deflection Typical dynamical charact.	V_f = 6.3 V I_f = 1.38 A	V_a = 75 V V_{g2} = 200 V V_{g1} = —10 V	$I_{a\,p}$ = 440 I_{g2p} = 30		 Magnoval
EL503 Output tetrode Typical charac.	V_f = 6.3 V I_f = 1.2 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —13.2 V	I_a = 100 I_{g2} = 8.5	S = 23 mA/V R_i = 7.3 kΩ μ_{g2g1} = 13 W_a = max 27 W	 Magnoval
EL505	V_f = 6.3 V I_f = 2 A	See PL505 (except for heater rating)			
EM4/EM34 Tuning indicators (sensitive system)	V_f = 6.3 V I_f = 0.2 A	V_b = V_l = 250 V R_{a1} = 1 MΩ V_g = 0/—5 V	I_l = 2.0/2.5	α_1 = 90°/5°	EM4  P

1) Common cathode bias resistor

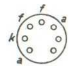
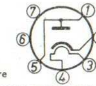
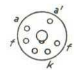
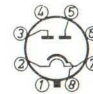
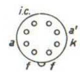
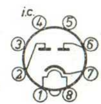
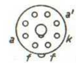
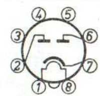
RECEIVING AND AMPLIFYING TUBES

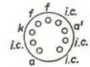
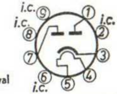
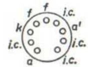
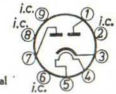
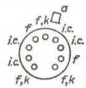
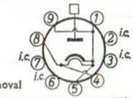
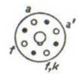
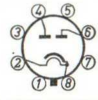
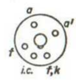
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
EM4/EM34 (continued) (insensitive system)		$V_b = V_l = 250$ V $R_{a2} = 1$ MΩ $V_g = 0/—16$ V	$I_l = 2.0/2.7$	$\alpha_2 = 90°/5°$	
EM80 Tuning indicator	$V_f = 6.3$ V $I_f = 0.3$ A	$V_b = V_l = 250$ V $R_a = 0.5$ MΩ $V_g = —1/—14$ V $R_g = 3$ MΩ	$I_a = 0.4/0.01$ $I_l = 2/2.3$	$\beta = 5°/50°$	
EM81 Tuning indicator	$V_f = 6.3$ V $I_f = 0.3$ A	$V_b = V_l = 250$ V $R_a = 0.5$ MΩ $R_g = 3$ MΩ $V_{g1} = —1/—10.5$ V	$I_a = 0.37/0.02$ $I_l = 2/2.3$	$\alpha = 65°/5°$	
EM84 Tuning indicator	$V_f = 6.3$ V $I_f = 0.21$ A	$V_b = V_l = 250$ V $R_{a,D} = 470$ kΩ $R_g = 3$ MΩ $V_{bg} = 0/—22$ V	$I_{a+D} = 0.45/0.06$ $I_l = 1/1.8$	$\alpha = 21/0$ mm	
EM87 Tuning indicator	$V_f = 6.3$ V $I_f = 0.3$ A	$V_b = V_l = 250$ V $R_{a+D} = 100$ kΩ $R_g = 3$ MΩ $V_{bg} = 0/—15$ V	$I_{a+D} = 2/0.2$ $I_l = 1/2$	$\alpha = 21/—1.5$ mm	

EQ80 Enneode F.M. detector	V_f = 6.3 V I_f = 0.2 A	V_b = 250 V R_a = 0.47 MΩ R_1 = 34 kΩ R_3 = 3.9 kΩ R_4 = 560 Ω	I_a = 0.28 I_{g2} = 1.5 I_{g3} = 0.09 I_{g5} = 0.03	R_i = 5 MΩ		
EY51 E.H.T. rectifying tube	V_f = 6.3 V I_f = 90 mA	V_{tr} = max. 5 kV V_{ainvp} = max. 17 kV V_{ainvp} = max. 17 kV	I_o = max. 3 I_o = max. 3 I_o = max. 0.35 I_{op} = max. 80[1])	C_{filt} = max. 0.1 μF, R_t = min. 0.1 MΩ: rectifier 50 c/s C_{filt} = max. 0.01 μF, R_t = min. 0.1 MΩ: rectifier 10-500 kc/s C_{filt} = max. 5000 pF: pulse rectifier		
EY81	V_f = 6.3 V I_f = 0.81 A	See PY81 (except for heater rating)				
EY82 Half-wave rectifying tube (Two tubes in a full-wave circuit)	V_f = 6.3 V I_f = 0.9 A	V_{tr} = 2 × 300 V V_{tr} = 2 × 250 V	I_o = 360 I_o = 360	R_t = 2 × 110 Ω R_t = 2 × 75 Ω C_{filt} = 60 μF		
EY84 Half-wave rectifying tube (Two tubes in a full-wave circuit)	V_f = 6.3 V I_f = 1 A	V_{tr} = 2 × 625 V V_{tr} = 2 × 500 V	I_o = 250 I_o = 300	R_t = 2 × 250 Ω R_t = 2 × 150 Ω C_{filt} (f = 50 c/s) = 16 μF C_{filt} (f = 1600 c/s) = 0.5 μF		
EY86	See EY87					
EY87 EHT rectifying tube for T.V. receivers	V_f = 6.3 V I_f = 90 mA	V_o = 18 kV	I_o = 0.15 I_o = max. 0.5	R_i (I_o = 1 mA) = 20 kΩ C_a = 1.55 pF		

1) Max. pulse time 1% of one cycle with a maximum of 5 μsec

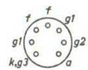
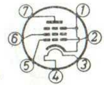
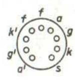
RECEIVING AND AMPLIFYING TUBES

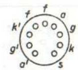
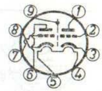
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
EY88	V_f = 6.3 V I_f = 1.55 A	See PY88 (except for heater rating)			
EY91 Half-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.42 A	V_{tr} = 250 V V_{tr} = 200 V	I_o = max. 75 I_o = max. 75	R_t = min. 100 Ω R_t = min. 70 Ω C_{filt} = 32 μF V_{kf} = max. 300 V	 Miniature 
EY500	V_f = 6.3 V I_f = 2.1 A	See PY500 (except for heater rating)			
EZ35 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2 × 325 V	I_a = max. 70	R_t = min. 2 × 350 Ω C_{filt} = max. 16 μF V_{kfp} = max. 350 V	 Octal 
EZ40 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2 × 250 V V_{tr} = 2 × 350 V	I_o = max. 90 I_o = max. 90	R_t = min. 2 × 125 Ω R_t = min. 2 × 300 Ω C_{filt} = max. 50 μF V_{kfp} = max. 500 V	 Rimlock 
EZ41 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.4 A	V_{tr} = 2 × 250 V	I_o = max. 60	R_t = min. 2 × 300 Ω C_{filt} = max. 32 μF V_{kfp} = max. 350 V	 Rimlock 

EZ80 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2 × 350 V V_{tr} = 2 × 250 V	I_o = max. 90 I_o = max. 90	R_t = min. 2 × 300 Ω R_t = min. 2 × 125 Ω C_{filt} = max. 50 μF V_{kfp} = max. 500 V		Noval 
EZ81 Full-wave rectifying tube Rectifier	V_f = 6.3 V I_f = 1 A	V_{tr} = 2 × 350 V V_{tr} = 2 × 250 V	I_o = 150 I_o = 160	R_{tmin} = 2 × 230 Ω R_{tmin} = 2 × 150 Ω C_{filt} = 50 μF		Noval 
GY501 E.H.T. rectifier diode for colour T.V. receivers	V_f = 3.15 V I_f = 0.37 A	V_o = 25 kV	I_a = 1.5	—V_{ap} = max. 35 kV[1]) V_o = max. 27.5 kV I_a = max. 1.7 mA C_{ak} = 1.5 pF		Magnoval 
GZ32 Full-wave rectifying tube Rectifier	V_f = 5 V I_f = 2 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 350 V V_{tr} = 2 × 300 V	I_a = max. 125 I_a = max. 250 I_a = max. 300	C_{filt} = max. 32 μF R_t = min. 2 × 100 Ω		Octal 
GZ34 Full-wave rectifying tube Rectifier	V_f = 5 V I_f = 1.9 A	V_{tr} = 2 × 550 V V_{tr} = 2 × 500 V V_{tr} = 2 × 400 V V_{tr} = 2 × 300 V V_{invp} = max. 1500 V	I_o = max. 160 I_o = max. 200 I_o = max. 250 I_o = max. 250 I_{ap} = max. 750	R_t = min. 2×200 Ω R_t = min. 2×175 Ω R_t = min. 2×125 Ω R_t = min. 2× 75 Ω C_{filt} = max. 60 μF		Octal 

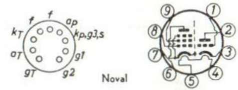
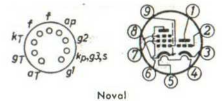
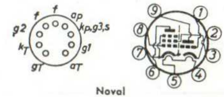
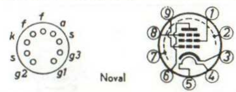
1) Max. permitted pulse duration is 22% of a cycle; max. 18 μsec.

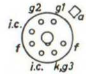
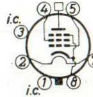
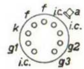
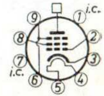
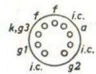
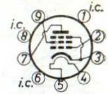
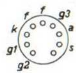
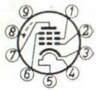
RECEIVING AND AMPLIFYING TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
HCH81 Triode-heptode	V_f = 12.6 V I_f = 0.15 A	See UCH81 (except for heater rating)			
HL94 Output pentode Class A final amplifier	V_f = 30 V I_f = 0.15 A	V_a = 100 V V_{g2} = 100 V V_{g1} = —6.7 V	I_a = 43 I_{g2} = 3	S = 9.2 mA/V R_i = 22 kΩ R_a = 2.4 kΩ W_o = 1.9 W W_a = max. 7.5 W	 Miniature 
PABC80	V_f = 9.5 V I_f = 0.3 A	See UABC80 (except for heater rating)			
PC86	V_f = 3.8 V I_f = 0.3 A	See EC86 (except for heater rating)			
PC88	V_f = 3.8 V I_f = 0.3 A	See EC88 (except for heater rating)			
PC97	V_f = 4.5 V I_f = 0.3 A	See EC97 (except for heater rating)			
PC900	V_f = 4 V I_f = 0.3 A	See EC900 (except for heater rating)			
PCC85 Double triode	V_f = 9 V I_f = 0.3 A	V_a = 200 V V_g = —2.4 V	I_a = 10	S = 6 mA/V R_i = 7.7 kΩ	 Noval 
Typical characteristics (each section)		V_a = 100 V V_g = —1.1 V	I_a = 4.5	S = 4.6 mA/V R_i = 11 kΩ	

PCC88 Double triode Typical characteristics (each section)	V_f = 7.6 V I_f = 0.3 A	V_a = 90 V V_g = —1.3 V	I_a = 15	S = 12.5 mA/V μ = 33 R_{eq} = ≈ 300 Ω	 Noval 
PCC189	V_f = 7.6 V I_f = 0.3 A	See ECC189 (except for heater rating)			
PCF80	V_f = 9 V I_f = 0.3 A	See ECF80 (except for heater rating)			
PCF86	V_f = 8.0 V I_f = 0.3 A	See ECF86 (except for heater rating)			
PCF200	V_f = 8 V I_f = 0.3 A	See ECF200 (except for heater rating)			
PCF201	V_f = 8 V I_f = 0.3 A	See ECF201 (except for heater rating)			
PCF801	V_f = 8 V I_f = 0.3 A	See ECF801 (except for heater rating)			
PCF802	V_f = 9 V I_f = 0.3 A	See ECF802 (except for heater rating)			
PCH200	V_f = 8.5 V I_f = 0.3 A	See ECH200 (except for heater rating)			
PCL82	V_f = 16 V I_f = 0.3 A	See UCL82 (except for heater rating)			

RECEIVING AND AMPLIFYING TUBES

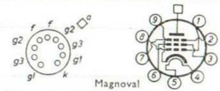
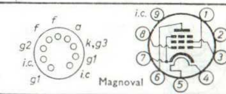
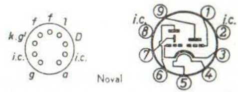
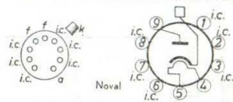
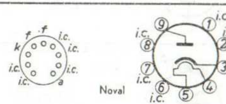
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
PCL84 Triode-pentode for video appl. Typical characteristics (pentode)	V_f = 15 V I_f = 0.3 A	V_a = 200 V V_{g2} = 200 V V_{g1} = —2.9 V	I_a = 18 I_{g2} = 3	S = 10.4 mA/V R_i = >130 kΩ μ_{g2g1} = 36 W_a = max. 4 W	 Noval
Typ. charact. triode section		V_a = 200 V V_g = —1.7 V	I_a = 3	S = 4 mA/V μ = 65 W_a = max. 1 W	
PCL85 Triode pentode for vert. defl. Typ. char. pentode	V_f = 17.5 V I_f = 0.3 A	V_a = 50 V V_{g2} = 170 V V_{g1} = —1 V	I_{ap} = 200 I_{g2p} = 35	W_a = max. 7 W W_{g2} = max. 1.5 W	 Noval
Typ. char. triode		V_a = 100 V V_g = 0 V	I_a = 10	S = 7 mA/V μ = 63	
PCL86 Triode-outp. pentode for audio appl. Class A final amplifier Pentode section	V_f = 13.3 V I_f = 0.3 A	V_a = 230 V V_{g2} = 230 V V_{g1} = —5.7 V	I_a = 39 I_{g2} = 6.5	S = 10.5 mA/V R_i = 45 kΩ R_a = 5.1 kΩ W_o = 4.1 W W_a = max. 9 W	 Noval
Typ. char. triode		V_a = 230 V V_g = 1.7 V	I_a = 1.2	S = 1.6 mA/V μ = 100 W_a = max. 0.5 W	
PF86 Pentode Typical characteristics	V_f = 4.5 V I_f = 0.3 A	V_a = 250 V V_{g2} = 140 V V_{g3} = 0 V V_{g1} = —2.2 V	I_a = 3 I_{g2} = 0.6	S = 2.2 mA/V R_i = 2.5 MΩ μ_{g2g1} = 38	 Noval
PFL200	V_f = 16.5 V I_f = 0.3 A	See EFL200 (except for heater rating)			

PL36 Line output pentode Typical characteristics	V_f = 25 V I_f = 0.3 A	V_a = 100 V V_{g2} = 100 V V_{g1} = —8.2 V	I_a = 100 I_{g2} = 7	S = 14 mA/V R_i = 5 kΩ W_a = max. 10 W	 Octal	
PL81 Line output pentode Typical characteristics	V_f = 21.5 V I_f = 0.3 A	V_a = 170 V V_{g3} = 0 V V_{g2} = 170 V V_{g1} = —22 V	I_a = 45 I_{g2} = 3.0	S = 6.2 mA/V R_i = 10 kΩ W_a = max. 8 W V_{ap} 1) = max. 7 kV	 Noval	
PL82 Frame and sound output pentode Typical characteristics	V_f = 16.5 V I_f = 0.3 A	V_a = 170 V V_{g2} = 170 V V_{g1} = —10.4 V	I_a = 53 I_{g2} = 10	S = 10.2 mA/V R_i = 20 kΩ W_a = max. 9 W V_{ap} 2) = max. 2.5 kV	 Noval	
PL83 Video amplifying pentode Typical characteristics	V_f = 15 V I_f = 0.3 A	V_a = 200 V V_{g3} = 0 V V_{g2} = 200 V V_{g1} = —3.5 V	I_a = 36 I_{g2} = 5	S = 10.5 mA/V R_i = 0.1 MΩ W_a = max. 9 W C_{g1} = 10.8 pF C_a = 6.6 pF C_{ag1} < 0.1 pF	 Noval	
PL84	V_f = 15 V I_f = 0.3 A	See UL84 (except for heater rating)				
PL500	V_f = 27 V I_f = 0.3 A	See EL500 (except for heater rating)				

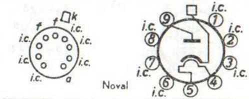
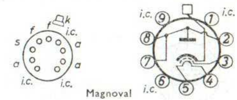
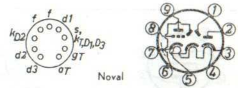
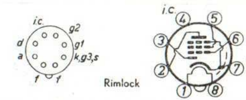
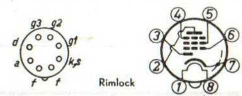
1) Max. pulse time 18% of one cycle with a maximum of 18 μsec.

2) Max. pulse time 10% of one cycle with a maximum of 2000 μsec.

RECEIVING AND AMPLIFYING TUBES

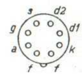
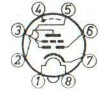
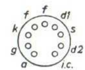
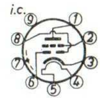
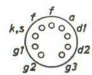
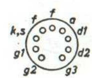
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
PL505 Output pentode for colour TV Typ. charact.	$V_f = 40$ V $I_f = 0.3$ A	$V_a = 160$ V $V_{g3} = 0$ V $V_{g2} = 160$ V $V_{g1} = 0$ V	$I_a = 1400$ $I_{g2} = 45$	V_{ap} = max. 7 kV W_a = max. 2 5 W	
PL508 Output pentode for colour TV Typ. charact.	$V_f = 18.5$ V $I_f = 0.3$ A	$V_a = 190$ V $V_{g2} = 190$ V $V_{g1} = -17$ V	$I_a = 60$ $I_{g2} = 3$	V_{ap} = max. 2.5 kV W_a = max. 12 W	
PM84 Tuning indicator	$V_f = 4.2$ V $I_f = 0.3$ A	$V_b = V_l = 170$ V $R_{a \cdot D} = 470$ kΩ $R_g = 3$ MΩ $V_{bg} = 0/-15$ V	$I_{a+D} = 0.3/0.04$ $I_l = 0.6/1.05$	α = 20/0 mm	
PY81 Booster diode Booster	$V_f = 17$ V $I_f = 0.3$ A	V_{akp} = max. 5 kV1)2) (k_{pos})	I_a = max. 150 I_{ap} = max. 450	V_{kfp} = max. 5 kV1) C_a = 6.4 µF W_a = max. 3.5 W	
PY82 Half-wave rectifying tube Rectifier	$V_f = 19$ V $I_f = 0.3$ A	$V_{tr} = 220$ V $V_{tr} = 127$ V	I_o = max. 180 I_o = max. 180	R_t = 65 Ω R_t = 0 Ω V_{ainvp} = max. 700 V V_{kfp} = max. 550 V3) C_{filt} = 60 µF	

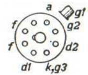
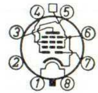
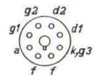
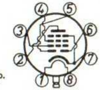
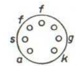
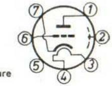
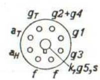
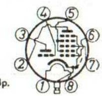
1) Max. pulse time 22% of a cycle with a max. of 18 µsec. 2) Cathode positive with respect to anode
3) Max. 220 V (rms) A.C. + 250 V D.C. Cathode positive with respect to heater.

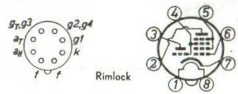
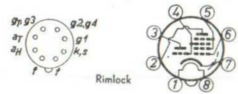
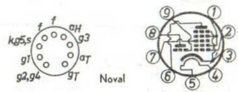
PY88 Booster diode Booster	V_f = 30 V I_f = 0.3 A	V_{akp} = max. 6 kV (k_{pos})	I_a = max. 220[1][2]) I_{ap} = max. 550	V_{kfp} = max. 6.6 kV[1][2] C_a = 8.6 pF W_a = max. 5 W	 Noval
PY500 Booster diode for colour T.V. receivers	V_f = 42 V I_f = 0.3 A	$-V_{ap}$ = max. 5.6 kV[1] R_i = 42 Ω (at I_a = 440 mA)	I_a = max. 440 I_{ap} = max. 800	V_{kfp} = max. 6.3 kV[1] C_{ak} = 13.5 pF C_{kf} = 3.7 pF W_a = max. 11 W	 Magnoval
UABC80 Triple diode high mu triode Typ. char. diodes	V_f = 28 V I_f = 0.1 A	V_{d1invp} = max. 350 V V_{d2invp} = max. 350 V V_{d3invp} = max. 350 V	I_{d1} = max. 1 I_{d1p} = max. 6 I_{d2} = max. 10 I_{d2p} = max. 75 I_{d3} = max. 10 I_{d3p} = max. 75	R_{id1} = 5 kΩ (V_{d1} = 10 V) R_{id2} = 200 Ω (V_{d2} = 5 V) R_{id3} = 200 Ω (V_{d3} = 5 V)	 Noval
Typ. char. triode		V_a = 170 V V_g = −1.85 V	I_a = 1	S = 1.45 mA/V R_i = 48 kΩ μ = 70	
UAF41 Diode variable mu pentode R.F. or I.F. amplifier	V_f = 12.6 V I_f = 0.1 A	V_a = V_b = 170 V R_{g2} = 44 kΩ V_{g1} = −2 V	I_a = 5 I_{g2} = 1.6	S = 1.8 mA/V R_i = 1.2 MΩ C_{ag1} < 2 mpF	 Rimlock
UAF42 Diode variable mu pentode R.F. or I.F. amplifier	V_f = 12.6 V I_f = 0.1 A	V_a = V_b = 170 V R_{g2} = 56 kΩ V_{g1} = −2.0 V V_{g3} = 0 V	I_a = 5.0 I_{g2} = 1.5	S = 2.0 mA/V R_i = 0.9 MΩ C_{ag1} < 2 mpF	 Rimlock

[1]) Max. pulse time 22 % of a cycle with a max. of 18 μsec. [2]) Design centre values

RECEIVING AND AMPLIFYING TUBES

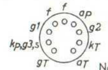
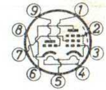
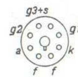
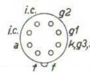
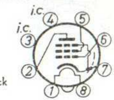
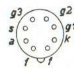
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
UB41	V_f = 19 V I_f = 0.1 A	See EB41 (except for heater rating)			
UBC41 Double diode high mu triode Typical characteristics	V_f = 14 V I_f = 0.1 A	V_a = 170 V V_g = —1.55 V	I_a = 1.5	S = 1.65 mA/V R_i = 42 kΩ μ = 70	 Rimlock 
UBC81 Double diode high mu triode Typical charact.	V_f = 14 V I_f = 0.1 A	V_a = 170 V V_g = —1.55 V	I_a = 1.5	S = 1.65 mA/V R_i = 42 kΩ μ = 70	 Noval 
A.F. amplifier		V_b = 170 V R_a = 0.1 MΩ R_k = 3.9 kΩ	I_a = 0.45	g = 37	
UBF80 Double diode var. mu pentode R.F. or I.F. amplifier	V_f = 17 V I_f = 0.1 A	V_a = V_b = 170 V R_{g2} = 47 kΩ R_k = 295 Ω V_{g3} = 0 V	I_a = 5.0 I_{g2} = 1.75	S = 2.2 mA/V R_i = 0.9 MΩ C_{ag1} < 2.5 mpF	 Noval 
A.F. amplifier		V_b = 170 V R_a = 0.22 MΩ R_{g2} = 0.68 MΩ R_k = 2.7 kΩ V_{g3} = 0 V	I_a = 0.56 I_{g2} = 0.20	g = 85	
UBF89 Double diode variable mu pentode Typical characteristics	V_f = 19 V I_f = 0.1 A	V_a = 200 V V_{g2} = 100 V V_{g3} = 0 V V_{g1} = —1.5 V	I_a = 11 I_{g2} = 3.3	S = 4.5 mA/V R_i = 0.6 MΩ μ_{g2g1} = 20 C_{ag1} < 2.5 mpF	 Noval 

UBL1 Double diode output pentode Class A final amplifier	V_f = 55 V I_f = 0.1 A	V_a = 185 V V_{g2} = 185 V R_k = 140 Ω	I_a = 59 I_{g2} = 11.3	S = 8.8 mA/V R_i = 23 kΩ R_a = 3 kΩ W_o = 5 W W_a = max. 11 W	 Octal	
UBL21 Double diode output pentode Class A final amplifier	V_f = 55 V I_f = 0.1 A	V_a = 180 V V_{g2} = 180 V R_k = 140 Ω	I_a = 61 I_{g2} = 10	S = 9 mA/V R_i = 22 kΩ R_a = 3 kΩ W_o = 4.8 W W_a = max. 11 W	 Loctal 8p.	
UC92 R.F. triode Typical characteristics	V_f = 9.5 V I_f = 0.1 A	V_a = 100 V V_g = −1 V	I_a = 3	S = 3.75 mA/V R_i = 16.5 kΩ freq. = max. 300 Mc/s	 Miniature	
		V_a = 170 V V_g = −1 V	I_a = 8.5	S = 5.9 mA/V R_i = 11 kΩ		
UCC85	V_f = 26 V I_f = 0.1 A	See PCC85 (except for heater rating)				
UCH21 Triode heptode Frequency changer (heptode)	V_f = 20 V I_f = 0.1 A	V_a = 200 V R_{g2+g4} = 15.5 kΩ R_{g3+gT} = 50 kΩ V_{g1} = −2 V	I_a = 3.5 I_{g2+g4} = 6.5 I_{g3+gT} = 0.19	S_c = 0.75 mA/V R_i = 1.0 MΩ	 Loctal 8p.	
Oscillator (triode section)		V_b = 200 V R_a = 20 kΩ R_{g3+gT} = 50 kΩ	I_a = 4.1 I_{g3+gT} = 0.19	S_{eff} = 0.45 mA/V V_{osc} = 7.5 V_{eff}		

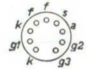
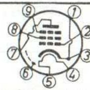
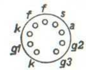
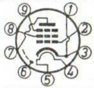
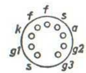
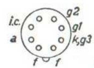
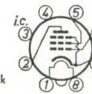
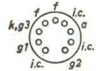
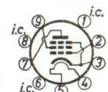
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
UCH41 Triode hexode Frequency changer (hexode)	$V_f = 14$ V $I_f = 0.1$ A	$V_a = V_b = 170$ V $R_1 = 22$ kΩ $R_2 = 47$ kΩ $R_{g3+gT} = 20$ kΩ $V_{g1} = -1.8$ V	$I_a = 2.2$ $I_{g2+g4} = 1.9$ $I_{g3+gT} = 0.32$	$S_c = 0.45$ mA/V $R_i = 1.2$ MΩ	 Rimlock
Oscillator (triode section)		$V_b = 170$ V $R_a = 10$ kΩ $R_{g3+gT} = 20$ kΩ	$I_a = 4.9$ $I_{g3+gT} = 0.32$	$S_{eff} = 0.6$ mA/V $V_{osc} = 7$ V_{eff}	
UCH42 Triode hexode Frequency changer (hexode)	$V_f = 14$ V $I_f = 0.1$ A	$V_a = V_b = 170$ V $R_1 = 18$ kΩ $R_2 = 27$ kΩ $R_{g3+gT} = 47$ kΩ $V_{g1} = -1.85$ V	$I_a = 2.1$ $I_{g2+g4} = 2.6$ $I_{g3+gT} = 0.20$	$S_c = 0.67$ mA/V $R_i = 1.0$ MΩ	 Rimlock
Oscillator (triode section)		$V_b = 170$ V $R_a = 10$ kΩ $R_{g3+gT} = 47$ kΩ $V_{osc} = 8$ V	$I_a = 5.7$ $I_{g3+gT} = 0.20$	$S_{eff} = 0.65$ mA/V	
UCH81 Triode heptode Frequency changer	$V_f = 19$ V $I_f = 0.1$ A	$V_a = V_b = 170$ V $R_{g2+g4} = 10$ kΩ $R_{g3+gT} = 47$ kΩ $V_{g1} = -0.5$ V[1])	$I_a = 3.3$ $I_{g2+g4} = 8.2$ $I_{g3+gT} = 0.2$ $I_{g1} = 0.0005$	$S_c = 1.1$ mA/V $R_i = 0.8$ MΩ $R_{eq} = 30$ kΩ	 Noval
R.F. or I.F. amplifier (heptode)		$V_a = V_b = 170$ V $R_{g2+g4} = 18$ kΩ $V_g = -0.5$ V[1]) $V_{g3} = 0$ V	$I_a = 8$ $I_{g2+g4} = 5$ $I_{g1} = 0.0005$	$S = 3.9$ mA/V $R_i = 0.4$ MΩ $R_{eq} = 4$ kΩ	

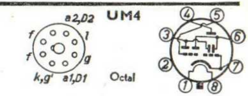
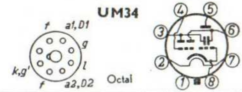
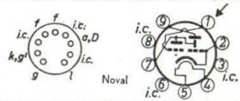
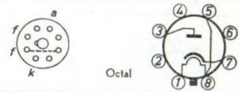
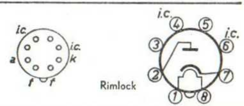
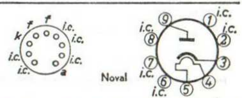
[1]) Grid current biasing obtained with $R_{g1-k} = 1$ MΩ and zero a.g.c. voltage; resulting $V_{g1} = -0.5$ V.

UCH81 (continued)

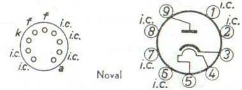
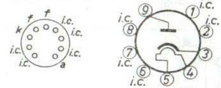
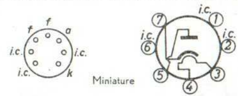
Typ. char. (triode)		$V_a = 100$ V $V_g = 0$ V	$I_a = 13.5$	$S = 3.7$ mA/V $R_i = 6$ kΩ	
Oscillator (triode)		$V_b = 170$ V $R_a = 15$ kΩ $R_{g3+gT} = 47$ kΩ	$I_a = 4.5$ $I_{g3+gT} = 0.2$	$S_{\text{eff}} = 0.65$ mA/V	
UCL82 Triode output-pentode Class A final amplifier (pentode)	$V_f = 50$ V $I_f = 0.1$ A	$V_a = 170$ V $V_{g2} = 170$ V $V_{g1} = -11.5$ V	$I_a = 41$ $I_{g2} = 9$	$S = 7.5$ mA/V $R_i = 16$ kΩ $R_a = 3.9$ kΩ $W_o = 3.3$ W $W_a =$ max. 7 W	 Noval 
Typ. charact. (triode section)		$V_a = 100$ V $V_g = 0$ V	$I_a = 3.5$	$S = 2.2$ mA/V $\mu = 70$	
UF21 Variable mu pentode R.F. or I.F. amplifier	$V_f = 12.6$ V $I_f = 0.1$ A	$V_a = V_b = 200$ V $R_{g2} = 60$ kΩ $V_{g1} = -2.5$ V $V_{g3} = 0$ V	$I_a = 6$ $I_{g2} = 1.7$	$S = 2.2$ mA/V $R_i = 1.0$ MΩ $C_{ag1} < 2$ mpF	 Loctal 8p. 
UF41 Variable mu pentode R.F. or I.F. amplifier	$V_f = 12.6$ V $I_f = 0.1$ A	$V_a = 170$ V $R_{g2} = 40$ kΩ $V_{g1} = -2.5$ V	$I_a = 6$ $I_{g2} = 1.75$	$S = 2.2$ mA/V $R_i = 1.0$ MΩ $C_{ag1} < 2$ mpF	 Rimlock 
UF42 R.F. pentode Typical characteristics	$V_f = 21$ V $I_f = 0.1$ A	$V_a = 170$ V $V_{g2} = 170$ V $V_{g1} = -2$ V $V_{g3} = 0$ V	$I_a = 10$ $I_{g2} = 2.8$	$S = 8$ mA/V $R_i = 0.3$ MΩ $R_{\text{eq}} = 1060$ Ω $C_{ag1} < 6$ mpF	 Rimlock 

RECEIVING AND AMPLIFYING TUBES

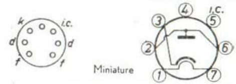
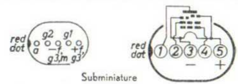
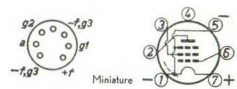
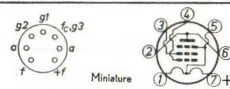
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
UF80 R.F. pentode R.F. or I.F. amplifier	$V_f = 19$ V $I_f = 0.1$ A	$V_a = 170$ V $V_{g3} = 0$ V $V_{g2} = 170$ V $V_{g1} = -2$ V	$I_a = 10$ $I_{g2} = 2.5$	$S = 7.4$ mA/V $R_i = 0.4$ MΩ $R_{eq} = 1$ kΩ $C_{ag1} < 7$ mpF	 Noval 
UF85 R.F. variable mu pentode R.F. or I.F. amplifier	$V_f = 19$ V $I_f = 0.1$ A	$V_a = V_b = 170$ V $R_{g2} = 27$ kΩ $V_{g1} = -2$ V $V_{g3} = 0$ V	$I_a = 9.7$ $I_{g2} = 2.6$	$S = 5.9$ mA/V $R_i = 0.3$ MΩ $R_{eq} = 1.4$ kΩ $C_{ag1} < 7$ mpF	 Noval 
UF89 Variable mu pentode R.F. or I.F. amplifier	$V_f = 12.6$ V $I_f = 0.1$ A	$V_a = 170$ V $V_{g2} = 100$ V $V_{g3} = 0$ V $V_{g1} = -1.2$ V	$I_a = 12$ $I_{g2} = 4.4$	$S = 4.4$ mA/V $R_i = 0.4$ MΩ $C_{ag1} < 2$ mpF	 Noval 
UL41 Output pentode Class A final amplifier	$V_f = 45$ V $I_f = 0.1$ A	$V_a = 170$ V $V_{g2} = 170$ V $V_{g1} = -10.4$ V	$I_a = 53$ $I_{g2} = 10$	$S = 9.5$ mA/V $R_i = 20$ kΩ $R_a = 3$ kΩ $W_o = 4$ W $W_a =$ max. 9 W	 Rimlock 
UL84 Output pentode Class A final amplifier	$V_f = 45$ V $I_f = 0.1$ A	$V_a = 170$ V $V_{g2} = 170$ V $V_{g1} = -12.5$ V	$I_a = 70$ $I_{g2} = 3.5$	$S = 11$ mA/V $R_i = 26$ kΩ $R_a = 2.4$ kΩ $W_o = 5.6$ W $W_a =$ max. 12 W	 Noval 
Class B (two tubes)		$V_a = 170$ V $V_{g2} = 170$ V $V_{g1} = -20.5$ V	$I_{a\min} = 2 \times 15$ $I_{a\max} = 2 \times 57.5$ $I_{g2\min} = 2 \times 0.7$ $I_{g2\max} = 2 \times 20.5$	$R_{aa} = 3.5$ kΩ $W_o = 13.5$ W	

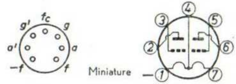
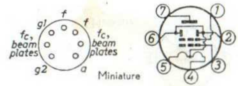
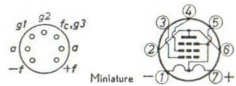
Type	Heater	Operating conditions			Base
UM4/UM34 Tuning indicators (sensitive system)	V_f = 12.6 V I_f = 0.1 A	V_b = V_l = 200 V R_{a1} = 1.0 MΩ V_g = 0/—4.2 V	I_l = 1.4/1.8	α_1 = 90°/5°	**UM4** Octal 
(insensitive system)		V_b = V_l = 200 V R_{a2} = 1.0 MΩ V_g = 0/—12.5 V	I_l = 1.4/2.0	α_2 = 90°/5°	**UM34** Octal 
UM80 Tuning indicator	V_f = 19 V I_f = 0.1 A	V_b = V_l = 170 V R_a = 0.5 MΩ R_g = 3 MΩ V_g = —1/—12 V	I_a = 03/0.01	β = 5°/50°	Noval 
UM84	V_f = 12 V I_f = 0.1 A	See PM84 (except for heater rating)			
UY1N Half-wave rectifying tube Rectifier	V_f = 50 V I_f = 0.1 A	V_{tr} = 250 V V_{tr} = 127 V	I_o = max. 140 I_o = max. 140	R_t = min. 175 Ω R_t = 0 Ω C_{filt} = max. 60 μF	Octal 
UY41 **UY42** Half-wave rectifying tubes Rectifier	V_f = 31 V I_f = 0.1 A	V_{tr} = max. 250 V V_{tr} = max. 220 V V_{tr} = max. 127 V V_{tr} = max. 110 V	I_o = max. 100 I_o = max. 100 I_o = max. 100 I_o = max. 100 I_{ap} = max. 600	R_t = min. 210 Ω R_t = min. 160 Ω R_t = 0 Ω R_t = 0 Ω C_{filt} = max. 50 μF	Rimlock 
UY82 Half-wave rectifier	V_f = 55 V I_f = 0.1 A	V_{tr} = 250 V V_{tr} = 220 V V_{tr} = 127 V	I_o = max. 180 I_o = max. 180 I_o = max. 180	R_t = min. 100 Ω R_t = min. 40 Ω R_t = 0 Ω C_{filt} = 60 μF	Noval 

RECEIVING AND AMPLIFYING TUBES

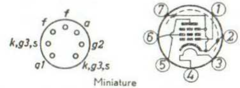
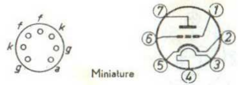
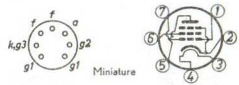
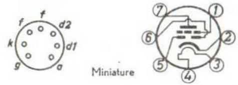
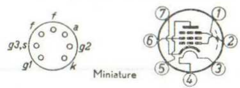
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
UY85 Half-wave rectifier	V_f = 38 V I_f = 0.1 A	V_{tr} = 250 V V_{tr} = 220 V V_{tr} = 127 V V_{tr} = 110 V	I_o = max. 110 I_o = max. 110 I_o = max. 110 I_o = max. 110 I_{op} = max. 660	R_t = min. 100 Ω R_t = min. 90 Ω R_t = 0 Ω R_t = 0 Ω C_{filt} = 100 μF	 Noval
UY89 Half-wave rectifier	V_f = 31 V I_f = 0.1 A	V_{tr} = 250 V V_{tr} = 220 V V_{tr} = 127 V V_{tr} = 110 V	I_o = max. 100 I_o = max. 100 I_o = max. 100 I_o = max. 100 I_{ap} = max. 600	R_t = min. 210 Ω R_t = min. 160 Ω R_t = 0 Ω R_t = 0 Ω C_{filt} = 50 μF	 Noval
UY92 Half-wave rectifier	V_f = 26 V I_f = 0.1 A	V_{tr} = 127 V V_{tr} = 110 V	I_o = max. 70	R_i = 0 Ω C_{filt} = 100 μF	 Miniature
XC97	V_f = 2.6 V I_f = 0.6 A	See EC97 (except for heater rating)			
XC900	V_f = 2.2 V I_f = 0.6 A	See EC900 (except for heater rating)			
XCC82	V_f = 3.5 V I_f = 0.6 A[1])	See ECC82 (except for heater rating)			
XCC189	V_f = 4.5 V I_f = 0.6 A	See ECC189 (except for heater rating)			
XCF80	V_f = 4.6 V I_f = 0.6 A	See ECF80 (except for heater rating)			

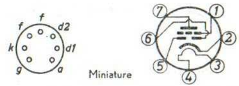
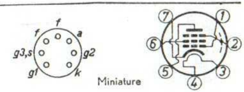
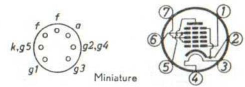
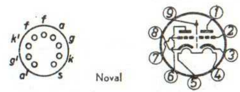
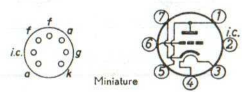
XCF801	$V_f =$ 4.6 V $I_f =$ 0.6 A	See ECF801 (except for heater rating)
XCH81	$V_f =$ 3.6 V $I_f =$ 0.6 A	$V_a =$ min. 25 V $V_{g2+4} =$ min. 25 V — for further data see ECH81
XCL82	$V_f =$ 8.2 V $I_f =$ 0.6 A	See ECL82 (except for heater rating)
XCL84	$V_f =$ 7.8 V $I_f =$ 0.6 A	See PCL84 (except for heater rating)
XCL85	$V_f =$ 8.6 V $I_f =$ 0.6 A	See PCL85 (except for heater rating)
XCL86	$V_f =$ 8.6 V $I_f =$ 0.6 A	See PCL86 (except for heater rating)
XF80	$V_f =$ 3.4 V $I_f =$ 0.6 A	See EF80 (except for heater rating)
XF85	$V_f =$ 3.4 V $I_f =$ 0.6 A	See EF85 (except for heater rating)
XF86	$V_f =$ 2.5 V $I_f =$ 0.6 A	See PF86 (except for heater rating)
XF183	$V_f =$ 3.6 V $I_f =$ 0.6 A	See EF183 (except for heater rating)
XF184	$V_f =$ 3.6 V $I_f =$ 0.6 A	See EF184 (except for heater rating)
XL36	$V_f =$ 12.8 V $I_f =$ 0.6 A	See PL36 (except for heater rating)
XL84	$V_f =$ 8 V $I_f =$ 0.6 A	See EL84 (except for heater rating)

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
XL86	$V_f =$ 8 V $I_f =$ 0.6 A	See EL86 (except for heater rating)			
XL500	$V_f =$ 13.3 V $I_f =$ 0.6 A	See EL500 (except for heater rating)			
XY88	$V_f =$ 16 V $I_f =$ 0.6 A	See PY88 (except for heater rating)			
1A3 Single diode Detector	$V_f =$ 1.4 V $I_f =$ 0.15 A	$V_{dinvp} =$ max. 330 V	$I_d =$ max. 0.5 $I_{dp} =$ max. 5	$V_{kf} =$ max. 140 V	
1AD4 Sharp cut-off pentode Typical characteristics	$V_f =$ 1.25 V $I_f =$ 0.1 A	$V_a =$ 45 V $V_{g2} =$ 45 V $V_{g1} =$ 0 V $R_{g1} =$ 2 MΩ	$I_a =$ 3.3 $I_{g2} =$ 0.9	$S =$ 2.2 mA/V $R_i =$ 0.4 MΩ $\mu_{g2g1} =$ 17.5	
1L4 Pentode R.F. or I.F. amplifier	$V_f =$ 1.4 V $I_f =$ 50 mA	$V_a =$ 90 V $V_{g2} =$ 90 V $V_{g1} =$ 0 V	$I_a =$ 4.5 $I_{g2} =$ 2.0	$S =$ 1.025 mA/V $R_i =$ 0.35 MΩ $C_{ag1} <$ 8 mpF	
		$V_a =$ 90 V $V_{g2} =$ 67.5 V $V_{g1} =$ 0 V	$I_a =$ 2.9 $I_{g2} =$ 1.2	$S =$ 0.925 mA/V $R_i =$ 0.6 MΩ	
3A4 Output pentode Class A, A.F. final amplifier	$V_f =$ 1.4 V $I_f =$ 0.2 A Pins 5-(1+7)	$V_f =$ 1.4 V $V_a =$ 135 V $V_{g2} =$ 90 V $V_{g1} =$ —7.5 V	$I_a =$ 14.8 $I_{g2} =$ 2.6	$S =$ 1.9 mA/V $R_i =$ 90 kΩ $R_a =$ 8 kΩ $W_o =$ 0.6 W $W_a =$ max. 2 W	

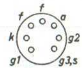
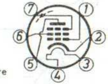
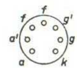
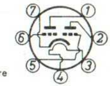
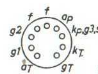
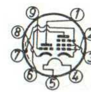
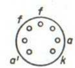
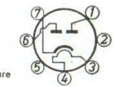
3A4 (continued) R.F. final amplifier (intermittent operation)	V_f = 2.8 V I_f = 0.1 A Pins 1-7	V_f = 1.4 V V_a = 150 V V_{g2} = 135 V R_{g1} = 0.2 MΩ	I_a = 18.3 I_{g2} = 6.5 I_{g1} = 0.13	freq. = 50 Mc/s W_o = 1.2 W	
3A5 Double triode Typ. char. (each section)	V_f = 1.4 V I_f = 0.22 A Pins 4-(1+7)	V_a = 90 V V_g = —2.5 V	I_a = 3.7	S = 1.8 mA/V R_i = 8.3 kΩ	
R.F. push-pull amplifier or oscillator (intermittent operation)	V_f = 2.8 V I_f = 0.11 A Pins 1-7	V_a = 135 V V_{g1} = —20 V V_{ip} = 2 × 45 V	I_a = 2 × 15 I_g = 2 × 2.5	freq. = 40 Mc/s W_o = 2 W	
3B4 R.F. Beam power amplifier	V_f = 2.5 V I_f = 0.165 A Pins 4-5 V_f = 1.25 V I_f = 0.33 A Pins 2-(4+5)	V_f = 2.5 V V_a = 200 V V_{g2} = 150 V V_{g1} = —25 V	I_a = 19 I_{g2} = <2	S = 1.7 mA/V μ = 4.1	
3Q4 Output pentode Class A final amplifier	V_f = 1.4 V I_f = 0.1 A Pins 5-(1+7)	V_a = 86 V V_{g2} = 86 V V_{g1} = —4.5 V	I_a = 8 I_{g2} = 1.8	S = 2.0 mA/V R_i = 0.11 MΩ R_a = 8 kΩ W_o = 0.29 W W_a = max. 1.2 W	
	V_f = 2.8 V I_f = 50 mA Pins 1-7	V_a = 86 V V_{g2} = 86 V V_{g1} = —4.3 V	I_a = 7.0 I_{g2} = 1.5	S ≐ 1.9 mA/V R_i = 0.12 MΩ R_a = 10 kΩ W_o = 0.27 W	

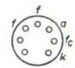
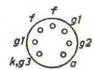
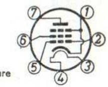
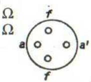
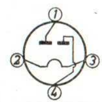
RECEIVING AND AMPLIFYING TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
6AK5 R.F. pentode Typical Characteristics	V_f = 6.3 V I_f = 0.175 A	V_a = 180 V V_{g2} = 120 V R_k = 180 Ω	I_a = 7.7 I_{g2} = 2.4	S = 5.1 mA/V R_i = 0.5 MΩ R_{eq} = 2 kΩ C_{ag1} < 0.02 pF	 Miniature
6AQ4 Grounded-grid triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = —1.5 V R_k = 150 Ω	I_a = 10	S = 8.5 mA/V R_i = 12 kΩ μ = 100 W_a = max. 2.5 W R_{eq} = 400 Ω freq. = max. 250 Mc/s	 Miniature
6AQ5 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.45 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —12.5 V	I_a = 45 I_{g2} = 4.5	S = 4.1 mA/V R_i = 52 kΩ R_a = 5 kΩ W_o = 4.5 W W_a = max. 12 W	 Miniature
6AT6 Double diode high mu triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = —3 V	I_a = 1	S = 1.2 mA/V R_i = 58 kΩ μ = 70	 Miniature
		V_a = 100 V V_g = —1 V	I_a = 0.8	S = 1.3 mA/V R_i = 54 kΩ	
6AU6 R.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2} = 150 V V_{g1} = —1 V V_{g3} = 0 V	I_a = 10.6 I_{g2} = 4.3	S = 5.2 mA/V R_i = 1 MΩ	 Miniature

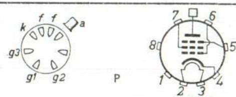
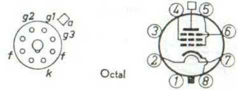
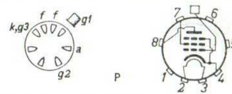
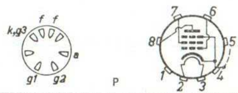
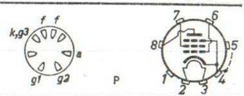
6AU6 (continued)		V_a = 100 V V_{g2} = 100 V V_{g1} = —1 V V_{g3} = 0 V	I_a = 5 I_{g2} = 2.1	S = 3.9 mA/V R_i = 0.5 MΩ	
6AV6 Double diode high mu triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_g = —2 V	I_a = 1.2	S = 1.6 mA/V R_i = 62.5 kΩ μ = 100	 Miniature
6BA6 Variable mu pentode R.F. or I.F. amplifier	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g3} = 0 V V_{g2} = 100 V R_k = 68 Ω	I_a = 11 I_{g2} = 4.2	S = 4.4 mA/V R_i = 1 MΩ R_{eq} = 4 kΩ C_{ag1} < 3.5 mpF	 Miniature
6BE6 Heptode Frequency changer	V_f = 6.3 V I_f = 0.3 A	V_a = 250 V V_{g2+g4} = 100 V V_{g3} = —1.5 V R_{g1} = 20 kΩ	I_a = 2.9 I_{g2+g4} = 6.8 I_{g1} = 0.5	S_c = 0.475 mA/V R_i = 1 kΩ	 Miniature
6BQ7A Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.4 A	V_a = 150 V R_k = 220 Ω	I_a = 9	S = 6.4 mA/V R_i = 6.1 kΩ μ = 39	 Noval
6C4 Triode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_a = 250 V V_g = —8.5 V	I_a = 10.5	S = 2.2 mA/V R_i = 7.7 kΩ	 Miniature
		V_a = 100 V V_g = 0 V	I_a = 11.8	S = 3.1 mA/V R_i = 6.25 kΩ	

RECEIVING AND AMPLIFYING TUBES

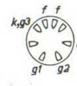
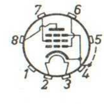
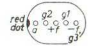
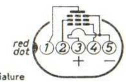
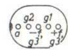
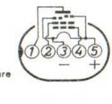
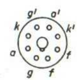
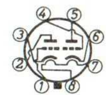
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
6CB6 R.F. sharp-cut off pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 200 V V_{g2} = 150 V V_{g3} = 0 V R_k = 180 Ω	I_a = 9.5 I_{g2} = 2.8	S = 6.2 mA/V R_i = 0.6 MΩ	 Miniature 
6J6 Double triode Typical char. (each section)	V_f = 6.3 V I_f = 0.45 A	V_a = 100 V R_k = 100 Ω	I_a = 8.5	S = 5.3 mA/V R_i = 7.1 kΩ	 Miniature 
R.F. class C telegr. amplifier and oscillator		V_a = 150 V V_g = —10 V R_g = 625 Ω	I_a = 2 × 15 I_g = 2 × 8	W_{ig} = 0.35 W W_o = 3.5 W	
6U8 Triode pentode Typ. charact. pentode	V_f = 6.3 V I_f = 0.45 A	V_a = 250 V V_{g2} = 110 V R_k = 68 Ω	I_a = 10 I_{g2} = 3.5	S = 5.2 mA/V R_i = 0.4 MΩ	 Noval 
Typ. charact. triode		V_a = 150 V R_k = 56 Ω	I_a = 18	S = 8.5 mA/V R_i = 5 kΩ	
6X4 Full-wave high vacuum rectifying tube Rectifier	V_f = 6.3 V I_f = 0.6 A	V_{tr} = 2 × 325 V	I_o = 70	R_t = 2 × 520 Ω C_{filt} = 10 μF	 Miniature 
12AQ5	V_f = 12.6 V I_f = 0.225 A	See 6AQ5 (except for heater rating)			
12AT6	V_f = 12.6 V I_f = 0.15 A	See 6AT6 (except for heater rating)			

12AU6	V_f = 12.6 V I_f = 0.15 A	See 6AU6 (except for heater rating)				
12AV6	V_f = 12.6 V I_f = 0.15 A	See 6AV6 (except for heater rating)				
12BA6	V_f = 12.6 V I_f = 0.15 A	See 6BA6 (except for heater rating)				
12BE6	V_f = 12.6 V I_f = 0.15 A	See 6BE6 (except for heater rating)				
12X4	V_f = 12.6 V I_f = 0.3 A	See 6X4 (except for heater rating)				
35W4 Half-wave rectifying tube Rectifier	V_f = 35 V I_f = 0.15 A Pins 3-4	V_{tr} = 117 V	I_o = 100	R_t = min. 15 Ω C = 40 μF		 Miniature
50C5 Output pentode Class A final amplifier	V_f = 50 V I_f = 0.15 A	V_a = 110 V V_{g2} = 110 V V_{g1} = —7.5 V	I_a = 49 I_{g2} = 4	S = 7.5 mA/V R_t = 14 kΩ R_a = 2.5 kΩ W_o = 1.9 W W_a = max. 5.5 W.		Miniature 
1805 Full-wave rectifying tube Rectifier	V_f = 4 V I_f = 1 A	V_{tr} = 2 × 500 V V_{tr} = 2 × 300 V	I_o = max. 60 I_o = max. 100	R_t = min. 2 × 100 Ω R_t = min. 2 × 60 Ω C_{filt} = max. 60 μF		A 

RECEIVING AND AMPLIFYING TUBES

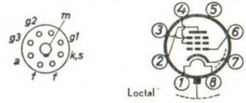
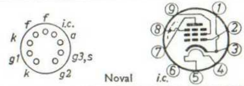
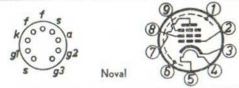
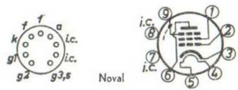
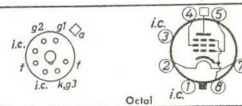
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
4654 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 250 V V_{g2} = 275 V R_k = 175 Ω V_{g3} = 0 V	I_a = 72 I_{g2} = 8	S = 8.5 mA/V R_i = 22 kΩ R_a = 3.5 kΩ W_o = 9.2 W W_a = max. 18 W	 P
Class AB push-pull amplifier		V_{ba} = 425 V V_{bg2} = 425 V R_{g2} = 2 kΩ R_k = 265 Ω V_{g3} = 0 V	$I_{a\min}$ = 2 × 46 $I_{a\max}$ = 2 × 60 $I_{g2\min}$ = 2 × 5.4 $I_{g2\max}$ = 2 × 13	R_{aa} = 6.5 kΩ W_o = 27.5 W d_t = 5%	 Octal
4682 Output pentode Class B	V_f = 4 V I_f = 1.1 A	V_a = 275 V V_{g2} = 250 V V_{g1} = —32 V	$I_{a\min}$ = 2 × 20 $I_{a\max}$ = 2 × 45 $I_{g2\min}$ = 2 × 3 $I_{g2\max}$ = 2 × 5.5	R_{aa} = 9 kΩ W_o = 19 W W_a = max. 9 W	 P
4688	V_f = 4 V I_f = 2 A	See 4689 (except for heater rating)			
4689 Output pentode Class AB push-pull amplifier	V_f = 6.3 V I_f = 1.35 A	V_a = 375 V V_{g2} = 275 V R_k[1]) = 165 Ω	$I_{a\min}$ = 2 × 48 $I_{a\max}$ = 2 × 62 $I_{g2\min}$ = 2 × 5 $I_{g2\max}$ = 2 × 9	R_{aa} = 6.5 kΩ W_o = 28.5 W W_a = max. 18 W	 P
4694 Output pentode Class AB push-pull amplifier	V_f = 6.3 V I_f = 0.9 A	V_a = 375 V V_{g2} = 250 V R_k[1]) = 145 Ω	$I_{a\min}$ = 2 × 24 $I_{a\max}$ = 2 × 30 $I_{g2\min}$ = 2 × 2.5 $I_{g2\max}$ = 2 × 5	R_{aa} = 13 kΩ W_o = 12 W W_a = max. 9 W	 P

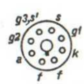
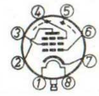
1) Common cathode bias resistor

4699 N Output pentode Class A final amplifier	V_f = 6.3 V I_f = 1.5 A	V_a = 250 V V_{g2} = 250 V R_k = 90 Ω	I_a = 72 I_{g2} = 8	S = 14.5 mA/V R_i = 20 kΩ R_a = 3.5 kΩ W_o = 8 W W_a = max. 18 W	 P 
5672 A.F. power amplifier Typical characteristics class A	V_f = 1.25 V I_f = 50 mA	V_a = 67.5 V V_{g2} = 67.5 V V_{g1} = —6.5 V	I_a = 3.1 I_{g2} = 0.95	S = 0.65 mA/V R_a = 20 kΩ W_o = 65 mW d_{tot} = 10%	  Subminiature
5678 R.F., M.F. or A.F. ampl.	V_f = 1.25 V I_f = 50 mA	V_a = 67.5 V V_{g2} = 67.5 V V_{g1} = 0 V	I_a = 1.8 I_{g2} = 0.48	S = 1.1 mA/V R_i = 1 MΩ	  Subminiature
Typical characteristics		V_a = 45 V V_{g2} = 45 V V_{g1} = 0 V	I_a = 0.8 I_{g2} = 0.22	S = 0.82 mA/V R_i = 1.2 MΩ	
6080 Double low μ triode Typical characteristics (each section)	V_f = 6.3 V I_f = 2.5 A	V_a = 100 V R_k = 300 Ω	I_a = 100	S = 6.5 mA/V R_i = 300 Ω μ = 2 W_a = max. 13 W	 Octal 

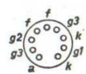
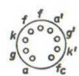
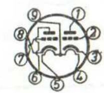
SPECIAL A.F. AND R.F. AMPLIFYING TUBES

RELIABLE LONG LIFE TUBES

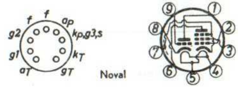
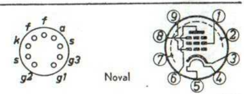
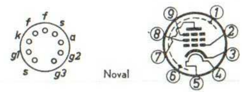
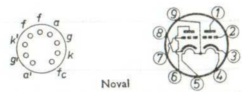
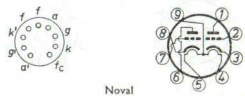
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
C3m Pentode Final amplifier	V_f = 20 V I_f = 0.125 A	V_{ba} = 225 V V_{bg2} = 155 V V_{g3} = 0 V R_k = 250 Ω	I_a = 16 I_{g2} = 3	S = 6.5 mA/V R_i = 250 kΩ μ_{g2g1} = 19 R_a = 10 kΩ d_{tot} = 10% W_o ≐ 1.5 W	 Loctal
D3a Pentode Typical charact.	V_f = 6.3 V I_f = 0.315 A	V_{ba} = 190 V V_{bg2} = 160 V V_{bg1} = +10 V R_k = 400 Ω V_{g3} = 0 V	I_a = 22 I_{g2} = 6	S = 35 mA/V R_i = 120 kΩ μ_{g2g1} = 80 R_{eq} = 150 Ω	 Noval
E81L Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.375 A	V_a = 210 V V_{g3} = 0 V V_{g2} = 210 V R_k = 120 Ω	I_a = 20 I_{g2} = 5.3	S = 11 mA/V R_a = 15 kΩ W_o = 1 W d_{tot} = 5% W_a = max. 4.5 W	 Noval
E83F Pentode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 210 V V_{g2} = 120 V R_k = 165 Ω V_{g3} = 0 V	I_a = 10 I_{g2} = 2.1	S = 9 mA/V R_i = 0.5 MΩ R_{eq} = 750 Ω μ_{g2g1} = 38	 Noval
Class A final amplifier		V_{ba} = 210 V V_{bg2} = 120 V R_{g2} = 5.6 kΩ R_k = 180 Ω V_{g3} = 0 V	I_a = 8.3 I_{g2} = 1.7	S = 8.2 mA/V R_i = 0.44 MΩ R_a = 20 kΩ W_o = 0.87 W W_a = max. 2.1 W	
EL360 Output pentode Typical charact.	V_f = 6.3 V I_f = 1.27 A	V_a = 250 V V_{g2} = 250 V V_{g1} = −46 V	I_a = 48 I_{g2} = 5.5	S = 6.9 mA/V R_i = 13.5 kΩ μ_{g2g1} = 5	 Octal

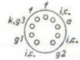
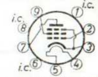
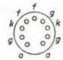
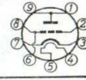
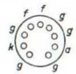
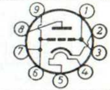
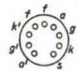
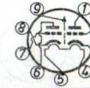
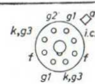
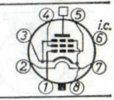
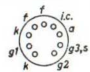
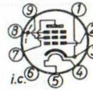
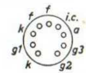
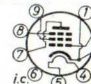
18040 Pentode Final amplifier	V_f = 18 V I_f = 0.20 A	V_a = 210 V V_{g2} = 210 V R_k = 120 Ω V_{g3} = 0 V	I_a = 20 I_{g2} = 5.3	S = 11 mA/V R_i = 0.3 MΩ R_a = 15 kΩ W_o = 1 W d_{tot} = 5% W_a = max. 4.5 W		Loctal 
18042	V_f = 18 V I_f = 0.1 A	See E83F (except for heater rating)				
18045	V_f = 18 V I_f = 0.130 A	See E81L (except for heater rating)				

RELIABLE, RUGGEDIZED AND LONG LIFE TUBES

E55L Wide band output pentode Typ. char. pentode	V_f = 6.3 V I_f = 0.6 A	V_a = 125 V V_{g2} = 125 V V_{g3} = 0 V V_{g1} = —3 V	I_a = 50 I_{g2} = 5.5	S = 45 mA/V R_i = 20 kΩ μ_{g2g1} = 30 W_a = max. 10 W		
Typ. char. as triode (a to g_2)		V_a = 125 V V_{g3} = 0 V V_{g1} = —3 V	I_a = 55.5	S = 50 mA/V μ = 30		Magnoval
E80CC Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.6 A V_f = 12.6 V I_f = 0.3 A	V_a = 250 V R_k = 920 Ω	I_a = 6	S = 2.7 mA/V R_i = 10 kΩ W_a = 2 W (abs. max.)		Noval 

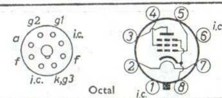
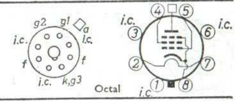
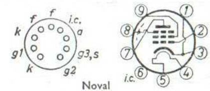
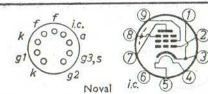
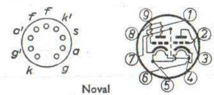
RELIABLE, RUGGEDIZED AND LONG LIFE TUBES

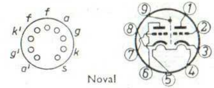
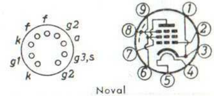
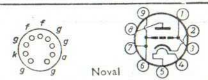
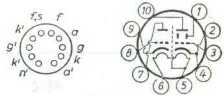
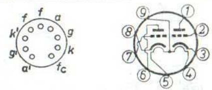
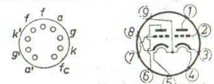
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
E80CF Triode-pentode Typ. char. pentode	$V_f = 6.3$ V $I_f = 0.33$ A	$V_a = 170$ V $V_{g2} = 170$ V $R_k = 155\ \Omega$	$I_a = 10$ $I_{g2} = 2.8$	$S = 6.2$ mA/V $R_i = 0.4$ MΩ $\mu_{g2g1} = 40$	 Noval
Typ. char. triode		$V_a = 100$ V $R_k = 120\ \Omega$	$I_a = 14$	$S = 5$ mA/V $\mu = 18$	
E80F A.F. pentode Typical characteristics	$V_f = 6.3$ V $I_f = 0.3$ A	$V_a = 250$ V $V_{g2} = 100$ V $R_k = 550\ \Omega$ $V_{g3} = 0$ V	$I_a = 3$ $I_{g2} = 0.65$	$S = 1.85$ mA/V $R_i = 1.5$ MΩ $\mu_{g2g1} = 25$	 Noval
E80L Output pentode Class A final amplifier	$V_f = 6.3$ V $I_f = 0.7$ A	$V_a = 200$ V $V_{g2} = 200$ V $R_k = 130\ \Omega$ $V_{g3} = 0$ V	$I_a = 30$ $I_{g2} = 4.1$	$S = 9.0$ mA/V $R_a = 7$ kΩ $W_o = 2.7$ W $W_a = 8$ W (abs. max.)	 Noval
E82CC Double triode Typical charact. (each section)	$V_f = 6.3$ V $I_f = 0.3$ A Pins 9-(4+5) $V_f = 12.6$ V $I_f = 0.15$ A Pins 4-5	$V_a = 250$ V $R_k = 800\ \Omega$	$I_a = 10.5$	$S = 2.2$ mA/V $R_i = 7.7$ kΩ $\mu = 17$	 Noval
E83CC Double triode Typical charact. (each section)	$V_f = 6.3$ V $I_f = 0.3$ A Pins 9-(4+5) $V_f = 12.6$ V $I_f = 0.15$ A Pins 4-5	$V_a = 250$ V $R_k = 1.6$ kΩ	$I_a = 1.25$	$S = 1.6$ mA/V $R_i = 62.5$ kΩ $\mu = 100$	 Noval

E84L Output pentode Typical charact.	$V_f = 6.3$ V $I_f = 0.76$ A	$V_a = 250$ V $V_{g2} = 250$ V $R_k = 135\ \Omega$	$I_a = 48$ $I_{g2} = 5.5$	$S = 11.3$ mA/V $R_i = 40$ kΩ $\mu_{g2g1} = 19$	 Noval	
E86C Triode Typical charact.	$V_f = 6.3$ V $I_f = 0.165$ A	$V_{ba} = 185$ V $R_k = 800\ \Omega$ $V_{bg} = +8$ V	$I_a = 12$	$S = 14$ mA/V $R_i = 4.85$ kΩ $\mu = 68$	 Noval	
E88C Triode Typical charact.	$V_f = 6.3$ V $I_f = 0.155$ A	$V_a = 160$ V $V_g = -1.25$ V	$I_a = 12.5$	$S = 13.5$ mA/V $R_i = 5.2$ kΩ $\mu = 70$ freq. = 850 Mc/s	 Noval	
E88CC Double triode Typical characteristics (each section)	$V_f = 6.3$ V $I_f = 0.3$ A	$V_{ba} = 100$ V $V_{bg} = +9$ V $R_k = 680\ \Omega$	$I_a = 15$	$S = 12.5$ mA/V $\mu = 33$ $R_{eq} = 300\ \Omega$	 Noval	
E130L Output pentode Typical charact.	$V_f = 6.3$ V $I_f = 1.7$ A	$V_a = 250$ V $V_{g2} = 150$ V $V_{g1} = -15.5$ V	$I_a = 100$ $I_{g2} = 4$	$S = 27.5$ mA/V $R_i = 10$ kΩ $\mu_{g2g1} = 6.5$ $W_a = 27.5$ W (abs. max.)	 Octal	
E180F Broadband amplifier pentode Typical characteristics	$V_f = 6.3$ V $I_f = 0.3$ A	$V_{ba} = 190$ V[1]) $V_{bg2} = 160$ V[1]) $V_{bg1} = +9$ V $R_k = 630\ \Omega$ $V_{g3} = 0$ V	$I_a = 13$ $I_{g2} = 3.3$	$S = 16.5$ mA/V $R_i = 90$ kΩ $\mu_{g2g1} = 50$ $R_{eq} = 300\ \Omega$	 Noval	
E186F Broadband amplifier Low micr. Typical charact.	$V_f = 6.3$ V $I_f = 0.32$ A	$V_{ba} = 190$ V[1]) $V_{bg2} = 160$ V[1]) $V_{bg1} = +9$ V $R_k = 630\ \Omega$ $V_{g3} = 0$ V	$I_a = 13$ $I_{g2} = 3.3$	$S = 16.5$ mA/V $R_i = 100$ kΩ $\mu_{g2g1} = 53$ $R_{eq} = 330\ \Omega$	 Noval	

1) V_{ba} and V_{bg2} measured with respect to the grounded terminal of R_k

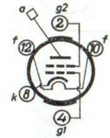
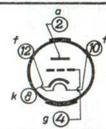
RELIABLE, RUGGEDIZED AND LONG LIFE TUBES

Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
E188CC Double triode	$V_f = 6.3$ V $I_f = 0.335$ A	See E88CC (except for heater rating)			
E235L Output pentode Typical charact.	$V_f = 6.3$ V $I_f = 1.2$ A	$V_a = 100$ V $V_{g2} = 100$ V $R_k = 75\ \Omega$	$I_a = 100$ $I_{g2} = 5.2$	$S = 14$ mA/V $R_i = 5$ kΩ $\mu_{g2g1} = 5.6$	 Octal
E236L Output pentode Typical charact.	$V_f = 6.3$ V $I_f = 1.2$ A	$V_a = 100$ V $V_{g2} = 100$ V $R_k = 75\ \Omega$	$I_a = 100$ $I_{g2} = 5.2$	$S = 14$ mA/V $R_i = 5$ kΩ $\mu_{g2g1} = 5.6$	 Octal
E280F Pentode Typical charact.	$V_f = 6.3$ V $I_f = 0.315$ A	$V_{ba} = 190$ V $V_{bg2} = 160$ V $V_{bg1} = +8$ V $R_k = 370\ \Omega$ $V_{g3} = 0$ V	$I_a = 20$ $I_{g2} = 6$	$S = 26$ mA/V $R_i = 100$ kΩ $\mu_{g2g1} = 60$ $R_{eq} = 220\ \Omega$	 Noval
E282F Pentode Typical charact.	$V_f = 6.3$ V $I_f = 0.35$ A	$V_{ba} = 125$ V $V_{bg2} = 125$ V $V_{bg1} = +12$ V $R_k = 300\ \Omega$ $V_{g3} = 0$ V	$I_a = 35$ $I_{g2} = 11$	$S = 26$ mA/V $\mu_{g2g1} = 27$ $R_{eq} = 200\ \Omega$	 Noval
E283CC Double triode Typical charact. (each section)	$V_f = 6.3$ V $I_f = 0.33$ A	$V_a = 250$ V $R_k = 1.6$ kΩ	$I_a = 1.25$	$S = 1.6$ mA/V $R_i = 62.5$ kΩ $\mu = 100$	 Noval

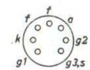
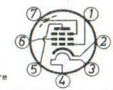
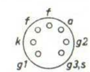
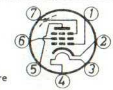
E288CC Double triode Typical charact. (each section)	$V_f = 6.3$ V $I_f = 0.475$ A	$V_{ba} = 100$ V $V_{bg} = +9$ V $R_k = 350\ \Omega$	$I_a = 30$	$S = 20$ mA/V $R_i = 1.25$ kΩ $\mu = 25$ $R_{eq} = 200\ \Omega$	 Noval
E810F Wide band amplifier pentode Typical charact.	$V_f = 6.3$ V $I_f = 0.34$ A	$V_{ba} = 135$ V1) $V_{bg2} = 165$ V1) $V_{bg1} = 12.5$ V $R_k = 360\ \Omega$ $V_{g3} = 0$ V	$I_a = 35$ $I_{g2} = 5$	$S = 50$ mA/V $\mu_{g2g1} = 57$ $R_{eq} = 110\ \Omega$	 Noval
EC8010 Triode Typical charact.	$V_f = 6.3$ V $I_f = 0.28$ A	$V_{ba} = 200$ V $R_a = 2.4$ kΩ $R_k = 47\ \Omega$	$I_a = 25$ $I_{k\max} = 35$	$S = 28$ mA/V $\mu = 60$ $W_a =$ max. 4.5 W	 Noval
ECC2000 Double triode Input system	$V_f = 6.3$ V $I_f = 0.335$ A	$V_a' = 90$ V $V_g' = -1.25$ V $V_{sn}' = 0$ V	$I_a' = 27$	$S' = 16.5$ mA/V $\mu' = 28$ $R_{eq}' = 225\ \Omega$	 Miniature
Output system		$V_a = 90$ V $V_g = -1.25$ V	$I_a = 27$	$S = 22$ mA/V $\mu = 22$ $R_{eq} = 150\ \Omega$	
5751 Double triode Typical charact. (each section)	$V_f = 6.3$ V $I_f = 0.35$ A Pins 9-(4+5) $V_f = 12.6$ V $I_f = 0.175$ A Pins 4-5	$V_{ba} = 250$ V $R_k = 3$ kΩ $V_{bg} = 0$ V	$I_a = 1$	$S = 1.2$ mA/V $R_i = 58$ kΩ $\mu = 70$	 Noval
5814A Double triode Typical charact. (each section)	$V_f = 6.3$ V $I_f = 0.35$ A Pins 9-(4+5) $V_f = 12.6$ V $I_f = 0.175$ A Pins 4-5	$V_{ba} = 250$ V $R_k = 800\ \Omega$ $V_{bg} = 0$ V	$I_a = 10.5$	$S = 2.2$ mA/V $R_i = 7.7$ kΩ $\mu = 17$	 Noval

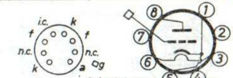
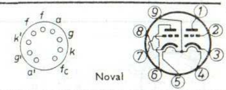
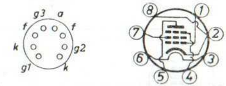
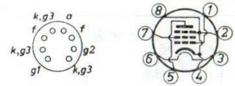
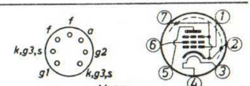
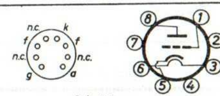
1) V_{ba} and V_{bg2} measured with respect to the grounded terminal of R_k

RELIABLE, RUGGEDIZED AND LONG LIFE TUBES

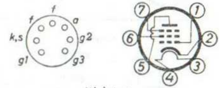
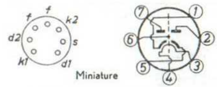
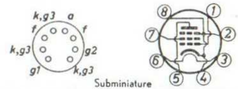
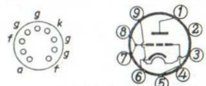
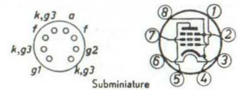
Type and Application	Filament data	Voltages · Resistances	Currents (mA)	Characteristic data	Base connections
7586 Nuvistor triode Typical charact.	V_f = 6.3 V I_f = 0.135 A	V_{ba} = 75 V V_{bg} = 0 V R_k = 100 Ω	I_a = 10.5	S = 11.5 mA/V R_i = 3 kΩ μ = 35	 **7586**
		V_g = —7 V	I_a = 0.01		
7587 Nuvistor tetrode Typical charact.	V_f = 6.3 V I_f = 0.15 A	V_{ba} = 125 V V_{bg2} = 50 V V_{bg1} = 0 V R_k = 68 Ω	I_a = 10 I_{g2} = 2.7	S = 10.6 mA/V R_i = 200 Ω	 **7587**
		V_{g1} = —45 V	I_a = 0.01		
7895 Nuvistor triode Typical charact.	V_f = 6.3 V I_f = 0.135 A	V_{ba} = 110 V V_{bg} = 0 V R_k = 150 Ω	I_a = 7	S = 9.4 mA/V R_i = 6.8 kΩ μ = 64	
		V_g = —4 V	I_a = 0.01		

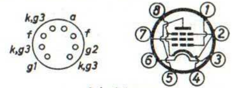
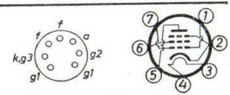
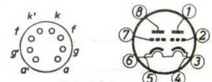
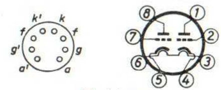
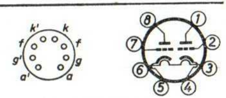
RELIABLE, RUGGEDIZED TUBES

Type and Application	Filament data	Voltages · Resistances	Currents (mA)	Characteristic data	Base connections
E90F Sharp cut-off pentode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_{ba} = 250 V V_{bg2} = 150 V V_{g3} = 0 V R_k = 100 Ω	I_a = 7.4 I_{g2} = 2.9	S = 4.6 mA/V R_i = 1.0 MΩ μ_{g2g1} = 48	 Miniature 
E99F Var. slope H.F. pentode Typical characteristics	V_f = 6.3 V I_f = 0.15 A	V_{ba} = 250 V V_{bg2} = 100 V V_{g3} = 0 V R_k = 80 Ω	I_a = 9.2 I_{g2} = 3.3	S = 3.8 mA/V R_i = 1 MΩ μ_{g2g1} = 25	 Miniature 

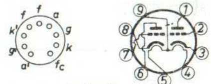
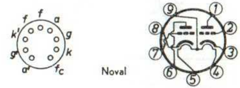
EC1000 Triode Typical charact.	V_f = 6.3 V I_f = 0.185 A	V_a = 80 V V_g = —2 V	I_a = 14	S = 14.5 mA/V μ = 27.5 freq. = 400 Mc/s	 Subminiature
12AX7S Double triode Typ. char. (each section)	V_f = 6.3 V | 12.6 V I_f = 0.3 A | 0.15 A Pins 9-(4+5) | 4-5	V_{ba} = 250 V V_{bg} = —2 V	I_a = 1.2	S = 1.6 mA/V R_i = 62.5 kΩ μ = 100	 Noval
5636 Sharp cut-off pentode Typical charact.	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_{g2} = 100 V V_{g3} = 0/—1 V R_k = 150 Ω	I_a = 5.3/4 I_{g2} = 4/5.8	S_{g1} = 3.2/1.95 mA/V S_{g3} = 0.5/0.95 mA/V R_i = 110/50 kΩ	 Subminiature
		V_{g1} = —7.5 V V_{g3} = —8 V	I_a = 0.01 I_a = 0.01		
5639 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.45 A	V_a = 150 V V_{g2} = 100 V R_k = 100 Ω	I_a = 21 I_{g2} = 4	S = 9 mA/V R_i = 50 kΩ $R_{a\sim}$ = 9 kΩ W_o = 1 W W_a = max. 4 W	 Subminiature
5654 Sharp cut-off pentode Typical characteristics	V_f = 6.3 V I_f = 0.175 A	V_{ba} = 120 V V_{bg2} = 120 V R_k = 200 Ω	I_a = 7.5 I_{g2} = 2.5	S = 5 mA/V R_i = 0.34 MΩ	 Miniature
		V_{g1} = —8.5 V	I_a = 0.01		
5719 High mu triode Typical charact.	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V R_k = 1500 Ω	I_a = 0.73	S = 1.7 mA/V μ = 70	 Subminiature
		V_a = 150 V R_k = 680 Ω	I_a = 1.85	S = 2.3 mA/V μ = 70	

RELIABLE, RUGGEDIZED TUBES

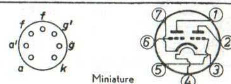
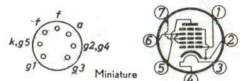
Type and Application	Filament data	Voltages Resistances	Currents (mA)	Characteristic data	Base connections
5725 Sharp cut-off pentode Typical charact.	V_f = 6.3 V I_f = 0.175 A	V_a = 120 V V_{g2} = 120 V V_{g3} = 0 V V_{g1} = —2 V	I_a = 5.2 I_{g2} = 3.5	S = 3.2 mA/V R_i = 150 kΩ	 Miniature
5726 Reliable double diode	V_f = 6.3 V I_f = 0.3 A	V_{tr} = 117 V	I_o = 9	R_t = 300 Ω C = 8 μF	 Miniature
Half-wave rectifier (each section)		V_{dinvp} = max. 360 V	I_d = max. 10 I_{dp} = max. 60		
5840 R.F. Pentode 8-lead sub-miniature	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_{g2} = 100 V R_k = 150 Ω	I_a = 7.5 I_{g2} = 2.4	S = 5 mA/V R_i = 230 kΩ	 Subminiature
5842 Grounded-grid triode Typical charact.	V_f = 6.3 V I_f = 0.3 A	V_{ba} = 150 V R_k = 60 Ω	I_a = 26	S = 24 mA/V μ = 50	 Noval
5899 Semi-remote cut-off pentode	V_f = 6.3 V I_f = 0.15 A	V_a = 100 V V_{g2} = 100 V R_k = 120 Ω	I_a = 7.2 I_{g2} = 2	S = 4.5 mA/V R_i = 260 kΩ	 Subminiature

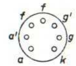
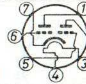
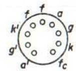
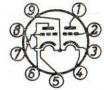
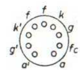
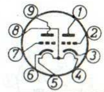
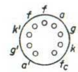
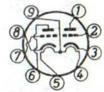
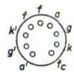
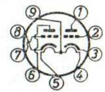
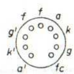
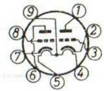
5902 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.45 A	V_{ba} = 110 V V_{bg2} = 110 V R_k = 270 Ω	I_a = 30 I_{g2} = 2.2	S = 4.2 mA/V R_i = 15 kΩ R_a = 3 kΩ W_o = 1 W W_a = 4 W (abs. max.)		Subminiature
6005 Output pentode Class A final amplifier	V_f = 6.3 V I_f = 0.45 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —12.5 V	I_a = 45 I_{g2} = 4.5	S = 4.1 mA/V R_i = 52 kΩ R_a = 5 kΩ W_o = 4.5 W W_a = max. 12 W		Miniature
6021 Double triode Typical charact. (each section)	V_f = 6.3 V I_f = 0.3 A	V_a = 110 V R_k = 150 Ω	I_a = 6.5	S = 5.4 mA/V R_i = 6.5 kΩ		Subminiature
6111 Double triode Typical charact. (each section)	V_f = 6.3 V I_f = 0.3 A	V_a = 100 V R_k = 220 Ω	I_a = 8.5	S = 5 mA/V R_i = 4 kΩ μ = 20		Subminiature
6112 Double triode Typical charact. (each section)	V_f = 6.3 V I_f = 0.3 A	V_a = 100 V R_k = 1500 Ω	I_a = 0.8	S = 1.8 mA/V R_i = 38.8 kΩ μ = 70		Subminiature

RELIABLE, RUGGEDIZED TUBES

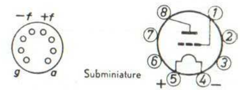
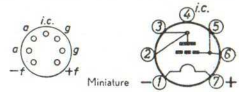
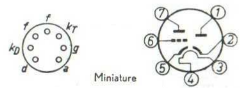
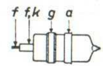
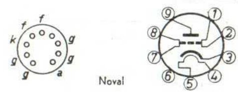
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
6189 Double triode	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5)	V_a = 100 V V_g = 0 V	I_a = 11.8	S = 3.2 mA/V μ = 20	 Noval
Typical charact. (each section)	V_f = 12.6 V I_f = 0.15 A Pins 4-5	V_a = 250 V V_g = —8.5 V	I_a = 10.5	S = 2.2 mA/V μ = 17	
6201 Double triode	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5)	V_{ba} = 100 V R_k = 270 Ω	I_a = 3.3	S = 4 mA/V R_i = 14.3 kΩ	 Noval
Typical characteristics (each section)	V_f = 12.6 V I_f = 0.15 A Pins 4-5	V_{ba} = 250 V R_k = 200 Ω	I_a = 10	S = 5.5 mA/V R_i = 10.9 kΩ	

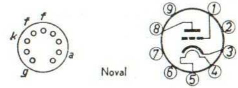
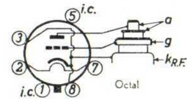
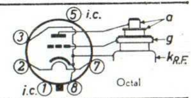
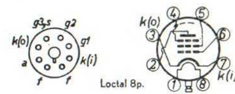
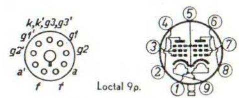
TUBES FOR COMPUTERS

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
DM160 Indicator mainly for use in transistorized computers	V_f = 1 V I_f = 30 mA	V_a = 50 V V_g = 0 V R_g = 100 kΩ	I_a = 0.585		 Subminiature
		V_g = —3 V	I_a = <0.005		
E90CC Double triode Typ. charact. (each section)	V_f = 6.3 V I_f = 0.4 A	V_a = 100 V V_g = —2.1 V	I_a = 8.5	S = 6 mA/V μ = 27	 Miniature
E91H Dual control heptode Typical characteristics	V_f = 6.3 V I_f = 0.27 A	V_{ba} = 150 V V_{bg2+g4} = 75 V V_{bg1} = 0 V V_{bg3} = 0 V	I_a > 5.5 I_a < 7	R_a = 20 kΩ R_{g2+g4} = 470 Ω R_{g1} = 47 kΩ R_{g3} = 47 kΩ	 Miniature

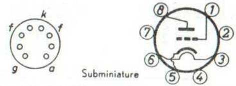
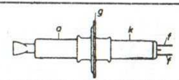
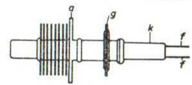
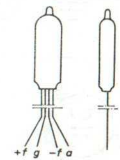
E92CC Double triode Typ. charact. (each section)	V_f = 6.3 V I_f = 0.4 A	V_a = 150 V V_g = —1.7 V	I_a = 8.5	S = 6 mA/V μ = 45	 	Miniature 
E180CC Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.4 A Pins 9-(4+5) V_f = 12.6 V I_f = 0.2 A Pins 4-5	V_a = 150 V V_g = —1.9 V	I_a = 8.5	S = 6.3 mA/V μ = 46	 	Noval 
E182CC Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.64 A Pins 8-(4+5) V_f = 12.6 V I_f = 0.32 A Pins 4-5	V_a = 120 V V_g = —2 V	I_a = 36	S = 15 mA/V μ = 24	 	Noval 
ECC186 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5) V_f = 12.6 V I_f = 0.15 A Pins 4-5	V_a = 100 V V_g = 0 V V_a = 250 V V_g = —8.5 V	I_a = 11.8 I_a = 10.5	S = 3.1 mA/V μ = 19.5 S = 2.2 mA/V μ = 17	 	Noval 
6211 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.3 A Pins 9-(4+5) V_f = 12.6 V I_f = 0.15 A Pins 4-5	V_a = 100 V R_k = 470 Ω	I_a = 4.6	S = 3.6 mA/V μ = 28	 	Noval 
6463 Double triode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.6 A Pins 9-(4+5) V_f = 12.6 V I_f = 0.3 A Pins 4-5	V_a = 250 V R_k = 620 Ω	I_a = 14.5	S = 5.2 mA/V μ = 20	 	Noval 

S.H.F., U.H.F. AND V.H.F. TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
DC70 Triode Typ. char.	V_f = 1.25 V I_f = 0.2 A	V_a = 150 V V_g = —4.5 V	I_a = 12	S = 3.4 mA/V R_i = 4 kΩ W_a = max. 2.4 W	 Subminiature
Oscillator		V_a = 150 V	I_k = 20	freq. = 500 Mc/s W_o = 0.45 W	
DC90 Triode Typ. char.	V_f = 1.4 V I_f = 50 mA	V_a = 90 V V_g = —3 V	I_a = 3	S = 1.1 mA/V μ = 11.5	 Miniature
Frequency changer		V_a = 90 V V_{osc} = 5.5 V	I_g = 0.006	R_g = 1 MΩ r_g (f = 100 Mc/s) = 12 kΩ	
EAC91 Diode triode Typical characteristics	V_f = 6.3 V I_f = 0.3 A	V_a = 200 V V_g = —4 V	I_a = 5.5	S = 2.5 mA/V R_i = 12.4 kΩ freq. = max. 300 Mc/s	 Miniature
EC55 Disc seal triode Typical characteristics	V_f = 6.3 V I_f = 0.4 A	V_a = 250 V V_g = —3.5 V	I_a = 20	S = 6 mA/V μ = 30 freq. = max. 3000 Mc/s	
EC80 Grounded-grid triode Typical characteristics	V_f = 6.3 V I_f = 0.48 A	V_a = 250 V V_g = —1.5 V	I_a = 15	S = 12 mA/V μ = 80 freq. = max. 500 Mc/s	 Noval

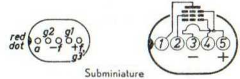
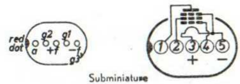
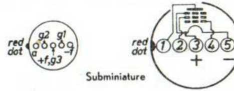
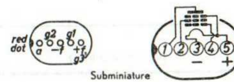
EC81 Oscillator triode Typical characteristics	V_f = 6.3 V I_f = 0.175 A	V_a = 150 V V_g = —2 V	I_a = 30	S = 5.5 mA/V μ = 16 freq. = max. 750 Mc/s	
EC157 Disc seal triode Typical characteristics	V_f = 6.3 V I_f = 0.75 A	V_a = 180 V V_g = —1.25 V	I_a = 60 $I_{k\max.}$ = 70	S = 21 mA/V μ = 43 freq. = 4000 Mc/s	
		V_a = 180 V V_g = —2.8 V	I_a = 30	S = 18 mA/V μ = 43	
EC158 Disc seal triode Typical charact.	V_f = 6.3 V I_f = 0.9 A	V_a = 180 V V_g = —3.5 V	I_a = 60 $I_{k\max.}$ = 170	S = 22 mA/V μ = 30 freq. = 4000 Mc/s	
EF51 Variable mu pentode Typical characteristics	V_f = 6.3 V I_f = 0.35 A	V_a = 250 V V_{g2} = 250 V V_{g1} = —2 V V_{g3} = 0 V	I_a = 14 I_{g2} = 2.6	S = 9.5 mA/V R_i = 0.5 MΩ R_{eq} = 1 kΩ C_{ag1} < 7 mpF	
EFF51 Double pentode Typical characteristics (each section)	V_f = 6.3 V I_f = 0.75 A	V_a = 250 V V_{g2} = 200 V V_{g1} = —2 V	I_a = 6 I_{g2} = 1.2	S = 7.5 mA/V R_i = 0.35 MΩ R_{eq} = 800 Ω C_{ag1} < 0.04 pF freq. = max. 500 Mc/s	

S.H.F., U.H.F. AND V.H.F. TUBES

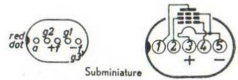
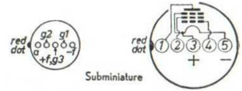
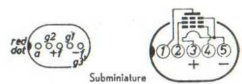
Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
5718 Medium mu triode 8-lead sub-miniature	V_f = 6.3 V I_f = 0.15 A	V_a = 150 V R_k = 180 Ω	I_a = 13	S = 6.5 mA/V R_i = 4.2 kΩ freq. = max. 1000 Mc/s	
5876(A) [1] Pencil type High-mu triode	V_f = 6.3 V I_f = 0.135 A	V_a = 250 V R_k = 75 Ω	I_a = 18	S = 6.5 mA/V μ = 56 freq. = max. 1700 Mc/s	
6263(A) [1] Pencil type Medium-mu triode Typical charact.	V_f = 6.3 V I_f(at V_f = 6.0 V) = 0.28 A	V_a = 200 V R_k = 110 Ω	I_a = 27	S = 7 mA/V μ = 27 freq. = max. 1700 Mc/s	
6264(A) [1] Pencil type Medium-mu triode Typical charact.	V_f = 6.3 V I_f (at V_f = 6.0 V) = 0.28 A	V_a = 200 V R_k = 80 Ω	I_a = 18.5	S = 6.8 mA/V μ = 40 freq. = max. 1700 Mc/s	
6286 Triode Typical charact.	V_f = 1.25 V I_f = 0.12 A	V_a = 67.5 V V_g = —2 V	I_a = 6 mA	S = 2.1 mA/V μ = 11.5	Subminiature 

1) Letter A indicates ruggedized version.

HEARING-AID TUBES

DF64 Pentode Typ. char.	$V_f = 0.625$ V $I_f = 10$ mA	$V_a = 15$ V $V_{g2} = 15$ V $V_{g1} = -0.62$ V	$I_a = 0.06$ $I_{g2} = 0.02$	$S = 0.1$ mA/V $R_i = 1$ MΩ $\mu_{g2g1} = 7.5$	 Subminiature
A.F. amplifier		$V_b = 15$ V $R_a = 2.2$ MΩ $R_{g2} = 4.5$ MΩ $V_{g1} = 0$ V $R_{g1} = 10$ MΩ $R_{g1}' = 5$ MΩ	$I_k = 0.0064$	$g = 25$	
DF66 Pentode Typical characteristics	$V_f = 0.625$ V $I_f = 15$ mA	$V_a = 22.5$ V $V_{g2} = 22.5$ V $V_{g1} = -1.05$ V	$I_a = 0.05$ $I_{g2} = 0.015$	$S = 0.1$ mA/V $R_i > 2$ MΩ $\mu_{g2g1} = 11.5$	 Subminiature
DF67 Pentode Typical characteristics	$V_f = 0.625$ V $I_f = 13.3$ mA	$V_a = 22.5$ V $V_{g2} = 18$ V $V_{g1} = -1.15$ V	$I_a = 0.05$ $I_{g2} = 0.01$	$S = 0.1$ mA/V $R_i = 4$ MΩ $\mu_{g2g1} = 8.7$	 Subminiature
A.F. amplifier		$V_b = 22.5$ V $R_a = 1$ MΩ $R_{g2} = 3.9$ MΩ $V_{g1} = 0$ V $R_{g1} = 10$ MΩ $R_{g1} = 5$ MΩ	$I_a = 0.0117$ $I_{g2} = 0.0025$	$g = 31$	
DL64 Output pentode Class A final amplifier	$V_f = 1.25$ V $I_f = 10$ mA	$V_b = 15$ V $V_{g2} = 15$ V $V_{g1} = -1.5$ V	$I_a = 0.16$ $I_{g2} = 0.04$	$S = 0.18$ mA/V $R_i = 0.4$ MΩ $R_a = 100$ kΩ $W_o = 0.95$ mW	 Subminiature

HEARING-AID TUBES

Type and Application	*Filament data*	*Voltages Resistances*	*Currents (mA)*	*Characteristic data*	*Base connections*
DL66 Output pentode Class A final amplifier	V_f = 1.25 V I_f = 15 mA	V_b = 22.5 V V_{g2} = 22.5 V V_{g1} = —1.4 V	I_a = 0.30 I_{g2} = 0.075	S = 0.35 mA/V R_i = 0.3 MΩ R_a = 75 kΩ W_o = 2.7 mW	
		V_b = 45 V V_{g2} = 45 V V_{g1} = —3 V	I_a = 0.90 I_{g2} = 0.2	R_a = 50 kΩ W_o = 16.5 mW	
DL67 Output pentode Class A final amplifier	V_f = 1.25 V I_f = 13 mA	V_a = 22.5 V V_{g2} = 22.5 V V_{g1} = —0.2 V	I_a = 0.475 I_{g2} = 0.1	S = 0.42 mA/V R_i = 0.4 MΩ μ_{g2g1} = 9	
		V_b = V_{g2} = 22.5 V R_{g1} = 3 MΩ R_k = 4 kΩ	I_a = 0.19 I_{g2} = 0.07	R_a = 0.1 MΩ W_o = 1.6 mW W_a = max. 25 mW	
DL68 Output pentode Class A final amplifier	V_f = 1.25 V I_f = 25 mA	V_b = 22.5 V V_{g2} = 22.5 V V_{g1} = —2.2 V	I_a = 0.6 I_{g2} = 0.15	S = 0.43 mA/V R_i = 0.1 MΩ R_a = 37.5 kΩ W_o = 5 mW W_a = max. 100 mW	

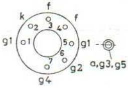
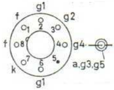
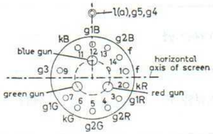
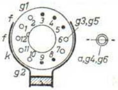
CATHODE-RAY TUBES

TELEVISION PICTURE TUBES

PICTURE TUBES

<table>
<tr><th rowspan="2">Type</th><th colspan="3">Rectangular screen
minimum (mm)</th><th>Deflection system</th><th colspan="2">Heater</th><th colspan="2">Operating charact.</th></tr>
<tr><th>Useful diag.</th><th>Useful width</th><th>Useful height</th><th>Double magnetic</th><th>V_f (V)</th><th>I_f (A)</th><th>V_{g4} (V)</th><th>V_{g3} (V)</th></tr>
<tr><td>A28-13W</td><td>262</td><td>228</td><td>171</td><td></td><td>11</td><td>0.068</td><td>0—350</td><td>11000</td></tr>
<tr><td>A47-11W</td><td>446</td><td>384</td><td>305</td><td rowspan="4"></td><td rowspan="4">6.3</td><td rowspan="4">0.3</td><td rowspan="4">0—400</td><td rowspan="4">18000</td></tr>
<tr><td>A59-11W</td><td>566</td><td>489</td><td>385</td></tr>
<tr><td>A59-16W</td><td>566</td><td>490.5</td><td>387.5</td></tr>
<tr><td>A65-11W</td><td>616.5</td><td>530</td><td>416</td></tr>
<tr><td>A63-11X[2]</td><td>585</td><td>504</td><td>395</td><td></td><td>6.3</td><td>0.9</td><td>25000</td><td>4200 to 5000</td></tr>
<tr><td rowspan="2">AW36-80</td><td rowspan="2">330</td><td rowspan="2">306.5</td><td rowspan="2">241</td><td rowspan="4">With ion trap type 55402</td><td rowspan="2">6.3</td><td rowspan="2">0.3</td><td>10000</td><td>—100/ +200</td></tr>
<tr><td>12000</td><td>—70/ +230</td></tr>
<tr><td>AW43-80</td><td>390</td><td>362</td><td>273</td><td rowspan="2">6.3</td><td rowspan="2">0.3</td><td>14000</td><td>—103/ +203</td></tr>
<tr><td>AW53-80</td><td>511</td><td>482</td><td>378</td><td>16000</td><td>—75/ +235</td></tr>
</table>

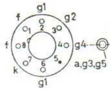
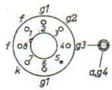
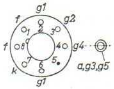
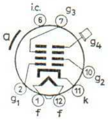
[1]) Grid voltage for visual cut-off   [2]) Colour tube

Operating characteristics		*Capac-itances*	*Overall length*		*Base connections*
V_{g2} (V)	$-V_{g1}$[1]) (V)	C_{g1} (pF)	max. (mm)	min (mm)	
250	35—69	7	250	240	
400	40—77	6	309	296	
			366	350	
500	50—93		375	356	
			391	375	
210 to 495	70 to 140	7	530	511	
300	40—80	7	368.5	352.5	
300	40—80	7	407	387	
			492	472	

PICTURE TUBES

<table>
<tr><th rowspan="2">Type</th><th colspan="3">Rectangular screen
minimum (mm)</th><th>Deflection system</th><th colspan="2">Heater</th><th colspan="2">Operating charact.</th></tr>
<tr><th>Useful diag.</th><th>Useful width</th><th>Useful height</th><th>Double magnetic</th><th>V_f (V)</th><th>I_f (A)</th><th>V_{g4} (V)</th><th>V_{g3} (V)</th></tr>
<tr><td>AW43-88</td><td>400</td><td>374.5</td><td>295</td><td rowspan="3">Without ion trap</td><td rowspan="3">6.3</td><td rowspan="3">0.3</td><td rowspan="3">4—400</td><td rowspan="3">16000</td></tr>
<tr><td>AW53-88</td><td>514.5</td><td>484</td><td>382.5</td></tr>
<tr><td>AW61-88</td><td>579.5</td><td>544.5</td><td>428.5</td></tr>
<tr><td>AW43-89</td><td>400</td><td>374.5</td><td>295</td><td rowspan="2">Without ion trap</td><td rowspan="2">6.3</td><td rowspan="2">0.3</td><td rowspan="2">16000</td><td rowspan="2">0—400</td></tr>
<tr><td>AW53-89</td><td>514.5</td><td>484</td><td>382.5</td></tr>
<tr><td>AW47-91</td><td>446</td><td>384</td><td>305</td><td rowspan="3">Without ion trap</td><td rowspan="3">6.3</td><td rowspan="3">0.3</td><td rowspan="3">0—400</td><td>18000</td></tr>
<tr><td>AW59-90</td><td>566</td><td>489</td><td>385</td><td>16000</td></tr>
<tr><td>AW59-91</td><td>566</td><td>489</td><td>385</td><td>18000</td></tr>
<tr><td>MW36-44</td><td>318</td><td>288</td><td>217</td><td>With ion trap type 55402</td><td>6.3</td><td>0.3</td><td>12000</td><td>0—250</td></tr>
</table>

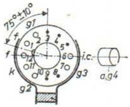
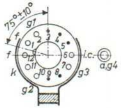
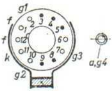
[1]) Grid voltage for visual cut-off

Operating characteristics		*Capacitances*	*Overall length*		*Base connections*
V_{g2} (V)	$-V_{g1}$ 1) (V)	C_{g1} (pF)	max. (mm)	min. (mm)	
300	30—72	6	325.5	312.5	
			381	365	
			411	395	
600	43—91	7	280.5	267.5	
			336	320	
400	40—77	6	309	296	
500	50—93				
300	30—72		386	370	
400	38—94				
400	40—77		366	350	
500	50—93				
250	33—72	7	433	413	

PICTURE TUBES

<table>
<tr><th rowspan="2">Type</th><th colspan="3">Rectangular screen
minimum (mm)</th><th>Deflection system</th><th colspan="2">Heater</th><th colspan="2">Operating charact.</th></tr>
<tr><th>Useful diag.</th><th>Useful width</th><th>Useful height</th><th>Double magnetic</th><th>V_f (V)</th><th>I_f (A)</th><th>V_{g4} (V)</th><th>V_{g3} (V)</th></tr>
<tr><td>MW43-69</td><td>390</td><td>362</td><td>273</td><td>With ion trap type 55402</td><td>6.3</td><td>0.3</td><td>14000</td><td>0—250</td></tr>
<tr><td>MW53-20</td><td>506</td><td>485</td><td>360</td><td rowspan="3">With ion trap type 55402</td><td rowspan="3">6.3</td><td rowspan="3">0.3</td><td rowspan="3">14000 to 16000</td><td rowspan="3">0—300</td></tr>
<tr><td>MW53-80</td><td>511</td><td>482</td><td>378</td></tr>
<tr><td>MW61-80</td><td>576.5</td><td>544.5</td><td>428.5</td></tr>
</table>

1) Grid voltage for visual cut-off

Operating characteristics		*Capac-itances*	*Overall length*		*Base connections*
V_{g2} (V)	$-V_{g1}$[1]) (V)	C_{g1} (pF)	*max.* (mm)	*min*	
300	40—86	7	495	475	
300	40—80	7	591	571	
			514	494	
			542.5	522.5	

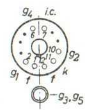
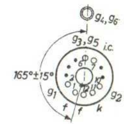
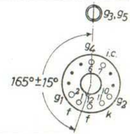
MONITOR TUBES

FLYING-SPOT SCANNERS

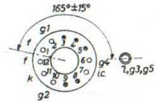
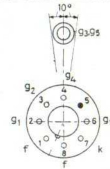
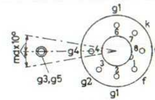
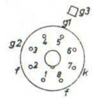
PROJECTION C.R. TUBES

CAMERA TUBES

MONITOR TUBES

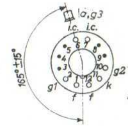
Type	Screen			Heater		Operating characteristics				Cap.	Overall length	Diam	Base connections
	Rectangular												
	Useful diag.	Useful width	Useful height	V_f (V)	I_f (A)	V_a	V_{g3}	V_{g2}	$-V_{g1}$[1]	C_{g1} (pF)	maximum (mm)		
	minimum (mm)					(V)							
AW 17-20	155	124	93	6.3	0.3	$V_{g4} =$ —200 to +200	12000	300	30—80	<8	346	144	
AW 21-80	195	180	135	6.3	0.3	$V_{g4,g6}$ = 9000	—30 to +200	400	40—80	<8	274	203	
AW 36-48	318	288	217	6.3	0.3	$V_{g4} =$ —200 to +200	14000	300	30—70	<8	455	319	

[1]) Grid voltage for visual cut-off

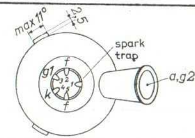
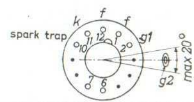
AW43-48	390	362	273	6.3	0.3	$V_{g4} =$ —200 to +200	16000	300	30—70	< 8	519	394	
M21-11W	195	180	135	11.5	0.06	$V_{g4} =$ 0-400	12000	400	32—69	< 9	221	202	
M21-12W	200	191	149	6.3	0.3	$V_{g4} =$ 0-400	16000	300	35—72	7	205	208	
M36-11W	330	306	241	11.5	0.06	$V_{g4} =$ 0-500	16000	600	43—98	< 9	330	335	
M36-13W	333	314	250	6.3	0.3	$V_{g4} =$ 0-400	16000	400	40—85	4	269	338	
MW13-35 View finder	Useful diameter min. 108 mm			6.3	0.3	7000	7000	300	30—70	< 10	287	127	

1) Grid voltage for visual cut-off

MONITOR TUBES

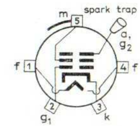
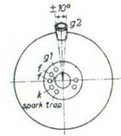
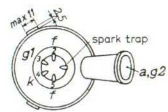
Type	Screen: Rectangular, Useful diag.	Useful width	Useful height	Heater V_f (V)	I_f (A)	Operating characteristics V_a	V_{g3}	V_{g2}	$-V_{g1}$[1]	Cap. C_{g1} (pF)	Overall length	Diam.	Base connections
	minimum (mm)					(V)					maximum (mm)		
MW36-67	318	288	217	6.3	0.3	14000	14000	300	30—70	<8	457	320	

FLYING SPOT SCANNERS

Type	Screen Round Useful diam. (mm)	Heater V_f (V)	I_f (A)	Operating characteristics $V_{a(l)}$ (V)	V_{g2} (V)	$-V_{g1}$[1] (V)	Capacitances C_g (pF)	Overall length	Diam.	Base connections
								maximum (mm)		
MC 6-16	57.5	6.3	0.3	25000	25000	40—90	6.3	278	65.5	
MC 13-16 **MK 13-16**	>108	6.3	0.3	25000	25000	50—100	6.5	347	130	

1) Grid voltage for visual cut-off

PROJECTION CATHODE-RAY TUBES

Type	Screen Round Useful diam. (mm)	Heater V_f (V)	Heater I_f (A)	Operating characteristics V_a (V)	Operating characteristics V_{g2} (V)	Operating characteristics $-V_{g1}$[1] (V)	Capacitances C_g (pF)	Overall length maximum (mm)	Face diam. maximum (mm)	Base connections
MG6-2 **MU6-2** **MW6-2** **MY6-2**	>55	6.3	0.3	25000	25000	40—90	6.3	268	65.5	
MG13-38 **MU13-38** **MW13-38** **MY13-38**	69×92 mm^2	6.3	0.3	50000	50000	100—170	<10	374	133	
MV6-5	>55	6.3	0.3	25000	25000	50—90	6.3	278	65.5	

[1]) Grid voltage for visual cut-off

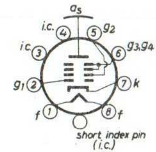
CAMERA TUBES

(vidicons)

Type	Applications	V_f (V)	I_f (mA)	Resolution TV lines	Focusing Deflection	Diameter (mm)	length (mm)	Base connections
55850	For use in black and white or colour TV cameras	6.3	90	600—900	magnetic	25.4	158	

The **55850** has 4 grades namely:

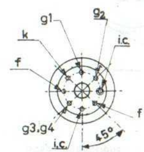
55850N : for normal industrial applications.
55850S : for industrial and broadcast applic. in which a higher picture quality is required.
55850SR : for use in X-ray medical equipment.
55850F : for use in film-scanners.



Type	Applications	V_f (V)	I_f (mA)	Resolution TV lines	Focusing Deflection	Diameter (mm)	length (mm)
55850AM	Low cost tube for experiments, amateur use, etc.	6.3	90	600—900	magnetic	25.4	158

(plumbicons)

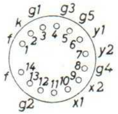
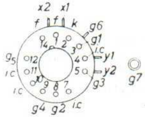
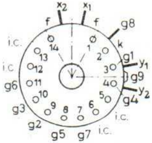
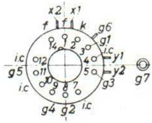
Type	Applications	V_f (V)	I_f (mA)	Resolution TV lines	Focusing Deflection	Diameter (mm)	length (mm)
55875	For use in black and white studio cameras	6.3	90	>600	magnetic	30	207.5
55875R **55875G** **55875B**	For use in colour studio cameras						
55876	For use with X-ray image intensifier in medical equipment						



INSTRUMENT CATHODE-RAY TUBES

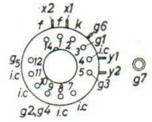
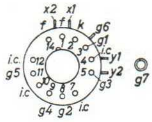
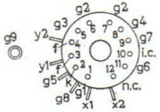
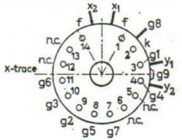
Type	Screen	Deflection system	Heater		Operating characteristics				
	Max. diam. (mm)	Double electro-static	V_f (V)	I_f (A)	V_{g7}	V_{g6}	V_{g5} (V)	V_{g4}	V_{g3}
D10-11BE **D10-11GH** **D10-11GM** **D10-11GP**	102	Symm.	6.3	0.09		4000	1000	1000	50—200
D10-12BE **D10-12GH** **D10-12GM** **D10-12GP**									
D13-15BE **D13-15GH** **D13-15GM** **D13-15GP**	134.5	Symm.	6.3	0.3	4000	2000	2000	2000	220—700
D13-16BE **D13-16GH** **D13-16GP**	134.5	Symm.	6.3	0.3	1670[2]	1670	1670	230/ 500	1670
D13-17BE **D13-17GH** **D13-17GP**									
D13-19BE **D13-19GH** **D13-19GM** **D13-19GP**	134.5	Symm.	6.3	0.3	10000	1670	1670	1670	320—500

[1]) Grid voltage for visual cut-off. [2]) V_{g8} = 1670 V; V_{g9} = 10000 V

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1]	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
1000	25—67	9.8	27.5	1.7	2	320	
2000	60—96	5.9	23	1.5	1.9	468	
1670	50—120	6 5	< 18	0.7	2.3	600	
1670	53—82	11	30	1	1.9	452	

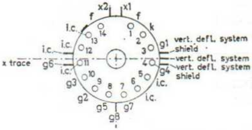
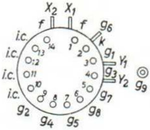
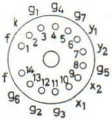
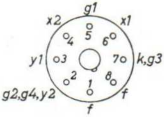
Type	Screen	Deflection system	Heater		Operating characteristics				
	Max. diam. (mm)	Double electro-static	V_f (V)	I_f (A)	V_{g7}	V_{g6}	V_{g5} (V)	V_{g4}	V_{g3}
D13-20BE	134.5	Symm.	6.3	0.3	24000	4000	4000	4000	770—1200
D13-21BE **D13-21GH** **D13-21GM** **D13-21GP**	134.5	Symm.	6.3	0.3	10000	1670	1670	1670	320—500
D13-22BE **D13-22GH** **D13-22GM** **D13-22GP**	138	Symm.	6.3	0.3	1500[3])	1500	1500	1500	250—500
D13-23GH	134.5	Symm.	6.3	0.3	1300[4])	1300	1300	180/ 390	1300

[1]) Grid voltage for visual cut-off. [3]) V_{g8} = —12 to —18 V with respect to V_{g7}; V_{g9} = 15000 V.
[4]) V_{g8} = 1300 V; V_{g9} = 6000 V

Oper. charact.		*Deflect. factor*		*Capacitances*		*Overall length*	*Base connections*
V_{g2}	$-V_{g1}$[1]	M_y	M_x	C_{y1y2}	C_{x1x2}	*max.*	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
4000	120—192	16	74	1.5	1.9	468	
1670	50—80	6.4	30	1.5	1.9	468	
1500	45—85	2.9	11	2.1	2.1	526	
1300	31—93		<14		2.3	600	

Type	*Screen*	*Deflection system*	*Heater*		*Operating characteristics*				
	Max. diam. (mm)	*Double electro-static*	V_f *(V)*	I_f *(A)*	V_{g7}	V_{g6}	V_{g5} *(V)*	V_{g4}	V_{g3}
D13-24BE	154	Symm. or asymm.	6.3	0.3	3000⁵)	3000	3000	400/ 900	3000
D13-26GH **D13-26GP**	134.5	Symm.	6.3	0.3	1500³)	1500	1500	1500	375—625
D13-27GH	134.5	Symm.	6.3	0.3	1500⁶)	1500	1500	300/ 550	1500
DH3-91	30	Sym-metrical or asymme-trical	6.3	0.55				500	

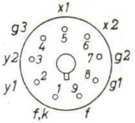
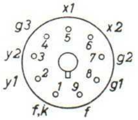
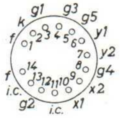
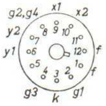
1) Grid voltage for visual cut-off
5) $V_{g8} = 3000$ V; $V_{g9} = 24000$ V
3) $V_{g8} =$ —12 to —18 V with respect to V_{g7}; $V_{g9} = 15000$ V.
6) $V_{g8} = 3000$ V.

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1]	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
3000	60—250	<8	<32		2.7	642	
1500	40—90	2.9	11	1.8	2.7	468	
1500	38—135	11.3	24	1.5	2.5	350	
500	8—27	45	52		1	105	

INSTRUMENT TUBES

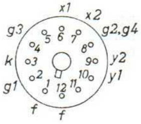
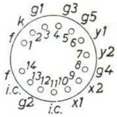
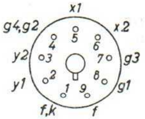
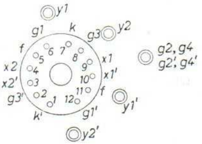
Type	Screen	Deflection system	Heater		Operating characteristics				
	Max. diam. (mm)	*Double electro-static*	V_f (V)	I_f (A)	V_{g7}	V_{g6}	V_{g5} (V)	V_{g4}	V_{g3}
DB DG4-1 DP	44	Sym- metrical	6.3	0.31					800
DB DG4-2 DP	44	x_1x_2 asymme- trical							
DB DG7-5 DP	71	Sym- metrical	6.3	0.31					800
DB DG7-6 DP	71	x_1x_2 Asymme- trical							
DB DH DN 7-11 DP	77.8	Sym- metrical	6.3	0.095		1200	300	300	20—150
DG7-31	71	x_1x_2 Asymme- trical	6.3	0.3				500	0—120
DG7-32		Symme- trical							

1) Grid voltage for visual cut-off

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1])	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
200—300	0—50	40	62	0.6 / 0.7	0.8 / 0.9	160	
200—300	0—50	40	62	0.6	0.8	160	
1200	30—80	3.7	11	1.7	1.9	285	
500	50—100	21	37	1	1.7	172	

Type	*Screen*	*Deflection system*	*Heater*		*Operating characteristics*				
	Max. diam. (mm)	*Double electro-static*	V_f *(V)*	I_f *(A)*	V_{g7}	V_{g6}	V_{g5} *(V)*	V_{g4}	V_{g3}
DB **DG7-36** **DN**	77.8	Sym-metrical	6.3	0.3				1500	247—397
DB **DH** 7-78 **DN** **DP**	77.8	Sym-metrical	6.3	0.3		1200	300	300	20—150
						4000	1000	1000	35—165
DH7-91	71	Symm. or asymm.	6.3	0.55				1000	210—320
DHM9-11	94	Sym-metrical	6.3	1.25				1500	330—470

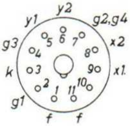
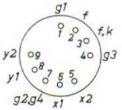
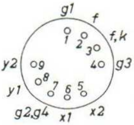
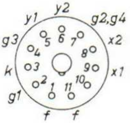
1) Grid voltage for visual cut-off

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1]	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
1500	40—80	19	27	1.7	1.9	296	
1200	36—72	3.7	11	1.6	1.7	296	
1000	30—60	12	35				
1000	28—65	12	20	2.2	1.8	257	
1500	42—95	16	23	1.6	2	310	

INSTRUMENT TUBES

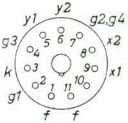
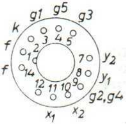
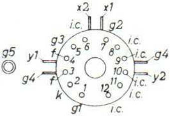
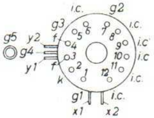
Type	*Screen*	*Deflection system*	*Heater*		*Operating characteristics*				
	Max. diam. (mm)	*Double electro-static*	V_f (V)	I_f (A)	V_{g7}	V_{g6}	V_{g5} (V)	V_{g4}	V_{g3}
DB **DG10-2** **DP**	97.5	Sym-metrical	6.3	0.3				2000	400—720
DB **DG** **10-3**	97.5	x_1x_2 Asymme-trical	4.0	0.56				1000	200—340
DB **DG** **10-5**	97.5	x_1x_2 Asymm. with accel-eration	4.0	0.56			1000 ——— 2500	1000	200—340
DB **DG10-6** **DP**	97.5	Symm. with accel-eration	6.3	0.3			2000 ——— 4000	2000	400—720

[1]) Grid voltage for visual cut-off

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1])	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
2000	45—100	28	37	1.9	2.5	341	
1000	18—46	15	18	1.9	2.6	344	
1000	18—46	$\frac{15}{27}$	$\frac{18}{31}$	1.9	2.6	344	
2000	45—100	$\frac{29}{36}$	$\frac{37}{45}$	1.9	2.5	341	

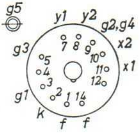
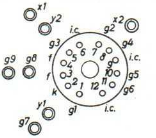
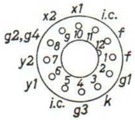
Type	*Screen*	*Deflection system*	*Heater*		*Operating characteristics*				
	Max. diam. (mm)	*Double electro-static*	V_f (V)	I_f (A)	V_{g7}	V_{g6}	V_{g5}	V_{g4}	V_{g3}
							(V)		
DB DG10-74 DP	97.5	Symm. with accel-eration	6.3	0.3			$\frac{2000}{4000}$	2000	400—720
DB DH DN DP 10-78	102	Sym-metrical	6.3	0.3		4000	1000	1000	150—350
DHM 10-93	108	Symm. or asymm.	6.3	0.55			3000	1500	320—420
DB DH10-94 DP	108	Sym-metrical	6.3	0.55			4000	2000	460—530

[1]) Grid voltage for visual cut-off

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1])	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
2000	45—100	29/36	37/45	1.9	2.5	341	
1000	22.5—37.5	11	34	1.7	2.1	305	
1500	40—95	27	27	< 0.1	< 2	393	
2000	28—60	23	37	1.5	1.6	392	

Type	Screen	Deflection system	Heater		Operating characteristics				
	Max. diam. (mm)	Double electro-static	V_f (V)	I_f (A)	V_{g7}	V_{g6}	V_{g5} (V)	V_{g4}	V_{g3}
DB DG13-2 DP	135	Symm. with accel-eration	6.3	0.3			2000 ——— 4000	2000	400—720
DB DH13-10 DN	137	Symm. or asymm.	6.3	0.55	[2] [3]	[2]	[2]	1500	200—500
DB13-11	See D13-20BE								
DG13-32	135.4	Sym-metrical	6.3	0.6				2000	340—640

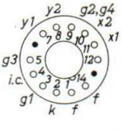
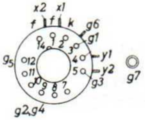
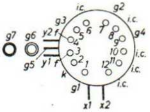
1) Grid voltage for visual cut-off   2) g_5, g_6 and g_7 connected to g_4 3) V_{g8} and $V_{g9} = 15$ kV

Oper. charact.		*Deflect. factor*		*Capacitances*		*Overall length*	*Base connections*
V_{g2}	$-V_{g1}$[1])	M_y	M_x	C_{y1y2}	C_{x1x2}	*max.*	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
2000	45—100	21 26	24 30	1.9	2.5	435	
1500	42—90	2.7	11	2	2	508	
2000	<90	21	26	1.5	2	384.5	

INSTRUMENT TUBES

Type	*Screen*	*Deflection system*	*Heater*		*Operating characteristics*				
	Max. diam. (mm)	*Double electro-static*	V_f *(V)*	I_f *(A)*	V_{g7} (V)	V_{g6} (V)	V_{g5} (V)	V_{g4} (V)	V_{g3} (V)
DB **DG13-34** **DP**	134.5	Sym-metrical	6.3	0.6			3000 4000	1500 2000	300—515 400—690
DB **DH 13-78** **DN** **DP**	134.5	Sym-metrical	6.3	0.3	10000	1670	1670	1670	180—590
DB **DH 13-79** **DN** **DP**	See D13-21...								
DB 13-97 **DH**	137	Symm. or asymm.	6.3	0.55	10000	4000	1800	1800	440—560

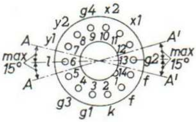
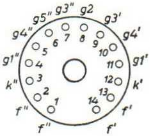
1) Grid voltage for visual cut-off

Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1]	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
1500	34—56	13	18	1.1	2.5	430	
2000	45—75	18	23				
1670	50—80	4	30	1.5	2	468	
1400	45—90	12	26	1.7	2.3	452	

INSTRUMENT TUBES

Type	*Screen*	*Deflection system*	*Heater*		*Operating characteristics*				
	Max. diam. (mm)	*Double electro-static*	V_f (*V*)	I_f (*A*)	V_{g7}	V_{g6}	V_{g5}	V_{g4}	V_{g3}
							(*V*)		
DB **DG16-22** **DP**	158 × 67.5	Symm. or asymm.	6.3	0.3				5000	600—700
E10-12BE **E10-12GH** **E10-12GM** **E10-12GP**	102	Symm.	6.3	0.3	1000[2])	1000	1000	100/ 300	1000

1) Grid voltage for visual cut-off 2) $V_{g8} = 1000$ V; $V_{g9} = 3000$ V

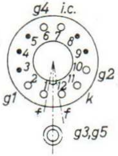
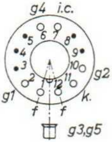
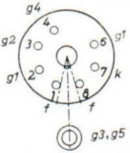
Oper. charact.		Deflect. factor		Capacitances		Overall length	Base connections
V_{g2}	$-V_{g1}$[1])	M_y	M_x	C_{y1y2}	C_{x1x2}	max.	
(V)	(V)	(V/cm)		(pF)	(pF)	(mm)	
1800	25—70	48	53	3	3	430	
1000	25—90	7	15	1.5	2	410	

RADAR CATHODE-RAY TUBES

RADAR TUBES

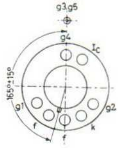
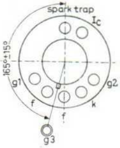
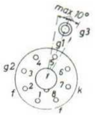
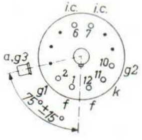
Type	Screen Round Useful diam. (mm)	Heater V_f (V)	Heater I_f (A)	Operating characteristics (V) V_a	V_{g5}	V_{g4}	V_{g3}	V_{g2}
AL13-36	108							
AL22-10	200	6.3	0.3	12000	12000	—200/ +200	12000	300
AL31-10	265							
F16-10LD	>135	6.3	0.3	14000	14000	0—400	14000	500
F21-10LD	>197	6.3	0.3	14000	14000	0—400	14000	600
F31-10LC	>265	6.3	0.3	16000	16000	200	16000	500

[1]) Grid voltage for visual cut-off [2]) Cathode drive

Operating characteristics		*Capac- itances*	*Overall length*	*Face diam.*	*Base connections*
$-V_{g1}$[1]) (V)	I_{g4} (μA)	C_{g1} (pF)	*Maximum (mm)*		
			308	127	
30-70	—15/+15	<8	408	230	
			485	308	
27-44	+15 to —15	<10	381	163	
2) V_k = 30-45	+15 to —15	<10	460	217	
2)V_k = 50-80	+25 to —25	<10	572	308	

Type	Screen Round Useful diam. (mm)	Heater		Operating characteristics				
		V_f (V)	I_f (A)	V_a	V_{g5}	V_{g4}	V_{g3}	V_{g2}
				(V)				
F41-10LC	> 368	6.3	0.3	16000	16000	300	16000	500
F41-11LC	> 368	6.3	0.3	25000			25000	120—300
MF13-1	108	6.3	0.3	7000			7000	250
MF31-22	287	6.3	0.3	9000			9000	300

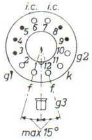
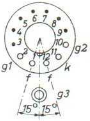
[1]) Grid voltage for visual cut-off

Operating characteristics		*Capac- itances*	*Overall length*	*Face diam.*	*Base connections*
$-V_{g1}$[1] (V)	I_{g4} (μA)	C_{g1} (pF)	*Maximum (mm)*		
50 to 80	+25 to −25	< 10	610	410	
[1]) V_k = 40	I_{g2} = +15 to −15	< 6	610	410	
28-63		< 10	287	127	
32-81		< 10	471	308	

RADAR TUBES

Type	Screen Round Useful diam. (mm)	Heater V_f (V)	I_f (A)	Operating characteristics V_a (V)	V_{g5}	V_{g4}	V_{g3}	V_{g2}
MF31-55	>265	6.3	0.3	15000			15000	300
MF41-10	373	6.3	0.3	15000			15000	300

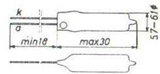
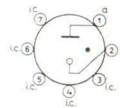
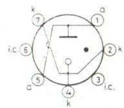
[1]) Grid voltage for visual cut-off

Operating characteristics		*Capac- itances*	*Overall length*	*Face diam.*	*Base connections*
$-V_{g1}$[1] (V)	I_{g4} (μA)	C_{g1} (pF)	*Maximum (mm)*		
30-90		<8	520	308	
30-70		<8	519	409	

COLD-CATHODE TUBES

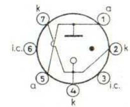
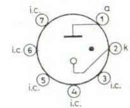
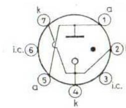
VOLTAGE REFERENCE
AND
STABILIZING TUBES

VOLTAGE REFERENCE TUBES

Type	V_m	$I_{k\,rec}$	V_{ign} max.	V_m 1) spread	I_k	Dimensions Height	Dimensions Diam.	Base connections
	(V)	(mA)	(V)	(V)	(mA)	max. (mm)		
ZZ1000 2)	81	3.2	115	80.1—82.5	2—4	30	6.1	
83A1	83.7	4.5	120	83—84.5	3.5—6	54	19	
85A2	85	5.5	115	83—87	1—10	54	19	

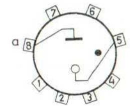
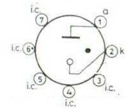
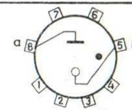
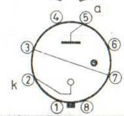
1) At I_k rec(ommended) 2) Ruggedized

VOLTAGE STABILIZERS

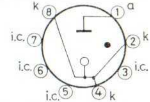
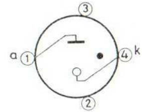
Type	V_m	$I_{k\,rec}$	V_{ign} max.	V_m[1]) spread	I_k	V_r max.	Dimensions Height	Dimensions Diam.	Base connections
	(V)	(mA)	(V)	(V)	(mA)	(V)	max. (mm)		
OA2	150	17.5	180	144—160	5—30	6	66.7	19	
OA2WA[2])	150	17.5	165	144—153	5—30	5			
OB2	108	17.5	127	106—111	5—30	3.5			
OB2WA[2])	108	17.5	130	105—111	5—30	3			
75C1	78	30	115	75—81	2—60	6.5	54.5	19	
90C1	90	20	115	86—94	1—40	14	54	19	

[1]) At I_k rec(ommended) [2]) Ruggedized

VOLTAGE STABILIZERS

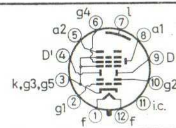
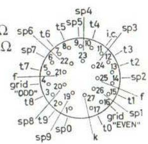
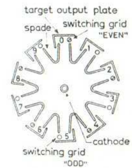
Type	V_m	$I_{k\,rec}$	V_{ign} max.	V_m[1] spread	I_k	V_r max.	Dimensions Height	Dimensions Diam.	Base connections
	(V)	(mA)	(V)	(V)	(mA)	(V)	max. (mm)	max. (mm)	
150A1	150	4	205	144—146	1—8	8	72	27	
150B2	150	10	180	146—154	5—15	5	54	19	
150C1	150	20	205	144—164	5—40	8	99 (P) 114 (K)	43 (P) 43 (K)	

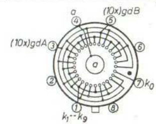
[1]) At I_k rec(ommended)

5644	95	15	120	85—105	5—25	5	50.8	10.1	
7475	100	4	140	90—110	1—8	8	84	27	

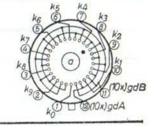
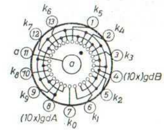
COUNTER-, SELECTOR- AND INDICATOR TUBES

DECADE COUNTER/SELECTOR TUBES

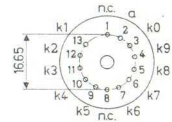
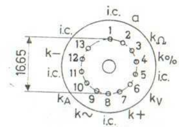
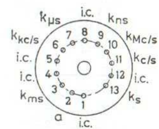
Type and Application	Filament data	Voltages	Currents (mA)	Resistors	Base connections
E1T counter tube*	$V_f = 6.3$ V $I_f = 0.3$ A	$V_b = 300$ V $V_{bg1} = 11.9$ V $V_{bD} = 156$ V	$I_k = 0.95$	$R_k = 15$ kΩ $R_{a1} = 39$ kΩ $R_{a2} = 1$ MΩ $R_{g1} = 47$ kΩ	
ET51 selector tube* (long life)	$V_f = 6.3$ V $I_f = 0.3$ A	$V_{btarg} = 100$ V $V_{bsp} = 100$ V $V_g = 25$ V $-V_g$ pulse $= 60$ V	$I_{targ} = 5.5$ $I_{sp} = 1$ $I_g = 50\ \mu$A $I_k = 6.5$	$R_{targ} = 3.3$ kΩ $R_{sp} = 100$ kΩ	

Type and application	Max. counting speed (kc/s)	Supply voltage (V)	Output current (μA)	Output voltage (V)	Tot. length (mm)	Diam. (mm)	Base connections
Z303C counter tube	4	475	340	35	101.5	29.5	

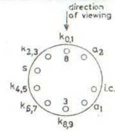
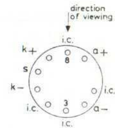
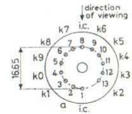
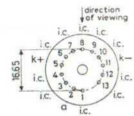
* Hot cathode

Z502S selector tube	4	475	340	35	90.5	33	
Z504S selector and counter tube	5	475	340	35	43	30	
Z505S selector tube	50	500	800	24	43	30	

CHARACTER INDICATING TUBES

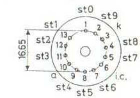
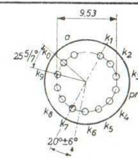
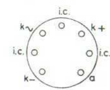
Type	Typical charact.	Limiting values	Dimensions			Base connections
			Character height	Length	Diam.	
			(mm)	(max. mm)		
ZM1020/ Z520M (ZM1022)* 0-9	V_{ba} = min. 170 V I_k = 2 mA V_m = 140 V V_{ext} = min. 120 V	I_k = 1—2.5 mA I_{kp} = max. 10 mA T_{bulb} = —50/+70°C	15	35	30	
ZM1021/ Z521M (ZM1023)* V, A, Ω, %, +, —, ~	As ZM1020 except for base connections					
ZM1024 Mc/s, kc/s, c/s, s, ms, μs, ns	As ZM1020 except for base connections					
ZM1025 *	As ZM1024					

* Electrically identical but without contrast filter

ZM1030 **(ZM1032)*** 0-9	V_{ba} = min. 170 V I_a = 4 mA V_m = 140 V V_{ext} = min. 110 V	I_a = 3—5 mA I_{kp} = max. 12 mA T_{bulb} = —55/+70°C	15.5	55.6	22	
ZM1031 +, —	V_{ba} = min. 170 V I_k = 4 mA V_m = 140 V	I_a = 2—5 mA I_{ap} = max. 10 mA T_{bulb} = —55/+70°C	15	55.6	22	
ZM1040/ **Z522M** **(ZM1042)*** 0-9	V_{ba} = min. 170 V I_k = 4.5 mA V_m = 140 V V_{ext} = min. 120 V	I_k = 3—6 mA I_{kp} = max. 20 mA T_{bulb} = 0/+70°C	30	69	30	
ZM1041 **(ZM1043)*** +, —	V_{ba} = 160 V I_k = 4.5 mA V_m = 140 V V_{ext} = min. 120 V	I_k = 3—6 mA I_{kp} = max. 20 mA T_{bulb} = —50/+70°C	20	69	30	

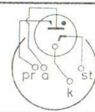
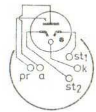
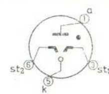
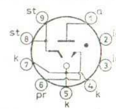
* Electrically identical but without contrast filter

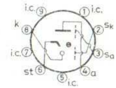
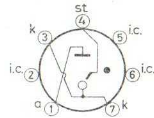
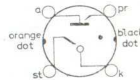
CHARACTER INDICATING TUBES

Type	Typical charact.	Limiting values	Dimensions: Character height (mm)	Dimensions: Length (max. mm)	Dimensions: Diam. (max. mm)	Base connections
ZM1050/ Z550M 0-9	V_{tr} = 110 V_{rms} I_k = 3 mA V_m = 84 V V_{st} = 5 V	I_k = 2—4 mA V_{stst} = max. 30 V	3	33	30	
ZM1080 0-9	V_{ba} = min. 180 V I_k = 2 mA V_m = 140 V	I_k = 1.5—3.5 mA I_{kp} = max. 12 mA T_{bulb} = —50/+70°C	13	47.5	19	
ZM1081 +, —, ~	V_{ba} = min. 170 V I_k = 2 mA V_m = 140 V V_{ext} = min. 115 V	I_k = 1.5—3.5 mA I_{kp} = max. 12 mA T_{bulb} = —50/+70°C	10.5	47.5	19	

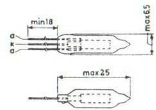
TRIGGER TUBES
AND
SWITCHING DIODES

TRIGGER TUBES

Type	Typical characteristics	Limiting values	Dimensions Length max. (mm)	Dimensions Diam. max. (mm)	Base connections
Z70U	V_{ba} = 250 V I_k = 3.5 mA V_{stign} = 145 V C_{st} = min. 100 pF V_m = 116 V	V_{ba} = 200—310 V V_{bapr} = min. 200 V I_{pr} = 1—12 μA I_{kp} = max. 200 mA T_{amb} = max. 70°C	23.5	10.16	
Z70W	Electrically as Z70U but with two starter electrodes				
Z71U	V_{ba} = 150 V I_k = 5 mA V_{stign} = 82 V C_{st} = min. 400 pF V_m = 60 V	V_{ab} = 120—165 V I_k = 3—7 mA I_{kp} = max. 12 mA T_{amb} = max. 70°C	45	10.16	
Z803U	V_{ba} = 240 V I_k = 15 mA V_{stign} = 132 V C_{st} = min. 500 pF $I_{sttransf}$ = 45 μA V_m = 105 V	V_{ba} = 170—290 V I_k = 8—40 mA I_{kp} = max. 1 A	45	22	

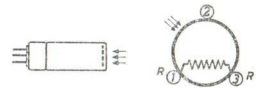
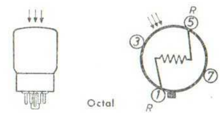
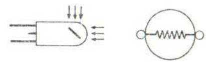
Z805U	V_{ba} = 220 V_{eff} I_k = 15 mA V_{stign} = 104 V_{eff} 146 $V_{d.c.}$ C_{st} = min. 330 pF $I_{sttransf}$ = 50 μA_{eff} V_m = 122 V	V_{ba} = 180—275 V_{eff} I_k = 10—25 mA I_{kp} = 25—150 mA	52.8	22	
Z900T/ 5823	V_{ba} = 117 V_{eff} = 175 $V_{d.c.}$ I_k = 15 mA V_{stign} = 80 V C_{st} = min. 400 pF V_m = 62 V	V_{ba} = 140—200 V I_k = max. 35 mA I_{kp} = max. 150 mA	54	19	
ZC1030	V_{ba} = 240 V I_k = 2 mA V_{stign} = 130 V C_{st} = 100 pF I_{st} = 125 μA V_m = 102 V	$-V_{a-k}$ = max. 80 V I_k = 1—4 mA	20	6	

GAS-FILLED SWITCHING DIODES

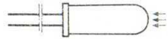
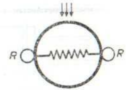
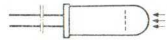
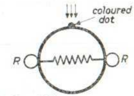
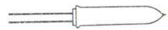
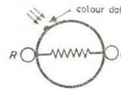
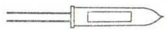
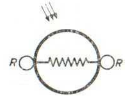
Type	Typical characteristics	Maximum ratings	Dimensions: Length, max. (mm)	Dimensions: Diam., max. (mm)	Base connections
ZA1001 (brown dot)	V_{ign} = 120—135 V I_k = 1.5 mA V_m = 93 V	$V_{a\mathrm{invp}}$ = max. 100 V C_{par} = max. 6800 pF			
ZA1002 (red dot)	V_{ign} = 165—175 V	for further data see ZA1000	25	6.5	
ZA1004 (yellow dot)	V_{ign} = 88—90 V V_m = 87—91 V (at I_k = 1 mA) V_{ext} = min. 83.5 V	$V_{a\mathrm{invp}}$ = max. 70 V I_k = 0.1—2.5 mA $I_{k\mathrm{p}}$ = max. 3 mA			
ZA1005 (Green dot)	V_{ign} = 110—140 V $I_{k\mathrm{p}}$ = 120 mA V_m = 75—90 V	$I_{k\mathrm{p}}$ = 50—250 mA			

PHOTOCONDUCTIVE DEVICES

CADMIUM-SULPHIDE PHOTOCONDUCTIVE CELLS

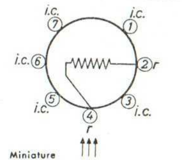
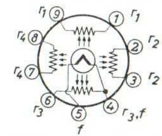
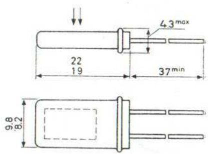
Type	Power dissipation at $T_{amb} = 25°C$ max. (mW)	Cell voltage d.c. and repetitive peak max. (V)	Cell resistance at 50 lux 2700°K colour temp. ($k\Omega$)	Sensitive area (mm^2)	Base connections diameter body length
ORP11[1])	400	300	1.7	125	 max. 17 max. 47
ORP30[1])	1200	350	0.33	450	 max. 38 max. 60
ORP50[2])	400	300	2.7	12'	 max. 16 max. 36

[1]) Top sensitivity [2]) Top and side sensitivity

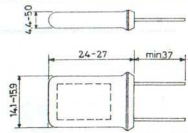
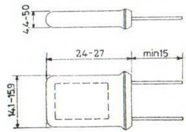
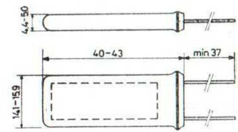
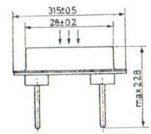
ORP60[1])	70	350	60	0.25			*max. 5.2* *max. 16.5*
ORP61[3])	70	350	60	0.25			*max. 5.2* *max. 16.5*
ORP62[3])	100	350	46	1.5			*max. 5.2* *max. 16.5*
ORP63[3])	150	75	1.25	15			*max. 6* *max. 30*

1) Top sensitivity   3) Side sensitivity

CADMIUM-SULPHIDE PHOTOCONDUCTIVE CELLS

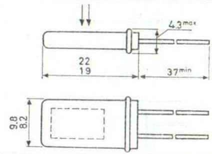
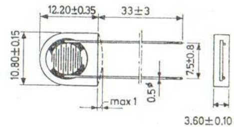
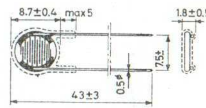
Type	*Power dissipation at T_{amb} = 25°C max. (mW)*	*Cell voltage d.c. and repetitive peak max. (V)*	*Cell resistance at 50 lux 2700°K colour temp. (kΩ)*	*Sensitive area (mm^2)*	*Base connections*
ORP90[3])	1000	350	1	290 (tot. area)	
RPY13[4])	150 (each cell)	200	0.015	V_f = 24 V I_f = 60 mA	
RPY17[3])	225	400	7	64 (tot. area)	

[3]) Side sensitivity [4]) Cds cells-lamp combination

RPY183)	500 2000[5])	100	0.025 (at 5000 lux)	150 (tot. area)	
RPY193)	500 2000[5])	400	3	150 (tot. area)	
RPY203)	1000 3000[5])	400	1.5	300 (tot. area)	
RPY276)	1000 10.000[5])	400	1.2	20°	

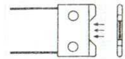
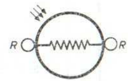
3) Side sensitivity 5) With a heatsink with K = 5°C/W 6) Top sensitivity

CADMIUM-SULPHIDE PHOTOCONDUCTIVE CELLS

Type	*Power dissipation at $T_{amb} = 25°C$ max. (mW)*	*Cell voltage d.c. and repetitive peak max. (V)*	*Cell resistance at 50 lux 2700°K colour temp. (kΩ)*	*Sensitive area (mm²)*	*Base connections*
RPY41[1]	225	100	1.6	64 (tot. area)	
LDR05	200	110	75—300 (at 1000 lux)		
LDR07	200	110	50—250 (at 1000 lux)		

[1]) Side sensitivity

INFRA-RED SENSITIVE INDIUM-ANTIMONIDE PHOTOCONDUCTIVE CELLS

Type	*Spectral response range*	*Sensitive area*	*Max. current*	*Max. temp. case*	*Base connections*
ORP10	visible to 8 μm	3 mm^2	100 mA	70°C	
ORP13	visible to 5.4 μm	3 mm^2	5 mA	—55°C T_{amb} +55°C	 

LEAD-SULPHIDE PHOTOCONDUCTIVE CELL

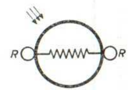
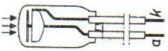
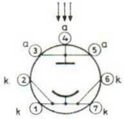
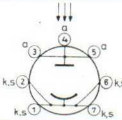
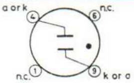
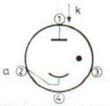
Type	*Spectral response range*	*Sensitive area*	*Max. applied voltage*	*Max. current*	*Max. amb. temp.*	*Base connections*
61SV	0.3—3.5 μ	0.36 cm^2	250 V	0.5 mA	60°C	 

PHOTO TUBES

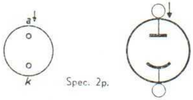
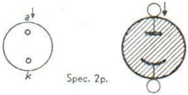
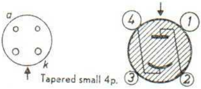
Type	Vacuum	Gas-filled	Radiation sensitivity	Cathode: Type	Cathode: Projected area (cm^2)	Typical characteristics: V_b (V)	Dark current max. (μA)	N[1] ($\mu A/l$)	R_a ($M\Omega$)
58CG	—	G	red	caesium on oxidized silver	1.1	85	0.1	108	1
58CV	V	—				50	0.05[2]	20	1
90AG	—	G	blue	caesium on antimony	4	85	0.1	130	1
90AV	V	—				100	0.05	45	1
90CG	—	G	red	caesium on oxidized silver	3.1	90	0.1	125	1
90CV	V	—				50	0.05	20	1
92AG	—	G	blue	caesium on antimony	2.1	85	0.1	130	1
92AV	V	—				85	0.05	45	1
155UG	—	G	ultra violet		220 RMS	spectral resp. 2000—2900 A maint. voltage 180—220 V			
3533	—	G	red	caesium on oxidized silver	2.25	85	0.1	120	1

1) Measured with a lamp of colour temperature 2700°K. 2) At $V_a = 100$ V

Max. ratings			C_{ak}	Dimensions		Base connections
V_b	I_k per cm^2	T_{amb}		Height max. (mm)	Dia- meter max. (mm)	
(V)	(μA)	(°C)	(pF)			
90	1.5					
		100	3.0	33	16	
250	3					
90	0.6					
		70	0.7	54	19	
100	1.25					
90	0.7		1.1			
		100		54	19	
250	3		0.8			
90	1.25					
		70	0.9	54	19	
100	2.5					
150 (rms)		100		35	30	
100	2	50	3.4	80	28	

Type	Vacuum	Gas-filled	Radiation sensitivity	Cathode			Typical characteristics		
				Type	Projected area (cm^2)	V_b (V)	Dark current max (μA)	N[1]) ($\mu A/l$)	R_a ($M\Omega$)
3538	—	G	red	caesium on oxidized silver	1.35	85	0.1	120	1
3545	V	—	red	caesium on oxidized silver	0.9	90	0.05	25	1
3546	—	G	red	caesium on oxidized silver	0.9	90	0.1	150	1
3554	—	G	red	caesium on oxidized silver	5.2	90	0.1	150	1

[1]) Measured with a lamp of colour temperature 2700°K.

Max. ratings			C_{ak}	Dimensions		Base connections
V_b	I_k per cm^2	T_{amb}		Height max. (mm)	Diameter max. (mm)	
(V)	(μA)	(°C)	(pF)			
100	2	50	2.5	73	23	
250	5	100	2	73 64 (PW)	16.5	 Spec. 2p.
90	2	100	2	73 64 (PW)	16.5	 Spec. 2p.
90	2	100	3.4	103	30	 Tapered small 4p.

TRANSMITTING TUBES

Type	V_f (V)	I_f (A)	V_a max (V)	V_{g2} max (V)	W_a max (W)	Full ratings: Max. freq. (Mc/s)	W_o (W)	η (%)	Operation
PB2/200	12	3.35	2000	400	110	20	270	71	C telegr.
						20	45	29	B teleph.
						20	147	72	C ag_2 mod.
						20	124	69	C an. mod.
						20	43	32	C g_3 mod.
						—	400	70	B mod.[1]
PB2/500	12	7.3	2500	500	250	10	600	70	C telegr.
						20	90	26	B teleph.
						10	325	69	C ag_2 mod.
						20	100	28	C g_3 mod.
						—	1000	70	B mod.[1]
PB3/800	12	8.5	3000	600	450	10	1200	72	C telegr.[2]
						10	190	30	B teleph.
						10	580	71	C ag_2 mod.
						10	200	35	C g_3 mod.
						—	1600	69	B mod.[1]
PE05/25	12.6	0.7	500	300	12	100	33	73	C telegr.
						100	6	33	B teleph.
						100	20	71	C ag_2 mod.
						55/165	9	43	C freq. mult.
PE06/40E	12.6	0.65				20	45	69	C telegr.
						20	11	31	B teleph.
PE06/40N	6.3	1.3	600	300	25	20	40	70	C ag_2 mod.
						2/4	27	52	C freq. mult.
PE06/40P	6.3	1.3				—	100	71	B mod.[1]
PE1/100	12.6	1.35	1000	300	45	60	132	74	C telegr.
						60	23	34	B teleph.
						60	75	78	C ag_2 mod.
						60	27	37	C g_3 mod.
						—	194	72	B mod.[1][2]
QB2/250	10	5	2250	1100	100	30	275	76	C telegr.
						30	50	33	B teleph.
						30	180	75	C ag_2 mod.
						—	490	68	B mod.[1]

[1] Two tubes. [2] $V_{g2} = V_{g3}$.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Type number	Description	max diam. (mm)	max length (mm)
60 60 60 60 60 —	152 35 77 75 32 —	58 25 51 50 24 —	Spec. 7p. 40207	40600 (2×)	Clip	53	165
60 60 60 60 —	312 50 175 45 —	55 22 51 22 —	Special 40200	40600 (2×)	Clip	82	276
60 60 — — —	488 67 — — —	55 21 — — —	Special 40201	40626 (2×)	Clip	106	293
167 — — —	15 — — —	55 — — —	Spec. 8 p. — 40210/02			35.3	104
60 60 60 — —	36 6.5 20 — —	62 20 55 — —	Medium 7p. 40220	28 906 022	Cap	51	146
			Medium 5p. 40219	28 906 022	Cap	51	146
			P5900/02	28 906 022	Cap	51	134
— — — — —	— — — — —	— — — — —	Septar 40202	—		47	110
120 120 120 —	126 34 80 —	70 30 67 —	Giant 7p.	40619	Cap	66	191

Type	V_f (V)	I_f (A)	V_a max (V)	V_{g2} max (V)	W_a max (W)	Full ratings Max. freq. (Mc/s)	Full ratings W_o (W)	Full ratings η (%)	Operation
QB3/200	6	3.5	3000	400	65	50 av. 50 av. —	280 230 270	81 84 68	C telegr. C ag_2 mod. B mod.[1]
QB3/300	5	6.5	3000	600	125	120 120 120 —	375 58 300 550	75 32 79 72	C telegr. B teleph. C ag_2 mod. B mod.[1]
QB3/300GA For fúrther data see QB3/300									
QB3.5/750	5	14.1	4000	600 1000[3]	250	75 75 75 —	1000 126 510 1240	80 33 75 75	C telegr. B teleph. C ag_2 mod. B mod.[1][2]
QB3.5/750 GA For further data see QB3.5/750									
QB4/1100	5	14.1	4000	800	400	75 75 —	1100 630 1540	78 76 66	C telegr. C ag_2 mod. B mod.[1][2]
QB4/1100 GA For further data see QB4/1100									
QB5/1750	10	9.9	5000	700	500	60 60 —	1760 1200 2220	80 79 76	C telegr. C ag_2 mod. B mod.[1]
QB5/2000	7.5	22.6	5500	800	800	30	2400	80	C telegr.
QBL3.5/2000	4	60	4500	700	1500	800 av.	2100[4]	85	C telegr.
QBL4/800	5	13.5	4000	500	500	110	930	73	C telegr.

1) Two tubes. 2) $I_{g1} = 0$. 3) A.F. operation as cathode follower. Bottom pin seal temp. max. 120°C. 4) Power in the load.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Type number	Description	max diam. (mm)	max length (mm)
220 220 —	110 75 —	63 63 —	Septar 40202		Cap	60.5	111
200 — — —	225 — — —	65 — — —	Giant 5p. 40211/01	40624	Clip	62	130
			Metal-shell Giant 5p. 40211/01			69.1	144
120 — — —	500 — — —	67 — — —	Giant 5p. 40211/01	40624	Clip	87	151
			Metal-shell Giant 5p. 40211/01			87	161
100 — —	800 — —	74 — —	Giant 5p. 40211/01	40624	Clip	87	150
			Metal-shell Giant 5p. 40211/01			87	161
100 — —	1300 — —	72 — —	Super Giant 40216	40626	Clip	118	209
—	—	—	Giant 5p. 40216	40665	Clip	153	248
						89	215
—	—	—				67	120

Type	V_f (V)	I_f (A)	V_a max (V)	V_{g2} max (V)	W_a max (W)	Full ratings			Operation
						Max. freq. (Mc/s)	W_o (W)	η (%)	
QBL 5/3500 — **QBW 5/3500**	6.3	32.5	5500	800	3000	75 110 av.	4100 2700	74 75	C telegr. C ag_2 mod.
QC05/35	1.6	3.2	650	250	25	60 60	65 34	74 75	C telegr. C ag_2 mod.
QE03/10	6	0.75	300	250	12	30	10	80	C telegr.
QE04/10	6.3	0.6	400	250	7.5	60 75/150 50/150 60	8 2.3 1.5 5.8	62 25 19 60	C telegr. C freq. mult. C freq. mult. C ag_2 mod.
QE05/40	6.3	1.25	600	250	20	60 60 —	52 34 83	77 75 68	C telegr. C ag_2 mod. B mod.[1])
QE05/40F	12.6	0.625	See QE05/40 except for heater rating and base						
QE05/40H	26.5	0.3	See QE05/40 except for heater rating						
QE05/40K	13.5	0.585	See QE05/40 except for heater rating						
QE06/50	6.3	0.9	600	300	25	60 60 60 —	40 12.5 28 80	67 33 71 67	C telegr. B teleph. C ag_2 mod. B mod.[1])

[1]) Two tubes.

Reduced ratings			Base	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)	Socket	Type number	Description	max diam.	max length
						(mm)	
				40622	Grid connector	97	169
				40634 (4×)	Filament clip		
220	2900	66		40635	Insulating collar		
			—	K713	Water jacket	70	160
				40622	Grid connector		
				40631	Key		
				40634 (4×)	Filament clip		
175	35	58	Octal	28 906 022	Cap	44	97
—	—	—	5903/13				
50	8	80	Noval			22.2	67.5
175	5.4	42	Loctal 9p.	—		38	78
—	—	—	40212				
—	—	—					
—	—	—					
175	25	55	Octal	28 906 022	Cap	44	97
—	—	—	5903/13				
—	—	—					
						44	96
125	20	60	Medium 5p.	28 906 022	Cap	52.4	146
125	8	30	40219				
125	14	65					
—	—	—					

Type	V_f (V)	I_f (A)	V_a max (V)	V_{g2} max (V)	W_a max (W)	Full ratings			Operation
						Max. freq. (Mc/s)	W_o (W)	η (%)	
QE08/200	6.3	3.9	825	300	100	30	200	70	C telegr.
						30	130	72	C ag$_2$ mod.
						—	300	71	B mod.[1]
QE08/200H	26.5	0.85	For further data see QE08/200						
QEL1/150	6	2.6	2000	300	250	150	370		C telegr.
QEL1/150H	26.5	0.57	For further data see QEL1/150						
QEL2/200	6	2.6	2000	500	250	500	210	47	SSB[5]
						500	106	30	B teleph.
QEL2/275	6	2.6	2000	300	250	175 av.	390	80	C telegr.
						175 av.	235	78	C ag$_2$ mod.
						216 av.	440	60	B television[6]
QEL2/275H	26.5	0.58	For further data see QEL2/275						
QQC03/14	3.15	1.65	300	200	2 × 7	200	11	60	C telegr.[4]
QQC04/15	3.15	1.36	600	250	2 × 6	186 av.	33.6	70	C telegr.[2][4]
	6.3	0.68				186 av.	7.8	59	C ag$_2$ mod.[2][4]
						93/186	8	50	C freq. mult.[2][3]
						—	16	63	B mod.[4]
QQE02/5	6.3	0.6	250	200	2 × 3	500 av.	5.8	58	C telegr.[4]
	12.6	0.3				167-500	2.35	33	C freq. mult.[4]
QQE03/12	6.3	0.82	300	200	2 × 5	200	18.5	62	C telegr.[2][4]
	12.6	0.41			2 × 7[2]	66.6/200	7.8	40	C freq. mult.[2][4]
						200	8.8	57	C ag$_2$ mod.[2][4]

[1] Two tubes. [2] Intermittent operation. [3] Per system. [4] Two systems in push-pull. [5] Peak envelope power under two-tone conditions. [6] Sync. level output.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Type number	Description	max diam. (mm)	max length (mm)
— — —	— — —	— — —	Giant 5p. 40211/01	40680	Cap	72	150
500 — —	170 — —	— — —	40222			42	63
— —	— —	— —	40222			42	63
500 — —	250 — —	50 — —	40222			42	63
—	—	—	Noval			22	77.8
— — — — —	— — — — —	— — — — —	Loctal 8p. 40213			32	100
— —	— —	— —	Noval			22	66.7
—	—	—	Noval 5908/36	40647	Tube retainer	22	78

TRANSMITTING TUBES

Type	V_f (V)	I_f (A)	V_a max (V)	V_{g2} max (V)	W_a max (W)	Full ratings Max. freq. (Mc/s)	W_o (W)	η (%)	Operation
QQE03/20	6.3 12.6	1.3 0.65	600	250	2 × 10	200 66.6/200 200	48 10 31	80 37 77	C telegr. C freq. mult. C ag_2 mod.
QQE03/32	See QQE03/20 except for neutralizing capacitances								
QQE04/5	6.3 12.6	0.6 0.3	400	250	2 × 8	960 av. 320/960	7 2.75	40 15	C telegr.[3]) C freq. mult.[2])[3])
QQE04/20	6.3 12.6	1.6 0.8	750	250	2 × 7.5	200 av. 200 av.	26 17	72 79	C telegr.[3])[4]) C ag_2 mod.[3])
QQE06/40	6.3 12.6	1.8 0.9	750	300	2 × 20	200 av. 250 av. 50/150 —	90 64 20 86	75 71 33 71	C telegr.[3]) C ag_2 mod.[3]) C freq. mult.[3]) B mod.[1])
TAL12/10	22	2 × 38	12000		4000	5 5 5 —	10500 2000 7700 17000	72 33 77 75	C telegr. B teleph. C an. mod. B mod.[1])
TAL12/20	21.5	78	12000		18000	28 28 28 —	22000 5000 9500 42000	68 27 68 72	C telegr. B teleph. C an. mod. B mod.[1])
TAL12/35	28.3	3 × 48.5	15000		18000	20 20 20 —	48500 9000 27000 80000	77 33 77 74	C telegr. B teleph. C an. mod. B mod.[1])
TAW12/10	22	2 × 38	12000		7500	5 5 5 —	15000 3700 7700 30000	73 33 77 73	C telegr. B teleph. C an. mod. B mod.[1])

[1]) Two tubes. [2]) Intermittent operation. [3]) Two systems in push-pull. [4]) In housing or jacket.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Type number	Description	max diam. (mm)	max length (mm)
600	20	50	Septar 40202	40623	Clip	46	86
133.3/400	8	30					
400	13	54					
—	—	—	40213			46	65
—	—	—					
250	17	53	Septar 40202	40615 (2 ×)	Clip	51	84
—	—	—					
500	60	60	Septar 40202	40623 (2 ×)	Clip	49	110
—	—	—					
75/225	12	23					
—	—	—					
20	10500	72	—	K501 or 40603	Foot Supporting ring	194	471
20	2000	33					
20	6000	75		40604 (2 ×)	Filament bracket		
—	—	—		40632 (2 ×)	Protective cap for grid seal		
—	—	—	—	K503/01	Housing with canalized outlet	163	567
—	—	—					
—	—	—		40614	Grid bracket		
—	—	—		40632 (2 ×)	Protective cap for grid and filament seals		
37.5	26000	62	—	K505	Housing	226	618
—	—	—		40606	Filament bracket		
27	26000	74		40632 (6 ×)	Protective cap for grid and filament seals		
75	3500	51	—	K700	Water jacket	194	440
20	3300	53		40604	Filament bracket		495[4])
20	6000	75		40632	Protective cap for grid seal		
—	—	—		R1 366 43	Rubber washer		
				62 960 81(2 ×)	Rubber washer		

Type	V_f (V)	I_f (A)	V_a max (V)	W_a max (W)	Full ratings			Operation
					Max. freq. (Mc/s)	W_o (W)	η (%)	
TAW12/20	For further data see TAL12/20							
TAW12/35G	For further data see TAL12/35					107000	74	B mod.[1]
TB2/500	12	7.3	2000	300	20 20 20 —	635 124 430 900	68 29 71 71	C telegr. B teleph. C an. mod. B mod.[1]
TB2.5/300	6.3	5.4	2500	135	150 av. 150 av. 150 av. —	390 65 205 700	76 34 80 78	C telegr. B teleph. C an. mod. B mod.[1]
TB2.5/400	6.3	5.8	3000	150	For further data see TB2.5/300			
TB3/350	5	6.3	4000	100	40 40 —	400 285 425	80 81 68	C telegr. C an. mod. B mod.[1]
TB3/750	5	14.1	4000	350	100 100 —	1200 2320 1550	79 77 72	C telegr. C osc.[1] B mod.[1]
TB3/2000	12	17	3500	1100	2 2 2 —	2900 600 1625 3300	72 35 75 66	C telegr. B teleph. C an. mod. B mod.[1]
TB4/800	5	10.5	4000	250	40 40 —	1000 435 1180	80 72 70	C telegr. C an. mod. B mod.[1]

[1]) Two tubes. [2]) In housing or jacket.

Reduced ratings			*Base Socket*	*Accessories*		*Dimensions*	
Freq. (Mc/s)	*W_o (W)*	*η (%)*		*Type number*	*Description*	*max diam.*	*max length*
						(mm)	
				K707 R1 367 50 62 960 53 62 960 81 (2 ×) 62 961 23	Water jacket Contact washer Rubber washer Rubber washer Rubber washer	163	578 653[2])
				K715 80 039 63	Water jacket ("grip-o- matic") Rubber washer	245	650 720[2])
100 — — —	400 — — —	57 — — —	Spec. 2p. 40204	40608 40626	Key Clip	86	243
— — — —	— — — —	— — — —	Giant 5p. 40211/01	40624	Clip	62	132
— — —	— — —	— — —	Medium 4p. 40218/03			81	197
— — —	— — —	— — —	Giant 5p. 40211/01	40624	Clip	87	151
20 20 20 —	2600 520 1300 —	70 32 74 —	Spec. 2p. 40205	40608 40626 (2 ×)	Key Clip	154	334
— — —	— — —	— — —	Jumbo 4p. 40408			95	256

Type	V_f (V)	I_f (A)	V_a max (V)	W_a max (W)	Full ratings			Operation
					Max. freq. (Mc/s)	W_o (W)	η (%)	
TB4/1250	10	9.9	4000	450	100 100 —	1690 1050 2290	79 78 77	C telegr. C an. mod. B mod.[1])
TB4/1500	5	32.5	7000	500	50 av.	1650	77	Industr. osc.
TB5/2500	6.3	32.5	7000	800	50 av.	2750	78	Industr. osc.
TBH6/14 As **TBL6/14**								
TBH6/6000 As **TBL6/6000**								
TBH7/8000 As **TBL7/800**			However with intregal helical water cooler and different dimensions.					
TBH7/9000 As **TBL7/9000**								
TBH12/25 As **TBL12/25**								
TBH12/38 As **TBL12/38**								
TBH12/100 As **TBL12/100**								
TBL2/300	3.4	19	2500	300	175 av. 175 av.	475 505	74 76	C telegr. C an. mod.
TBL2/400	3.4	19	2200	400	470 av.	510+ 85[2])	63	C telegr.
TBL2/500	3.4	19	2700	500	400 av.	620 + 50[2])	65	C telegr.
TBL6/14	6.3	130	8000	15000	30	17700	72	Industr. osc.
TBL6/20	6.3	154	5500	10000	110 av.	15000 +2000[2])	62	C telegr.

[1]) Two tubes. [2]) Power transferred from driving stage included.

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	*W_o (W)*	*η (%)*		*Type number*	*Description*	*max diam.*	*max length*
100 — —	1125 — —	71 — —	Super Giant 40216	40626	Clip	118	213
—	—	—	Special B8 700 51	40626		130	240
			Special B8 700 51	40626		155	256
						115	351
						70.5	219
						70.5	219
						86	211
						114	410
						145	422
						225	712
900 900	155 102	34 34	Coaxial			41.6	73
810	328+ 80[2])	45	Coaxial			41.6	83
—	—	—	Coaxial			41.6	83
—	—	—		40662 40664 K508	Filament clips Grid connector Cooler housing	115	309 (average)
—	—	—		40651 40652 40653 40654	Grid and anode connector Inner fil. connector Outer fil. connector Insulating pedestal	169	277

TRANSMITTING TUBES

Type	V_f (V)	I_f (A)	V_a max (V)	W_a max (W)	Full ratings: Max. freq. (Mc/s)	W_o (W)	η (%)	Operation
TBL6/4000	6.3	65	8000	1700	50 av.	4850	77	Industr. osc.
TBL6/6000	12.6	33	6000	5000	75 75 75 —	6900 1900 4700 13300	76 32 78 74	C telegr. B teleph. C an. mod. B mod.1)
TBL7/8000	12.6	33	7200	6000	30 —	9500 20000	73 71	C telegr. B mod.1)
TBL7/9000	12.6	32	8000	6000	50	5000 5)	85	Industr. osc.
TBL12/25	8	98	13000	15000	30	29000	75	Industr. osc.
TBL12/38	8	130	13000	15000	30	39000	72	Industr. osc.
TBL12/40	8	130	13000	15000	30 30	41000 27500	76 78	C telegr. C an. mod.
TBL12/100	17.5	196	15000	45000	30 30 —	108000 80000 202000	75 76 70	C telegr. C an. mod. B mod.1)
TBL15/125	17.5 15.5	196 3) 131 4)			For further data see TBL12/100			
TBW6/14				15000	For further data see TBL6/14			
TBW6/20					For further data see TBL6/20			
TBW6/6000				6000	For further data see TBL6/6000			

1) Two tubes. 2) In housing or jacket. 3) Single-phase filament energizing. 4) Three-phase filament energizing. 5) Power in the load.

Reduced ratings			Base	Accessories		Dimensions	
Freq. (Mc/s)	*W_o (W)*	*η (%)*	*Socket*	*Type number*	*Description*	*max diam.*	*max length*
						(mm)	
—	—	—	B8 700 51			86	177.5
220	2500	50		40622	Grid connector	122.6	195
—	—	—					
—	—	—		40630	Insulating collar		
—	—	—					
				40634 (3×)	Clip		
—	—	—		40622	Grid connector	122.6	195
—	—	—		40634	Filament clips		
				40630	Insulating pedestal		
				40634	Grid and filament clips	122.6	186
				40630	Insulating pedestal		
—	—	—		40663	Grid connector	268	378
				40662	Filament clips		
				40648	Insulating pedestal		
—	—	—		40662	Filament clips	263	404
				40663	Grid connector		
				40648	Insulating pedestal		
—	—	—				225	392
—	—	—					
—	—	—		K506	Housing	286	635
—	—	—		40628 (6×)	Filament clip	510[2])	1130[2])
—	—	—					
				K720	Water jacket	163[2])	415[2])
				K718	Water jacket	127	359[2])
				K713	Water jacket	70.5	190
				40631	Key		260[2])
				R1 158 11	Rubber washer		

Type	V_f (V)	I_f (A)	V_a max. (V)	W_a max. (W)	Full ratings			Operation
					Max. freq. (Mc/s)	W_o (W)	η (%)	
TBW7/8000					For further data see TBL7/8000			
TBW7/9000					For further data see TBL7/9000			
TBW12/25				20000	For further data see TBL12/25			
TBW12/38				20000	For further data see TBL12/38			
TWB12/100	17.5	196	15000	50000[2])	30 30 30 —	108000 51500 80000 202000	75 35 76 70	C telegr. B teleph. C an. mod B mod.[1])
TBW15/125	17.5 15.5	196[3]) 131[4])			For further data see TBW12/100			
YD1000	12.6	160	15000	45000	10 10	120000 +8500[5]) 85000 +3100[5])	82 73	C telegr. B telegr.
YD1001				35000	For further data see YD1000			
YD1002				60000	For further data see YD1000			
YD1010	18	280	15000	120000	10 av. 30 av.	360000 165000	82 79	C telegr. C an. mod.
YD1012				180000	For further data see YD1010			
YD1030	18	164	15000	60000	10	247000	81	C telegr.
YD1032				110000	For further data see YD1030			
YD1090	18	166	12000	60000	30	204000	81	C telegr.
YD1092				110000	For further data see YD1090			

[1]) Two tubes. [2]) For B teleph. 100 kW. [3]) Single-phase filament energizing. [4]) Three-phase filament energizing. [5]) Power transferred from driving stage in a grounded-grid circuit. [6]) in housing or jacket.

Reduced ratings			*Base Socket*	*Accessories*		*Dimensions (mm)*	
Freq. (Mc/s)	W_o (W)	η (%)		*Type number*	*Description*	*max. diam.*	*max. length*
				K713	Water jacket	70.5	190 260[6])
				K721	Water jacket		224
				K717	Water jacket	145 190[6])	376 465[6])
				K722	Water jacket	145 190[6])	422 500[6])
— — — —	— — — —	— — — —		K714 40628(6×) 89 039 63	Water jacket Filament clip Rubber washer	240[6])	710[6])
30 30	9000 +7700[5]) 85000 +3900[5])	81 72		K724 40670 40671	Water jacket Filament clips with cable Coaxial grid connector	300	380
				40672	Insulating pedestal	300	380
				K728	Vap. cooler		
30 —	285000 —	81 —		K723 40667	Water jacket Filament clips with cable	218	656
				K729	Vap. cooler	315	650
30	205000	81		—	—	179	462
						228	462
—	—	—		—	—	179	462
						228	462

Type	V_f (V)	I_f (A)	V_a max. (V)	V_{g2} max. (V)	W_a max. (W)	Full ratings: Max. freq. (Mc/s)	W_o (W)	η (%)	Operation
YD1130	5	14.1	3000	—	400	30 av	580 [1]	43	SSB amplifier
YD1140	17.5	196	15000	—	100000	30 30	108000 83000	75 79	C telegr. C an. mod.
YD1141					45000	For further data see YD1140			
YD1142	17.5	196	15000	—	100000	30 30	108000 83000	75 79	C telegr. C an. mod.
YL1000	1.1	0.88	300	300	5	50 av.	8 [1]	—	C telegr.
YL1020	1.6	4.25	600	300	2×10	200 av.	45	75	C telegr. [2]
YL1030	2.1	4.5	750	300	2×20	180 av.	64	66	C telegr.
YL1060	6.3 12.6	1.8 0.9	1000	300	2×30	175 av.	150	75	C telegr. [2]
YL1070	6.3 12.6	1.8 0.9	1000	360	60	70 av.	141	—	SSB [3] [4] amplifier
YL1071	13.25 26.5	0.866 0.433	For further data see YL1070						
YL1080	1.6	2.05	300	200	2×5	200 av.	12 [1]	65	C telegr.
YL1100	26.5	0.52	1000	300	115	400 av.	80 [1]	—	C telegr.
YL1101	6.3	2.1	For further data see YL1100						
YL1102	=	YL1100	However with conductive cooling						

[1]) Power in the load. [2]) Two systems in push-pull. [3]) Peak envelope power under two tone conditions.
[4]) Both sections in parallel. [6]) in housing or jacket

Reduced ratings			Base Socket	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)		Type number	Description	max. diam. (mm)	max. length (mm)
—	—	—	40211/01	40624	Anode clip	87	151
— —	— —	— —		K714 40628(6×)	Water jacket Filament clip	240	710[6]) 620
				K506	Cooler	510 286	1130[6]) 635
— —	— —	— —		40628(6×)	Filament clip	225	710[6])
175	3.6[1])	—	Noval B8 700 19			22	68
460	21	53	Septar 40202	40623	Clip	46	86
—	—	—	Septar 40202	40623	Clip	46	93
—	—	—	Septar 40202	40681	Clip	45	103
—	—	—	Septar 40202	40681	Clip	45	103
—	—	—	Noval B8 700 19	40647	Tube retainer	22	78.5
1200	40	—				32.2	49.6

TRANSMITTING TUBES

Type	V_f (V)	I_f (A)	V_a max. (V)	V_{g2} max. (V)	W_a max. (W)	Full ratings Max. freq. (Mc/s)	W_o (W)	η (%)	Operation
YL1103	6.3	2.1	For further data see YL1100, however with conductive cooling						
YL1110	6.3	7.85	2500	1200	700	470 av.	730[2])	—	C telegr.
YL1121	12.6	13	5500	1000	4000	13 av.	5100[2])	45	SSB[3]) amplifier
YL1130	1.1	3.1	300	200	2 × 4	200 av.	16	68	C telegr[1].)
YL1150	6.3 12.6	1.62 0.81	750	300	75	30	110[2])	42	SSB[3]) amplifier
YL1190	1.1	3.8	500	200	2 × 8	200 av.	33	67	C telegr.[1])
YL1200	12.6	1.35		SQ tube for special pulse or static applications					
YL1210	6.75 13.5	0.72 0.36	For further data see QQE03/12						
YL1220	6.75 13.5	0.56 0.28	For further data see QQE02/5						
YL1230	6.3	19.5	3500	1000	1500	1 av.	1000[2])	—	SSB amplifier
YL1240	6.75 13.5	0.8 0.4	400	200	2 × 7.5	175 av.	21[2])	59	C telegr.[1])
YL1250	6.75 13.5	1.2 0.6	550	300	25	75	52[2])	69	C telegr.
YL1280	5.5	17.3	2500	1000	1500	600	1600	64	C telegr.
YL1290	19	1.3	For further data see QE08/200.						

[1]) Two systems in push-pull. [2]) Power in the load. [3]) Peak envelope power under two tone conditions.

Reduced ratings			Base	Accessories		Dimensions	
Freq. (Mc/s)	W_o (W)	η (%)	Socket	Type number	Description	max. diam. (mm)	max. length (mm)
790	590 2)	—				53	61
28	5100 2)	45	—	40654	Insulating pedestal	159	202
500	8	57	Noval B8 700 20			22	73
—	—	—	Septar 40202	40634	Clip	50	135
500	19	52	Magnoval B8 700 86			30.2	74
			Septar 40202			47	110
—	—	—	—	—	—	95.5	85
—	—	—	Novar			30	83
175	38 2)	64	Magnoval 40685			44.5	64
—	—	—				95.5	85

RECTIFYING TUBES FOR TRANSMITTING PURPOSES

Type	V_f (V)	I_f (A)	V_{ainvp} (kV)	I_o max (A)	Circuit: Number of secondary phases	Circuit: Rectification	Number of tubes
DCG1/250	4	2.5	3	0.25	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG1.5/250	4	2.5	4.25	0.25	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG 4/1000ED / **DCG 4/1000G**	2.5	4.8	10	0.25	2	half wave	2
					3	half wave	3
					3	half wave	6
DCG4/5000	4	7	13	1.25	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG5/30	5	30	13	6	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG 5/5000EG / **DCG 5/5000GB** / **DCG 5/5000GS**	5	7	13	1.5	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG6/18 / **DCG 6/18GB**	5	11.5	15	3	2	half wave	2
					3	half wave	3
					3	full wave	6

V_{tr} (kV)	V_o (kV)	I_o (A)	W_o tot. (kW)	Base Socket	Accessories Type number	Accessories Description	Dimensions max diam. (mm)	Dimensions max length (mm)
1.1 1.2 2.1	0.96 1.4 2.8	0.5 0.75 0.75	0.48 1.1 2.2	A 40465	—		48	115
1.5 1.7 3.0	1.3 2.0 4.1	0.5 0.75 0.75	0.7 1.5 3.0	A 40465	—		47	138
3.5 4.1 7.1	3.2 4.8 9.6	0.5 0.75 0.75	1.6 3.6 7.2	Edison E300022	—		49	147
				Medium 4p. 40218/03	40619	Cap	49	157
4.6 5.3 9.2	4.1 6.2 12.4	2.5 3.75 3.75	10.3 23.3 46.6	Goliath 65909 BG/01	40619	Cap	53	225
4.6 5.3 9.2	4.1 6.2 12.4	12 18 18	50 112 224	— — —	40612 08 281 72	Anode cap Plug pin for grid connection	225	581
4.6 5.3 9.2	4.1 6.2 12.4	3 4.5 4.5	12.4 27.8 55.6	Goliath 65909 BG/01	40619	Cap	58.7	237
				Jumbo 4p. 40408	40619	Cap	58.7	215
				Super-Jumbo 4p. 40403	40619	Cap	58.7	222
5.3 6.1 10.6	4.8 7.2 14.4	6 9 9	28.8 65 130	Super Jumbo 4p. 40403	40619	Medium Cap M6 screw	72	308
				Jumbo 4p. 40408	40619	Cap	72	308

RECTIFYING TUBES FOR TRANSMITTING PURPOSES

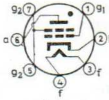
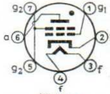
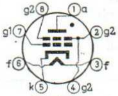
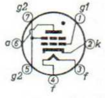
Type	V_f *(V)*	I_f *(A)*	V_{ainvp} *(kV)*	I_o *max (A)*	*Circuit*		*Number of tubes*
					Number of secondary phases	*Rectification*	
DCG6/6000	5	6.5	13	1	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG7/100 **DCG7/100B**	5	15	15	15	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG9/20	5	13.5	21	2.5	2	half wave	2
					3	half wave	3
					3	full wave	6
DCG12/30	5	13.5	27	2.5	2	half wave	2
					3	half wave	3
					3	full wave	6
DCX4/1000	2.5	5	10	0.25	2	half wave	2
					3	half wave	3
					3	full wave	6
DCX4/5000	5	7.1	10	1.25	2	half wave	2
					3	half wave	3
					3	full wave	6
ZT1000	5	13	21	2.5	2	half wave	2
					3	half wave	3
					3	half wave	6
ZT1001 as ZT1000 however with Jumbo 4 p. bayonet.							
ZY1000 **ZY1001** **ZY1002**	5	7	13.5	1.5	2	half-wave	2
					3	half-wave	3
					3	full-wave	6

V_{tr} (kV)	V_o (kV)	I_o (A)	W_o tot. (kW)	Base Socket	Accessories		Dimensions (mm)	
					Type number	Description	max diam.	max length
4.6 5.3 9.2	4.1 6.2 12.4	2 3 3	8.3 18.6 37.2	Jumbo 4p. 40408	40616	Anode cap	120	242
5.3 6.1 10.6	4.8 7.2 14.4	20 30 30	96 216 432	Special 4p. 40409	40620	20 mm Cap M8 screw	117	417
					40620	20 mm Cap M8 screw	117	387
7.4 8.6 14.8	6.7 10 20	5 7.5 7.5	34 75 150	Spec. 3p. 40209	40616 40620	Anode cap Cap	120	381
9.5 11 19.1	8.6 12.9 25.8	5 7.5 7.5	43 97 194	Spec. 3p. 40209	40616 40620	Anode cap Cap	120	384
3.5 4.1 7.1	3.2 4.8 9.6	0.5 0.75 0.75	1.6 3.6 7.2	Medium 4p. 40218/03	40619	Cap	53	156
3.5 4.1 7.1	3.2 4.8 9.6	2.5 3.75 3.75	8 18 36	Jumbo 4p. 40408	40619	Cap	59	216
7.4 8.5 14.8	6.7 10 20	5 7.5 7.5	34 75 150	Super jumbo 4p. 40403	40616 40620	Anode cap Cap	120	352
4.35 5 8.7	3.6 5.4 10.8	3 4.5 4.5	10.8 24.3 48.6	Jumbo 4 p. 40408	40619	Cap	58.7	215
				Super Jumbo 4 p. 40403	40619	Cap	58.7	222
				Goliath 65909 BG/01	40619	Cap	58.7	237

THYRATRONS — IGNITRONS

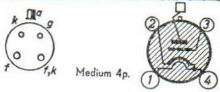
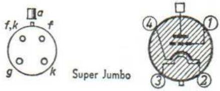
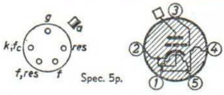
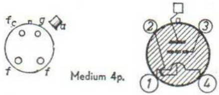
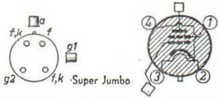
SMALL THYRATRONS

Type	Filament data			Voltages max. (V)	Currents max. (A)
	V_f (V)	I_f (A)	t_w (sec)		
PL2D21/ PL21 Tetrode inert-gas filled	6.3	0.6	20	$V_{ap} = 650$ $V_{ainvp} = 1300$ $-V_{g2p} = 100$ $-V_{g1p} = 100$	$I_k = 0.1$ $I_{kp} = 0.05$ $I_{g2} = 0.01$ $I_{g1} = 0.01$
PL5727 Tetrode inert-gas filled	6.3	0.6	20	$V_{ap} = 650$ $V_{ainvp} = 1300$ $-V_{g2p} = 100$ $-V_{g1p} = 100$	$I_k = 0.1$ $I_{kp} = 0.5$ $I_{g2} = 0.01$ $I_{g1} = 0.01$
5643 Tetrode inert-gas filled	6.3	0.15	10	$V_{ap} = 500$ $V_{ainvp} = 500$ $V_{g2} = 100$ $V_{g1} = 200$	$I_k = 0.022$ $I_{kp} = 0.1$
5696 Tetrode inert-gas filled	6.3	0.15	10	$V_{ap} = 500$ $V_{ainvp} = 500$ $-V_{g2} = 50$ $-V_{g1} = 100$	$I_k = 0.025$ $I_{kp} = 0.1$ $I_{g2} = 0.005$ $I_{g1} = 0.005$ $I_{g1p} = 0.025$

Typical characteristics	*Dimensions*		*Base connections*
	Max. diam. (mm)	*Max. height (mm)*	
$V_{arc} = 8$ V t_{av} = max. 30 sec. $T_{amb} = -75/+90$°C	19	54	 Miniature
$V_{arc} = 8$ V t_{av} = max. 30 sec. $T_{amb} = -75/+90$°C	19	54	 Miniature
$V_{arc} = 10$ V $T_{amb} = -55/+100$°C	10.16	34.9	 Subminiature
$V_{arc} = 10$ V t_{av} = max. 15 sec. $T_{amb} = -55/+90$°C	19	44.5	 Miniature

Type	Filament data V_f (V)	I_f (A)	T_w (sec)	Voltages max (V)	Currents max (A)
3C45 Triode hydrogen filled	6.3	2.25	>120	V_{ap} = 3000 V_{ainvp} = 3000 V_{gp} = min. 175 V_{ginvp} = 200	I_a = 0.045 I_{ap} = 35
4C35A Triode hydrogen filled	6.3	6.1	>180	V_{ap} = 8000 V_{ainvp} = 8000 V_{gp} = min 175 V_{ginvp} = 200	I_a = 0.1 I_{ap} = 90
5C22 Triode hydrogen filled	6.3	10.6	>300	V_{ap} = 16000 V_{ainvp} = 16000 V_{gp} = min 200 V_{ginvp} = 200	I_a = 0.2 I_{ap} = 325[1])
5949 Triode hydrogen filled	6.3	15-22	>15 min	V_{ap} = 25000 V_{ainvp} = 25000 V_{gp} = min 550 V_{ginvp} = 450	I_a = 0.5 I_{ap} = 500
PL3C23A Triode mercury vapour and inert-gas filled	2.5	7	30	V_{ap} = 1500 V_{ainvp} = 1500 $-V_g$ = 500	I_k = 1.6 I_{kp} = 6.4 I_g = 0.01 I_{gp} = 0.05
PL10 Triode for pulse and relay circuits	1.85	3.4	0	V_{ap} = 400 V_{ainvp} = 400 V_{gp} = +1800 V_{gp} = −1800	I_a = 0.1 I_{ap} = 4
PL105 Tetrode mercury-vapour filled	5	10	>300	V_{ap} = 2500 V_{ainvp} = 2500 $-V_{g2}$ = 500 $-V_{g1}$ = 1000	I_a = 6.4 I_{ap} = 40 I_{g2} = 0.5 I_{g1} = 0.25

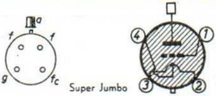
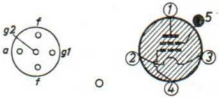
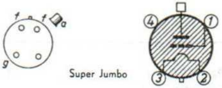
[1]) Freq. ≦ 20 c/s. [2]) Measured at half amplitude. [3]) Freq. = pulse repetition frequency

Typical characteristics	*Dimensions*		*Base connections*
	Max diam. (mm)	*Max height (mm)*	
T_{imp} = max 6 μsec 2) $V_{ap} \times I_{ap} \times$ freq. $< 0.3 \times 10^9$ 3)	40	132	 Medium 4p.
T_{imp} = max 6 μsec 2) $V_{ap} \times I_{ap} \times$ freq. $< 2 \times 10^9$ 3)	65	178	 Super Jumbo
T_{imp} = max 6 μsec 2) $V_{ap} \times I_{ap} \times$ freq. $< 3.2 \times 10^9$ 3)	65	222	
$V_{ap} \times I_a \times$ freq. $< 6.25 \times 10^9$ 3)	84	317	 Spec. 5p.
V_{arc} = 10 V T_{av} = max 5 sec t_{Hg} = $-40/+80$°C T_{rec} = $+25$°C	52	155	 Medium 4p.
V_{arc} = 20—35 V T_{av} = max. 10 sec freq. = max 100 c/s t_{amb} = $-75/+90$°C	21.5	105	 Mignon
V_{arc} = 12 V T_{av} = max 15 sec t_{Hg} = $+40/+80$°C t_{rec} = $+60$°C	123	288	 Super Jumbo

THYRATRONS

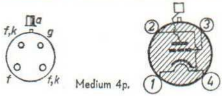
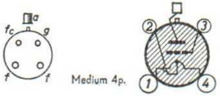
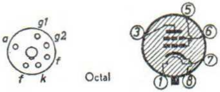
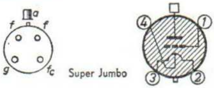
Type	Filament data			Voltages max (V)	Currents max (A)
	V_f (V)	I_f (A)	T_w (sec)		
PL106 Triode mercury-vapour and inert-gas filled	2.5	22	60	$V_{ap} = 2000$ $V_{a\,invp} = 2000$ $-V_g = 500$	$I_a = 6.4$ $I_{ap} = 80$ $I_g = 0.25$
PL150 Triode mercury-vapour and inert-gas filled	1.9	26	60	$V_{ap} = 240$ $V_{a\,invp} = 500$ $-V_g = 150$[1] $-V_g = 50$[2]	$I_a = 15$ $I_{ap} = 90$ $I_{gp} = 0.1$
PL255 Triode mercury-vapour filled	5	11	>600	$V_{ap} = 1500$ $V_{a\,invp} = 2500$ $-V_g = 300$	$I_a = 12.5$ $I_{ap} = 80$ $I_g = 0.25$ $I_{gp} = 1$
PL260 Triode mercury-vapour filled	5	19	>600	$V_a = 2000$ $V_{a\,invp} = 2500$ $-V_g = 300$	$I_a = 25$ $I_{ap} = 160$ $I_g = 0.25$ $I_{gp} = 1$
PL1607 Tetrode inert-gas filled	2	2.6	>30	$V_{ap} = 650$ $V_{a\,invp} = 650$ $-V_{g2} = 100$ $-V_{g1} = 100$	$I_a = 0.5$ $I_{ap} = 2$ $I_{g2} = 0.05$ $I_{g1} \doteq 0.05$
PL5544 Triode inert-gas filled	2.5	12	>60	$V_{ap} = 1500$ $V_{a\,invp} = 1500$ $-V_g = 250$	$I_a = 3.2$ $I_{ap} = 40$ $I_g = 0.2$
PL5545 Triode inert-gas filled	2.5	21	>60	$V_{ap} = 1500$ $V_{a\,invp} = 1500$ $-V_g = 250$	$I_a = 6.4$ $I_{ap} = 80$ $I_g = 0.2$

[1]) At negative anode voltage. [2]) At positive anode voltage

Typical characteristics	*Dimensions*		*Base connections*
	Max diam. (mm)	*Max height (mm)*	
V_{arc} = 12 V T_{av} = max 15 sec t_{Hg} = +25/+80 °C	73	290	 Super Jumbo
V_{arc} = 12 V T_{av} = max 15 sec t_{Hg} = +40/+80 °C t_{rec} = +60/+70 °C	92	293	straps
V_{arc} = 10 V T_{av} = max 15 sec t_{Hg} = +40/+80 °C t_{rec} = +60 °C	102	334	straps
V_{arc} = 10 V T_{av} = max 15 sec t_{Hg} = +40/+80 °C t_{rec} = +60 °C	127	405	straps
V_{arc} = 15 V T_{av} = max 15 sec t_{amb} = −75/+90 °C	48	142	
V_{arc} = 12 V T_{av} = max 15 sec t_{amb} = −55/+70 °C	67	190	 Super Jumbo
V_{arc} = 12 V T_{av} = max 15 sec t_{amb} = −55/+70 °C	67	229	

Type	Filament data V_f (V)	I_f (A)	T_w (sec)	Voltages max (V)	Currents max (A)
PL5557/ PL17 Triode mercury-vapour filled	2.5	5	10	V_{ap} = 2500 V_{ainvp} = 5000 $-V_{g1}$ = 500	I_a = 0.5 I_{ap} = 2 I_g = 0.05
PL5559/ PL57 Triode mercury-vapour filled	5	4.5	>300	V_{ap} = 1000 V_{ainvp} = 1000 $-V_g$ = 500	I_a = 2.5 I_{ap} = 15 I_g = 0.25
PL5632/ C3J Triode xenon-filled	2.5	9	60	V_{ap} = 900 V_{ainvp} = 1250 $-V_g$ = 300	I_k = 2.5 I_{kp} = 30 I_g = 0.1 I_{gp} = 0.5
PL5684/ C3JA Triode xenon-filled	2.5	9	60	V_{ap} = 1000 V_{ainvp} = 1250 $-V_g$ = 300[1]	I_k = 2.5 I_{kp} = 30 I_g = 0.1 I_{gp} = 0.5
PL6574 Tetrode inert-gas filled	6.3	0.95	>15	V_{ap} = 650 V_{ainvp} = 1300 $-V_{g2}$ = 100 $-V_{g1}$ = 250	I_k = 0.3 I_{kp} = 2 I_{g2} = 0.02 I_{g1} = 0.02
PL6755A Tetrode mercury-vapour and inert-gas filled	2.5	11	>30	V_{ap} = 2000 V_{ainvp} = 2000 $-V_g$ = 300	I_k = 3.6 I_{kp} = 40 I_g = 0.25

[1]) 400 V may be tolerated up to V_a = 900 V and R_g = 50—100 kΩ.

Typical characteristics	Dimensions Max diam. (mm)	Max height (mm)	Base connections
$V_{arc} = 12\ V$ T_{av} = max 15 sec $t_{Hg} = +35/+80°C$ $t_{rec} = +50°C$	52	155	 Medium 4p.
$V_{arc} = 12\ V$ T_{av} = max 15 sec $t_{Hg} = +40/+80°C$ $t_{rec} = +60°C$	76	185	 Medium 4p.
$V_{arc} = 10\ V$ T_{av} = max 5 sec $T_{amb} = -55/+75°C$	40	150	 Medium 4p.
$V_{arc} = 10\ V$ T_{av} = max 5 sec $T_{amb} = -55/+75°C$	40	150	
$V_{arc} = 10\ V$ V_a/V_{g1} $\begin{pmatrix}V_{g2} = 0\ V\\ R_{g1} = 0\ \Omega\end{pmatrix} = 275$ V_a/V_{g2} $\begin{pmatrix}V_{g1} = 0\ V\\ R_{g2} = 0\ \Omega\end{pmatrix} = 370$ T_{av} = max 15 sec $T_{amb} = -75/+90°C$	33	70	 Octal
$V_{arc} = 12\ V$ T_{av} = max 15 sec t_{amb} = 0–55°C	59	228	 Super Jumbo [1]

1) fc should preferably be used as cathode return connection

IGNITRONS

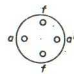
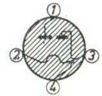
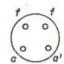
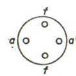
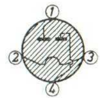
Type	Ignitor characteristics		Single phase A.C. control (two tubes in inverse parallel connection)				
	V_{firing} (V) max	I_{firing} (A)	V_{arms} max (V)	Demand max (kVA)	I_a max (A)	Demand current (A/rms)	T_{av} max. (sec)
PL5551A[1]	200	6-8 <12	220	530 180	30.2 56	2400 125	18
freq. 25-60 c/s			250	600 200	30.2 56	2400 125	18
			600	600 200	30.2 56	1000 125	7.5
PL5552A[1]	200	6-8 <12	220	1060 350	75.6 140	4800 311	14
freq. 25-60 c/s			250	1200 400	75.6 140	4800 311	14
			600	1200 400	75.6 140	2000 311	5.8
PL5553B[1]	200	6-8 <12	220	2120 705	192 355	9600 790	11
freq. 25-60 c/s			250	2400 800	192 355	9600 790	11
			600	2400 800	192 355	4000 790	4.6
PL5555 freq. 25-60 c/s	V_{fwdp} = max. V_{ap} $I_p = <100$		2400	2400 1105	135 207	1000 450	1.66
PL5822A[1] freq. 50-60 c/s	200	6-8 <12					
ZX1000 freq. 25—60 c/s			380	200 67	7[5] 13[5]	526 175	16.8[3] 10[4]

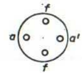
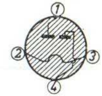
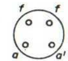
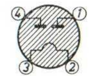
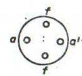
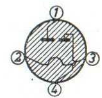
1) With provisions for mounting a thermostatic control unit.
2) Values apply to continuous operation. 3) Water cooling. 4) Forced air cooling. 5) Average.

V_{afwdp} max (V)	V_{ainvp} max (V)	I_{ap} max (A)	I_a corresp. (A)	T_{av} max (sec)	I_a/I_{ap} max (T_{av} = 0.2)
Rectifier (intermittent operation, phase control angle = 0) f = 50-60 c/s					
1200	1200	600 135	5 22.5	10	0.166
1500	1500	480 108	4 18		
500	500	1600	100	6	
600	600	4000 1140	54 190	6.25	0.166
1200	1200	3000 840	40 140		
1500	1500	2400 672	32 112		
900 2100[2])	900 2100[2])	1800 1200[2])	200 150[2])		
1200	1200	1500 420	20 70	6.25	0.166
1500	1500	1200 336	16 56		

INDUSTRIAL RECTIFYING TUBES

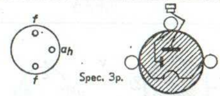
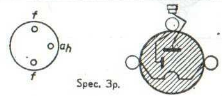
INDUSTRIAL RECTIFYING TUBES

Type	m	Filament data		Voltages		Currents		Typical characteristics			Dimensions		Base connections
		V_f (V)	I_f (A)	V_{tr}	V_{ainvp}	I_o	I_{ap}	R_t	V_{ign}	V_{arc}	Diam.	Height	
				max. (V)		max. (A)		min (Ω)	(V)		max. (mm)		
328	2	1.9	3.0	28	90	1.3	4	3	16	7	33	112	 A 
354	1	1.9	5.5	20 130	65 400	2 0.25	10 1.25	4 50	16	8	62	120	Edison
367	2	1.9	8.0	45	140	6	18	1	16	9	81	170	 W 
451	2	1.9	2.8	16	50	1.3	4	3	11	7	33	112	 A 

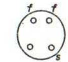
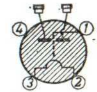
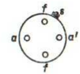
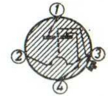
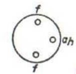
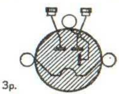
1010	2	1.9	3.5	60	185	1.3	4	10	16	9	37	120	 A	
1037	2	1.9	11	60	185	6	18	1.75	16	9	85	240	Goliath	
1039	2	1.9	20	60	185	15	45	0.75	16	9	94	264	Goliath	
1048	2	1.9	7	60	185	6	18	1.75	16	9	81	170	 W	
1049	2	1.9	28.5	60	185	25	75	0.3	16	9	101	280	straps	
1054	2	1.9	68	48	150	40	120	0.18	16	9	111	350	straps	
1069K[1]	2	3.25	70	55	170	60[2]	200	0.12	16	10	114	365	straps	
1110	2	1.9	3.5	60	185	1.7	5	4	16	9	39	131	 A	
1119	2	1.9	5.8	45	140	3	9	1.8	16	9	71	142		
1129	2	1.9	5.5	60	185	3	9	2.5	16	9	71	142		
1138	1	2.5	27	85	275	15	85	0.3	16	10	115	269	Goliath	
1163	1	2.25	17	130	375	6	36	0.5	16	9	83	178	Goliath	
1164	1	2.5	25	80	225	15	90	0.3	16	9	98	220	Goliath	

[1]) For welding equipment. [2]) With fan cooling.

INDUSTRIAL RECTIFYING TUBES

Type	m	Filament data		Voltages		Currents		Typical characteristics			Dimensions		Base connections
		V_f (V)	I_f (A)	V_{tr}	V_{ainvp}	I_o	I_{ap}	R_t	V_{ign}	V_{arc}	Diam.	Height	
				max. (V)		max. (A)		min (Ω)	(V)		max. (mm)		
1173	1	1.9	13	275 220	850 685	4	20 24	0.75	22[1]	12	62	189	
1174	1	1.9	12	275 220	850 685	6	30 36	0.5	22[2]	12	77	218	
1176	1	1.9	28	275 220	850 685	15	75 90	0.2	22[2]	12	92	301	straps
1177	1	1.9	60	275 220	850 685	25	135 150	0.1	28[2]	12	128	362	straps
1533	3	1.9	23	275	850	15	45	0.6	45[3]	15	192	270	straps
1534	2	1.9	23	275	850	15	45	—	45[3]	15	197	270	straps
1543	3	1.9	36	275	850	25	70	0.4	50[3]	15	207	265	cables
1544	2	1.9	36	275	850	25	70	—	50[3]	15	242	268	cables

1) For welding equipment.
2) With auxiliary ignition unit type 1289 (40 V, 10 mA).
3) With auxiliary ignition unit type E3 108 03 (100 V, 25 mA).

1553	3	1.9	70	275	850	40	135	0.25	50[1])	15	297	355		cables	
1554	2	1.9	70	275	850	40	135	—	50[1])	15	317	355		cables	
1564	2	1.9	70	275	850	60	135	—	50[1])	15	372	390		cables	
1710	2	1.9	8	150	470	3	9	2.5	22[4])	10	69.5	205		W	
1725A	2	1.9	3.5	150	470	1.3	4	5	22[4])	10	71	135		A	
1738	2	1.9	18	95	300	15	45	0.2	20	9	94	284		Goliath	
1749A	2	1.9	25	95	300	25	75	0.1	22	10	101	290		straps	
1788	2	1.9	11	95	300	10	30	0.3	22[2])	9	94	284		Goliath	
1838	2	1.9	21.5	115	360	15	45	0.25	22[3])	10	97	262		Spec. 3p.	
1849	2	1.9	29	115	360	25	75	0.2	22[3])	10	105	294		straps	
1859	2	1.9	60	115	360	50	150	0.1	28	12	143	436		straps	

1) With auxiliary ignition unit type E3 108 03 (100 V, 25 mA). 2) Screen connected with filament via a resistor of 10000 Ω, 0.5 W.
3) With auxiliary ignition unit type 1289 (40 V, 10 mA). 4) Screen connected with filament via a resistor of 1000 Ω, 0.5 W.

MICROWAVE TUBES

Type	*Frequency (Mc/s)*	*Wavelength band (cm)*	*Peak output power (kW)*
JP8-02B	8770—8830	3	0.025
JP9-2.5D	9415—9475	3	3
JP9-2.5E	9415—9475	3	3
JP9-7A	9210—9270	3	7.5
JP9-7D[1])	9345—9405	3	10.5
JP9-15(D)	9345—9405	3	22
JP9-15B	9415—9475	3	22
YJ1000	9190—9320	3	3
YJ1010[2])	8500—9600	3	225
YJ1011[2])	8500—9600	3	225
YJ1020	32700—33400	0.8	25
YJ1021	32700—33400	0.8	30
YJ1030[2])	5400—5900	5	0.16
YJ1040	9345—9405	3	14
YJ1071	9380—9440	3	10
YJ1110	9345—9405	3	20
YJ1120	9380—9440	3	25
YJ1140	16350—16650	2	50
YJ1150	1220—1350	23	450
YJ1170[2])	8500—9300	3	90
YJ1180[2])	8700—9500	3	205
2J42	9345—9405	3	7.5

[1]) Short pulse version of 2J42. [2]) Tunable.

Type	*Frequency (Mc/s)*	*Wavelength band (cm)*	*Peak output power (kW)*
2J51[2])	8500—9600	3	60
2J51A[2])	8500—9600	3	60
2J55	9345—9405	3	50
4J50	9345—9405	3	225
4J52A	9350—9400	3	80
5J26[2])	1220—1350	23	450
725A	9345—9405	3	50
5586[2])	2700—2900	10	800
6972	9345—9405	3	80
7028	9345—9475	3	3
7093	34512—35208	0.8	40
55029	9405—9505	3	at 1 μs 250 at 0.1 μs 205
55030	9345—9405	3	
55031/02	9260—9345	3	
55031/01	9168—9260	3	
55032/02	9085—9168	3	
55032/01	9003—9085	3	
55085-01 **55085-02** **55085-03** **55085-04**	3570—3614 3530—3570 3490—3530 3450—3490	8.5	360
55100-01 **55100-02** **55100-03** **55100-04**	3030—3060 3005—3030 2980—3005 2940—2980	10	400

[2]) Tunable.

CONTINUOUS-WAVE MAGNETRONS

Type	Frequency (Mc/s)	Wavelength band (cm)	Continuous-wave output power (kW)
DX206[1]	2425—2574	12.5	1.2
YJ1080[2]			2.5
YJ1082[1]			2.5
YJ1160[2]			2.5
YJ1162[1]			2.5
YJ1190[2]			5.0
7090			0.2
7292[2]			2.5
JPT9-01[3]	9150—9600	3	0.01

[1] Air cooled. [2] Water cooled. [3] Tunable.

KLYSTRONS

Type	Frequency (Mc/s)	Wavelength band (cm)	Output power (W)
KS7-85	6500—7500	4	0.1
KS9-20B	General charact. as 723A/B		
KS9-20D			
KS9-40	9300—9500	3	0.04
KS9-40D	9380—9510	3	0.035
YK1000	400—620	60	13500
YK1001	470—960	50	13500
YK1002	470—960	50	13500
YK1010	67000—74000	0.4	0.13
YK1061	470—960	50	27000

KLYSTRONS

Type	*Frequency (Mc/s)*	*Wavelength band (cm)*	*Output power (W)*
YK1062	470—960	50	27000
YK1090	10500—12200	2.8	0.42
YK1091	10500—12200	2.8	0.42
2K25	8500—9660	3	0.05
723A/B	9370	3	> 0.02
	8702—9548		> 0.01
6975	8500—9600	3	0.04
55335	31000—36000	0.8	0.15

TRAVELLING WAVE TUBES

Type	*Frequency (Mc/s)*	*Saturation power (W)*	*Low level gain (dB)*	*Beam voltage (V)*	*Beam current (mA)*
LA9-3B	7000—11500	0.011	30	1300	0.55
LB3-250B	2700—3300	250	33	5000	800
LB6-10	5925—6425	10	35	2650	40
LB6-20	5900—6500	20	37	3300	45
YH1080	7400—8500	15	37	3300	40
YH1090	3400—4200	24	40	2000	60
7537	4400—5000	8	36	1100	50
55340	3800—4200	10	39	1100	50

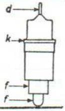
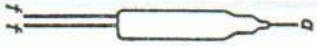
DUAL T.R. SWITCH

Type	*Frequency (Mc/s)*	*Peak power (kW)*
56032	8490—9580	3—250

BACKWARD-WAVE OSCILLATORS

Type	*Frequency (Mc/s)*	*Power output (mW)*	*Range of delay structure voltage (V)*	*Beam current (mA)*
BA16-10B	11000—18000	20	500—2600	<30
YH1100	8000—12400	50	460—2100	<35

MEASURING DIODES

EA52 **EA53** Diode for frequencies up to 1000 Mc/s	$V_f = 6.3$ V $I_f = 0.3$ A	$V_d = <3$ V at $I_d =$ 0.5 mA	$I_k = <0.3$ mA $V_{d\text{invp}} = <1000$ V at $f < 100$ Mc/s $C_d = <0.5$ pF	 **EA52**  **EA53**
5642 Half-wave rectifier	$V_f = 1.25$ V $I_f = 0.2$ A	V_{invp} <10 kV	$I_a < 250\ \mu$A $C_{af} = 0.6$ pF	

NOISE DIODES

Type	V_f *(V)*	I_f *(A)*	λ *(cm)*	V_{ign} *(V)*	V_d *(V)*	I_d *(mA)*	*Noise level (dB)*
K50A Neon filled noise diode	2	2	3	min 6000	165	125	18.7
K51A Neon filled noise diode	2	3.5	10	min 6000	140	200	19.1
K81A Noise diode	1.85	2.5			100	15	13
10P High vacuum noise diode	3	Wf max. 4 W.	30	—	100	15	17.6

HIGH-VACUUM DIODE

Type	V_f (V)	I_f (A)	T_h (sec)	Application	Typical characteristics	
8020	5	6	5	Rectifier		$V_{a\,invp}$ = max 40 kV I_o = max 100 mA I_{ap} = max 750 mA
				Limiter	V_f = 5.5 V V_{ap} = 10 kV I_{ap} = min 2A	V_f = max 5.8 V V_{ap} = max 12.5 kV W_f = max 75W

DEVICES FOR NUCLEAR EQUIPMENT

RADIATION COUNTER TUBES

RADIATION COUNTER TUBES (halogen filled)

Type	Description	Radiation sensitivity	Wall thickness	Anode resistor	Max. starting voltage	Plateau
			(mg/cm^2)	($M\Omega$)	(V)	(V)
18503	cylinder counter	γ	250	10	325	375—600
18504	Mica window counters	β, γ	2—3[1])	10	325	375—600
18505		α, β, γ	1,5—2[1])	10	350	450—700
18506		β, γ	2.5—3.5[1])	10	375	450—750
18507	End window counter	X-ray	2.5—3.5	5	1450	1600—2000
18508	For liquid or solid samples	γ	1 mm	5—10	450	800—1100
18509	High flux counter	β, γ	80—100	2	375	500—650
18510	Liquid flow counter	β	30	5	375	500—650
18511	Side window proportional counter	X-ray	2—2.5[1])			1500—1850[2])
18515	Low level mica window counters	α, β	1.5—2[1])	5—10	350	500—700
18516		β	10[1])	5—10	375	500—750
18517	Guard counter for 18515	cosmic rays	1 mm	10	650	800—1200
18518	Guard counter for 18516					
18520	Cylinder counters	γ	0,7 mm	2.7	345	375—475
18522			0.5 mm	10	500	600—1000
18524	Pour-in counters	β, γ	25	2.7	350	400—500
18525						
18526	End window counter	α, β, γ	1.5—2[1])	10	375	450—750

[1]) Window thickness. [2]) Operating voltages.

Max. plateau slope	*Max. dead time*	*Max. background (shielded)*	*Effective length*	*Max. Dimensions*	
				tot. length	*diam.*
(%/V)	(μsec.)	(counts/min.)	(mm)	(mm)	
0.02	100	10	40	55	17
0.02	100	10	40	55	17
0.02	160	15	37	57	26
0.02	180	25	37	57	34
0.04	100	25	107	127	25.4
0.04	100	100	90	123	68
0.15	20	2	16	38	7
0.07	125	15	36	92	24
			67	128	27
0.04	70	5	13	30	26
0.04	70	9	18	34	34
0.03	1000	75 — 70		90	80
0.15	200	40	140	170	22.2
0.03	550	160	400	475	42
0.15	100	12	60	235 182	32 30
0.02	200	25	27.8	57	34

RADIATION COUNTER TUBES (halogen filled)

Type	Description	Radiation sensitivity	Wal thickness	Anode resistor	Max. starting voltage	Plateau
			(mg/cm^2)	$(M\Omega)$	(V)	(V)
18529	High flux counter	β, γ	80—100	2	400	500—650
18533	Dip counter	β, γ	30	2.7	350	400—500
18536	Low level mica window counter	α, β	1.5—2	5—10	375	500—750
18537	End window counters	X-ray	3.5—4[1])	2.7	1000	1100—1300
18538	End window counters	X-ray	3.5—4[1])	2.7	800	900—1100
18545	Cylinder counter	γ	525	2.7	350	380—480
18546	End window counter	β	3.5—4[1])	4.7	400	700—1100
18548	Guard counter for 18546	Cosmic rays	1 mm	10	700	800—1200
18550	Thin wall cylinder counters	β, γ	32—40	5	380	500—650
18552	Thin wall cylinder counters	β, γ	40—60	2	400	450—800
18553	Thin wall cylinder counters	β, γ	40—60	2	400	450—800
ZP1000[3])	BF 3 counters	Slow neutrons	0.4 mm			1600—2400[2])
ZP1001	BF 3 counters	Slow neutrons	0.4 mm			1600—2400[2])
ZP1010[3])	BF 3 counters	Slow neutrons	0.4 mm			900—1900[2])
ZP1020[3])	BF 3 counters	Slow neutrons	1 mm			2300—3800[2])
ZP1080	Dip counters	β, γ	30	4.7	360	400—600
ZP1083	Dip counters	β, γ	30	4.7	360	400—600

[1]) Window thickness. [2]) Operating voltage. [3]) With coaxial connector.

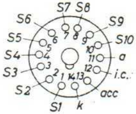
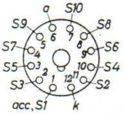
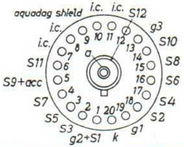
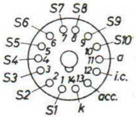
Max. plateau slope	*Max. dead time*	*Max. background (shielded)*	*Effective length*	*Max. dimensions*	
				tot. length	*diam.*
(%/V)	(μsec.)	(counts/min.)	(mm)	(mm)	
0.25	20	1	8	27	7
0.15	100	12	60	143	34
0.03	60	10	18	34	34
0.08	150 — 400	50	110	154	25.4
0.1	200	75	240	270	22.2
0.04	45	30	25	45	58
0.03	850	90		111	104
0.04	50	4	28	52	10
0.02	70	30	75	146	18
0.02	100	60	192	287	18
0.01		1	250	355	25.4
0.01		1	250	318	25.4
0.01		0.1	100	199	13.2
0.01		3	513	646	51.5
0.08	100	50	60	150	22
				145	34

PHOTOMULTIPLIERS

PHOTOMULTIPLIERS

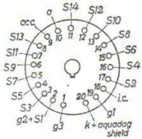
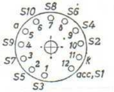
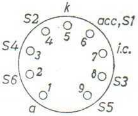
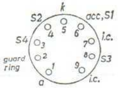
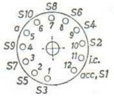
Type	Number of stages	Spectral response (type)	Useful diam. (mm)	N_k ($\mu A/lm$)	$N_a(A/lm)$ or $G(ain)$	at V_b (V)
XP1000	10	A(S11)	44	70	700	1800
XP1001[1]		A(S11)		80	700	
XP1002		T(S20)		150	400	
XP1003		TU		150	400	
XP1004		U(S13)		70	700	
XP1005		C(S1)		20	100	
XP1010[2]	10	A(S11)	32	80	700	1800
XP1011[3]				60		
XP1015[3]				60		
XP1020	12	A(S11)	42	65	$G = 10^8$	2500
XP1021		A(S11)				
XP1023		U(S13)				
XP1030	10	A(S11)	36.5	70	250	1800
XP1031[1]		A(S11)		80		
XP1032		U(S13)		70		
XP1033		U(S13)		60		

[1]) Energy resolution for 0.661 MeV Cs_{137} line = 8.5 %. [2]) Low noise. [3]) Ruggedized.

Dark current (μA)	N_a(A/lm) at or G(ain)	Tot. length (max. mm)	Diam. (max. mm)	Base connections
0.015	100	148	58	
0.015	100			
0.015	60			
0.015	60			
0.015	100			
<10	20			
0.01	60	127	39.5	
		127		
		219		
<5	G = 10^8	197	55	
		207		
		207		
<2	100	159	75.5	
		159		
		198		
		205		

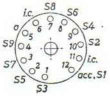
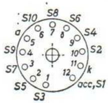
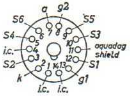
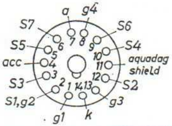
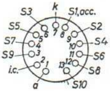
Type	*Number of stages*	*Spectral response (type)*	*Useful diam. (mm)*	N_k ($\mu A/lm$)	$N_a(A/lm)$ or $G(ain)$ at	V_b (V)
XP1040	14	A(S11)	110	70	$G = 10^8$	2400
XP1110 / **XP1111**[4]	10	A(S11)	14	70	250	1800
XP1113	6	A(S11)	14	40	0.4	1200
XP1114	4	A(S11)	14	40	0.004	800
XP1115[3][4]	10	A(S11)	14	70	250	1800
XP1116[3]	10	C(S1)	14	20	20	1800

[3] Ruggedized. [4] With flying leads.

Dark current at (μA)	N_a(A/lm) or G(ain)	Tot. length (max. mm)	Diam. (max. mm)	Base connections
2	G = 10^8	281	136.5	
0.02	30	105 91	19 19	
< 0.01	0.2	70	22	
0.1 (nA)	0.004	70	22	
0.02 10	30 10	105	19	

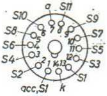
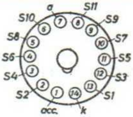
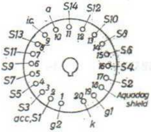
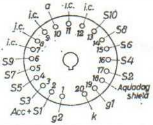
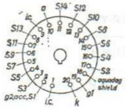
Type	*Number of stages*	*Spectral response (type)*	*Useful diam. (mm)*	N_k ($\mu A/lm$)	N_a(A/lm) or G(ain) at	V_b (V)
XP1117[3])	9	T(S20)	14	100	100	1800
XP1118	10	U(S13)	14	70	250	1800
XP1140	6	S4	150 (mm^2)	45	$G = 10^4$	3500
XP1141	7	A(S11)	42	55	$G = 10^4$	3500
52AVP	10	A(S11)	20	60	250	1800

[3]) Ruggedized.

Dark current at (μA)	N_a(A/lm) or G(ain)	Tot. length (max. mm)	Diam. (max. mm)	Base connections
0.1	30	105	19	
0.02	30	105	19	
0.1	$G = 10^4$	123	58	
1	$G = 10^4$	167	58	
0.02	30	150	25.5	

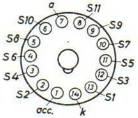
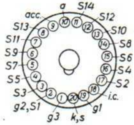
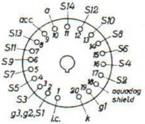
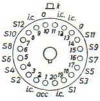
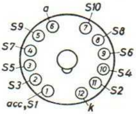
PHOTOMULTIPLIERS

Type	*Number of stages*	*Spectral response (type)*	*Useful diam. (mm)*	N_k ($\mu A/lm$)	$N_a(A/lm)$ or $G(ain)$ at	V_b (V)
53AVP / **53UVP**	11	A(S11) / U(S13)	44	70	1000	1800
54AVP / **54UVP**	11	A(S11) / U(S13)	111	60	500	1800
56AVP	14	A(S11)	42	65	$G = 10^8$	2200
56AVP/03		A(S11)				2150
56AVP/05		A/05				2200
56UVP		U(S13)				2200
56CVP	10	C(S1)	42	25	100	2750
56TUVP / **56TVP**	14	TU / T(S20)	42	115	$G = 10^8$	2500

Dark current at (μA)	*N_a(A/lm) or G(ain)*	*Tot. length*	*Diam.* *(max. mm)*	*Base connections*
0.015	60	153	58	
0.2	250	235	130	
0.5 0.1 0.5 0.5	$G = 10^8$	190	52.5	
10	20	170	52.5	
5	$G = 10^8$	190	52.5	

PHOTOMULTIPLIERS

Type	Number of stages	Spectral response (type)	Useful diam. (mm)	N_k ($\mu A/lm$)	$N_a(A/lm)$ or $G(ain)$ at	V_b (V)
57AVP	11	A(S11)	200	50	250	1800
58AVP	14	A(S11)	110	70	$G = 10^8$	2400
58UVP	14	U(S13)	110	70	$G = 10^8$	2400
60AVP	12	A(S11)	200	50	$G = 10^8$	3000
150AVP	10	A(S11)	32	70	700	1800
150CVP	10	C(S1)	32	25	100	1800
150UVP	10	U(S13)	32	70	700	1800

Dark current at (μA)	N_a(A/lm) or G(ain)	Tot. length (max. mm)	Diam. (max. mm)	Base connections
1	60	325	236	
2	G = 10^8	281	136.5	
2	G = 10^8	340	138	
50	G = 10^8	323	231	
0.01	60			
10	20	127	39.5	
0.01	60			

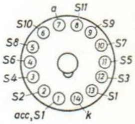
PHOTOMULTIPLIERS

Type	*Number of stages*	*Spectral response (type)*	*Useful diam. (mm)*	N_k ($\mu A/lm$)	$N_a(A/lm)$ or $G(ain)$ at	V_b (V)
153AVP	11	A(S11)	44	80	1000	1800

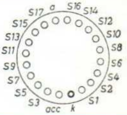
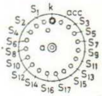
WINDOWLESS PHOTOMULTIPLIERS

Type	*Cathode* [2]	*Quantum efficiency for UV-photons*	*Gain at* $V_b = 4000$ V
XP1120[1]	Ni	10% at 800 Å	5.10^7
XP1121[1]	CuBeO	20% at 680 Å	
XP1122[1]	Ni	10% at 800 Å	
XP1123[1]	CuBeO	20% at 680 Å	
XP1130[1]	Ni	10% at 800 Å	5.10^7
XP1131[1]	CuBeO	20% at 680 Å	

[1]) Potted voltage dividers. [2]) Useful area 22× 22 mm². [3]) High voltage connector "LEMO" type III C40 H.T. 10. Signal connector "LEMO" type OC50.

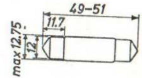
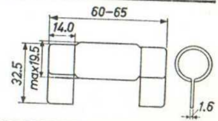
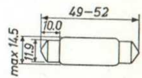
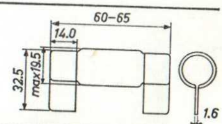
Dark current at (μA)	$N_a(A/lm)$ or $G(ain)$	Tot. length (max. mm)	Diam. (max. mm)	Base connections
0.015	60	153	58	

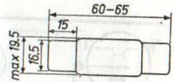
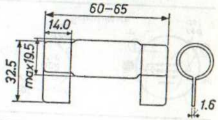
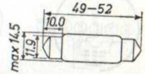
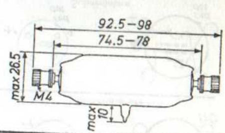
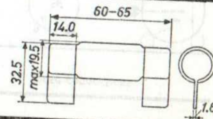
WINDOWLESS PHOTOMULTIPLIERS

Dark current at $G = 20^6$ (μA)	Pressure during operation (mm Hg)	Tot. length (max. mm)	Diam. (max. mm)	Base connections [3]
6.10^{-6}	10^{-5}—10^{-6}	325	60.5	
6.10^{-6}	10^{-5}—10^{-10}	321	90.5	

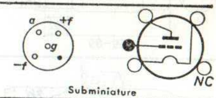
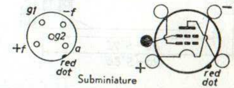
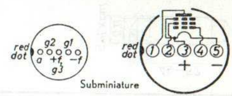
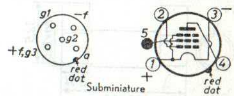
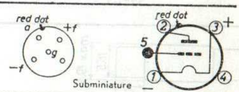
MISCELLANEOUS

SURGE ARRESTERS

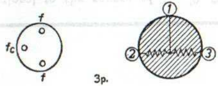
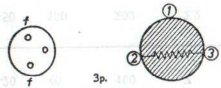
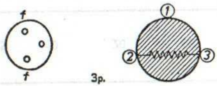
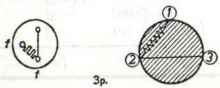
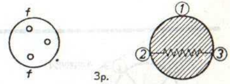
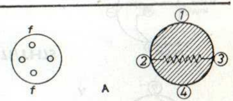
Type	Ignition voltage (V d.c.)	Extinguishing voltage (min.) (V d.c.)	Max. ratings				Mains voltage		Dimensions
			Temporary I (A)	Temporary I (sec)	Fuse in series (A)	Capacitive discharge (repeatedly) (Ws)	D.C. max (V)	A.C. value r.m.s. max (V)	
4349	130—180	110	5	3	6	10	70	75	
4369	150—200	110	10	3	10	10	70	75	
4370	80—120	60	10	3	10	10	36	50	
4371	150—200	110	5	3	6	10	70	75	
4372	280—350	250	2.5	1	6	10	200	180	

4378	80—120	60	10	3	10	10	36	50	
4379	280—350	130	10	3	10	10	50	180	
4383	280—350	130	5	3	6	10	50	180	
4390	700—910	200	25	3	25	500	175	300	
4397	400—500	200	5	1	6	10	150	230	

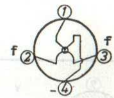
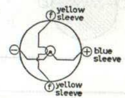
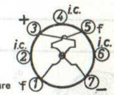
ELECTROMETER TUBES

Type	V_f (V)	I_f (mA)	V_a (V)	V_{g2} (V)	I_a (μA)	V_{g1} (V)	S (μA/V)	μ	I_{g2} (A)	I_{g1} (A)	Base connections
4065 Triode	1.25	13	9	—	100	—2.5	80	2	—	$< 12.5 \times 10^{-14}$	
4066 Tetrode	1.25	13	4.5	—3.2	20	3	17		2.5×10^{-15}	2.5×10^{-4}	
4067[1] Pentode	0.5	8	5	21	0.5	—1.7				2.5×10^{-11}	
4068 Pentode	1.25	8.2	10	6.5	5	—2.5	10.5	110		3×10^{-15}	
4069 Triode	1.25	14	9		100	—2.7	80	2		1.6×10^{-13}	

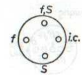
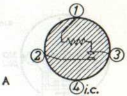
[1]) For pH meters only

Type	V_{contr} (V)	I_{reg} (A)	Base connections
329	10—30	1.15	 3p.
340	3—10	5.9	Edison
1904	30—80	0.1	 3p.
1905	2—6	1	Edison
1908	5—15	0.8	 3p.
1909	5—45	0.635	
1909A	5—45	0.635	 3p.
1910	5—15	1.4	 3p.
1913	4—12	2	Edison
1918-01	4—10	0.1	Edison Mignon
1923	15—45	0.43	Edison
1927	40—120	0.18	 A
1928	80—240	0.18	
1941	80—200	0.3	

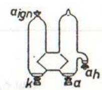
THERMOCOUPLES

Type	I_f (mA)				R_f	R_{Th}	Dimensions		Base connections
	I_f	I_f[1])	I_f (E = 12 mV)	I_f[2]) (max)	(Ω)	(Ω)	Tot. length	Diam.	
							(max. mm)		
TH1 TH71 TH91	0—15	0—5	10	20	68	6	63	24	TH1/ TH5  A
TH2 TH92	0—30	0—10	20	40	25	3.5			
TH3 TH73 TH93	0—75	0—20	40	100	7	3.5	44.5	19	TH71/TH75  Miniature
TH4 TH94	0—150	0—50	100	200	2.2	3.5			
TH5 TH75 TH95	0—300	0—100	200	350	1.2	3.5	25	7.9	TH91/TH95  Miniature

[1]) In this range V_o is proportional to the square of I_f. [2]) During max. 1 min.

Type	Typical characteristics	Max current: Mains	Max current: At switching on	Max current: At switching off	Base connections
4152/02	$I_R = 85$—115 mA $R = 370\ \Omega$ Timing at $t_{amb} = 25$ °C: at 95 mA max 55—85 sec	220 V D.C.	1.5 A	0.25 A	 A 
		220 V A.C.	1.5 A	0.25 A	
		380 V A.C.	0.7 A	0.075 A	

RELAY TUBE

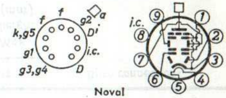
Type	Voltages max (V)	Currents max (A)	Typical characteristics	Dimensions: Max diam. (mm)	Dimensions: Max height (mm)	Base connections
PL5 Triode with capacitive ignition	$V_{ainvp} = 1500$ $V_{arms} =$ max 500 $=$ min 20	$I_a = 3.5$[1]) $I_a = 0.5$ $I_{ap} = 1000$	$V_{arc} = 40$ V $T_{av} =$ max 1 sec $V_{ign} =$ max 25 V freq. = max 300 c/s $t_{Hg} = 10$-40 °C	135	190	

[1]) With fan cooling.

NEUTRON GENERATOR TUBE

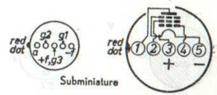
18600 Typical Operation	V_{ion} source = 2000 V d.c. I_{ion} source = 0.3 mA d.c. V replenisher = 1.5 V I replenisher = 3.5 A	V target = —125 kV d.c. I target = 100 μA d.c. Neutron yield min. 10^8 n/sec.	Total length max. 600 mm	Diameter max. 70 mm

BEAM DEFLECTION TUBE

E80T	V_f = 6.3 V I_f = 0.15 A	V_c = 100 V V_{g3+g4} = 250 V V_{g2} = 70 V V_{g1} = 0 V V_D = 120 V $V_{D'}$ = 120 V[1])	I_a = 1.35 I_k = 2	I_a ($\Delta V_{D'}$ = 7.5 V) = 0.25 mA	 Noval

1) Adjusted for max. anode current I_a

TRANSMITTING PENTODE FOR USE IN RADIO SONDES

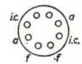
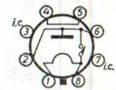
95108 Typical characteristics	V_f = 1.25 V I_f = 45 mA	V_a = 45 V V_{g2} = 45 V V_{g1} = —2.75 V	I_a = 0.875 mA I_{g2} = 0.2 mA	S = 0.65 mA/V R_i = 0.75 MΩ μ_{g2g1} = 9.3	 Subminiature
As oscillator[1]) (triode connected) for use in radio sondes		V_f = 2 V V_a = 120 V V_{g2} = 120 V	I_k = 15 mA I_g = 2 mA	R_g = 10 kΩ W_o = 750 mW f = 30 Mc/s	

1) Life expectancy 5 hours.

IONIZATION VACUUM GAUGE

Type	*Supply voltage*	*Gas pressures*	*Field intensity of required permanent magnet*
95322 Cold cathode	2000 $V_{d \cdot c \cdot}$	10^{-3}—10^{-5} mm Hg	approx. 370 Gauss

SATURATED DIODE FOR USE IN STABILISING CIRCUITS

56001	$V_f = 4.6$ V $I_f = 0.155$ A	$V_a = 250$ V	$I_a = 150\ \mu$A	$V_f = 4.5$ V $I_a = 122\ \mu$A		

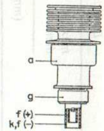
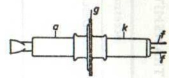
TRANSMITTING TUBES (recent additions)

Type	V_f (V)	I_f (A)	V_a max. (V)	V_{g2} (V)	W_a max. (W)	Full ratings: Max. freq. (Mc/s)	W_o (W)	η %)	Operation
YD1150	6.3	33	7000	—	2500	160	4100	78	Industrial oscillator
YD1151	For further data see YD1150								
YD1152	For further data see YD1150								
YD1160	6.3	66	7000	—	5000	160	7500	78	Industrial oscillator
YD1161	For further data see YD1160								
YD1162	For further data see YD1160								
YD1170	5.3	130	7200	—	10000	120	15000	75	Industrial oscillator
YD1171	For further data see YD1170								
YD1172	For further data see YD1170								
YD1220	5	14	4200	—	350	85	1180	78	Industrial oscillator
YL1010	10	200	12000	1400	30000	30 220	30000[1]) 25000	50 72	SSB class C amplifier
YL1011					25000	For further data see YL1010			
YL1012					45000	For further data see YL1010			
YL1090	22	350	15000	1600	120000	30	120000[1])	50.5	SSB
YL1091					150000	For further data see YL1090			
YL1122	12.6	13	5500	1000	4000	13	5100	45	SSB

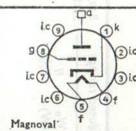
[1]) P.E.P

Reduced ratings			*Base Socket*	*Accessories*		*Dimensions*	
Freq. (Mc/s)	W_o *(W)*	η *(%)*		*Type number*	*Description*	*max. diam.*	*max. length*
						(mm)	
—	—	—		40686 40688–40689 40630	Grid connector Filament clips Insulating pedestal	122.5	172
				K713	Water jacket	62	172
				With integral helical water cooler		131	207
—	—	—		40686 40688–40689 40630	Grid connector Filament clips Insulating pedestal	122.5	192
				K726	Water jacket	62	192
				With integral helical water cooler		131	227
—	—	—		40690 40692–40693 40654	Grid connector Filament clips Insulating pedestal	169	221
				K727	Water jacket	84	221
				With integral helical water cooler		114	232
—	—	—	Giant 5-P 40211/01	40666	Chimny	87	151
— —	— —	— —				140	305
						215	315
						218	315
—	—	—				260	492
						315	492
				With integral helical water cooler		124	229

S.H.F., U.H.F. AND V.H.F. TUBES (recent additions)

2C39A **2C39BA** Disk seal triode Typ. char.	$V_f = 6.3$ V $I_f = 1.02$ A freq. = max. 3000 Mc/s $V_f = 6.0$ V $I_f = 0.98$ A freq. = max. 3500 Mc/s	**2C39A** **2C39BA**	$V_a = 600$ V $R_k = 30\ \Omega$ $I_a = 75$ mA $S = 25$ mA/V $\mu = 100$		
5893 Pencil type medium-mu triode Typ. char.	$V_f = 6.0$ V $I_f = 0.28$ A	$V_a = 200$ V $R_k = 100\ \Omega$	$I_a = 25$	$S = 6$ mA/V $\mu = 27$	

RECEIVING AND AMPLIFYING TUBES (recent additions)

ED500	$V_f = 6.3$ V $I_f = 0.35$ A	For further data see PD500			
PD500 Triode for colour T.V.	$V_f = 7.3$ V $I_f = 0.3$ A	$V_a = 25$ kV $-V_g = 7\text{–}30$ V	$I_a = 1.5$	V_a max. = 25 kV I_a max. = 1.6 mA W_a max. = 30 W	
EL508	$V_f = 6.3$ V $I_f = 0.835$ A	For further data see PL508			

INTERCHANGEABILITY GUIDE FOR ELECTRON TUBES

Receiving tubes for radio and TV

Picture tubes

Special tubes for industrial and communication services

INLEIDING

Deze lijst van equivalente en vervangingstypen voor elektronenbuizen geeft een overzicht van alle buizen die door onze typen vervangen kunnen worden.

In de eerste kolom worden in nummeriek-alfabetische volgorde de te vervangen buizen te samen met onze gangbare en oudere typen vermeld.

In de tweede kolom worden de CV-nummers van onze equivalente buizen en **in de derde** onze typenummer(s) van deze buizen vermeld.

Opgemerkt wordt dat de typenummers zonder haakjes in de derde kolom **direct**-equivalente typen zijn, terwijl de tussen haakjes geplaatste typenummers de **vrijwel**-equivalente buizen aangeven. Aangenomen mag worden dat in praktisch alle gevallen de **vrijwel**-equivalente buizen na enige wijzigingen in de bedrading de originele buizen kunnen vervangen. Voor verouderde buizen zijn eveneens de meest geschikte vervangingsbuizen in deze lijst opgenomen. In een aantal gevallen kan de voorgestelde vervanging zonder ingrijpende wijzigingen van het apparaat uitgevoerd worden; in andere gevallen zal het echter nodig zijn de bedrading van de buishouder te wijzigen, de buishouder te vervangen, een verloopvoet te gebruiken en/of wijzigingen in de schakeling aan te brengen. Indien een triode door een pentode wordt vervangen, wordt deze laatste als triode geschakeld. Het feit dat een buis in de lijst is opgenomen houdt niet in, dat deze steeds kan worden geleverd.

Type to be replaced	*CV number*	*Replacement type*
0.1NE3/1		(ZP1010)
OA2;OA2WA		
OA3		
OA4;OA4G	see page 314	
OB2;OB2WA		
OC3		
OD3		
OE3	see page 315	
OG3		
*OH3		
1A3	753	1A3;DA90
1A7GT	1802	DK32
1AB6		1AB6;DK96
1AC6		1AC6;DK92
1AD4	2237	1AD4;DF62
1AH5		1AH5;DAF96
1AJ4		1AJ4;DF96
1AN5		1AN5;DF97
1B3GT	1830	1B3GT
1BG2		1BG2;DY51
1BU3		1BU3
1C1		1R5;DK91
1C2		DK92;1AC6
1C3		DK96;1AB6
1CP31	2302	1CP31;DH3-91
*1E3		DC70;6375
1F1		1AJ4;DF96
1F2		1L4;DF92
1F3		1T4;DF91
1FD1		1AH5;DAF96
1FD9		1S5;DAF91
1G3GT		1G3GT
1G35P		4C35;6268;4C35A
1G45P		3C45
1H2		1S2;DY86
1L4	1758;2742; 2795	1L4;DF92
1M1		(1M3);(DM70)
1M3	2980	1M3;DM70

Type to be replaced	*CV number*	*Replacement type*
1N3		1N3;DM71
1N16		(RG1-240A)
1P1		3C4;DL96
1P10		3S4;DL92
1P11		3V4;DL94
1P23		(3554)
1P32		(3546PW)
1P37		(90AG)
1P41		(53CG)
1R5	782	1R5;DK91
1S2		1S2;DY86; 1S2A;DY87
1S2A		1S2A;DY87
1S4	783	(3S4);(DL92)
1S5	784	1S5;DAF91
1T4	785;1971	1T4;DF91
1U4	2507	1U4
1U5	3912	1U5;DAF92
1X2		(1S2);(DY86)
1X2A		(1S2);(DY86)
1X2B		(1S2A);(DY87)
1.5NG12		(ZP1010)
2B3		(1B3GT)
2B29		(5894);(QQE06/40)
2B32		832A;QQE04/20
2B46		6146;QE05/40
2B52		6252;QQE03/20
2B94		5894;QQE06/40
2C39A	2516	2C39A
2C39BA		2C39BA
2D21	797	PL2D21;EN91; PL5727;M8204
2D21W	2876	PL5727;M8204
2D21WA	4018	PL5727;M8204
2E24		(2E26);(QV05-10)

** Obsolete type with replacement type*

INTERCHANGEABILITY GUIDE ELECTRON TUBES

Type to be replaced	CV number	Replacement type
2E26	3990	2E26;QV05-10
2FY5		2FY5;XC97
2G57		PL5557
2G402A		DCX4/1000;3B28
2G/472B		DCX4/5000;4B32
2GK5		2GK5
2H28		3B28;DCX4/1000
2H66		866A;DCG4/1000G
2HA5		2HA5;XC900
2HR8		2HR8;XF86
2J42	3676	2J42
2J42A	3997	JP9-15
2J51	3560	2J51
2J51A	5134	2J51A
2J55		2J55
2J56	2852	2J56
2K25	2792	2K25
2K26		KS7-85
2V/400A	32	DCG4/1000G;866A
2V/400B		(DCG4/1000G);(866A)
2V/470C		(DCG4/5000)
2V/471A		(DCG4/5000)
2V/490C		(DCG4/5000)
2V/500C		(DCG4/5000)
2V/530A		(DCG9/20);(6508)
2V/530E		(DCG9/20);(6508)
2V/531E		(DCG9/20);(6508)
3-400Z		(YD1130)
3A4	807;2390	3A4;DL93
3A5	808	3A5;DCC90
3AFP7		3AFP7;DP7-91
3AFP11		3AFP11;DB7-91
3AFP31		3AFP31;DH7-91
3AJ8		3AJ8;XCH81
3AL5		3AL5
3ALP1	2175	3ALP1;DG7-5
3ALP7	5171	3ALP7;DP7-5
3ALP11		3ALP11-DB7-5

Type to be replaced	CV number	Replacement type
3AMP1	2431	3AMP1;DG7-32
3AMP1A		3AMP1A;DG7-32/01
3AU6		3AU6
3AZP7		3AZP7;DPM9-11
3AZP11		3AZP11;DBM9-11
3AZP31		3AZP31;DHM9-11
3B4	2240	3B4;DL98
3B28	1835	3B28;DCX4/1000
3BE6		3BE6
3BH2		3BH2;GY501
3BKP2		3BKP2;DN7-78
3BKP31		3BKP31;DH7-78
3BLP7		3BLP7;DP7-10
3BLP31		3BLP31;DH7-10
3BX6		3BX6;XF80
3BY7		3BY7;XF85
3BYP2		3BYP2;DN7-11
3BYP31		3BYP31;DH7-11
3BZ6		3BZ6
3C4		3C4;DL96
3C23		PL3C23A
3C45	6007	3C45
3CB6		3CB6
3DT6		3DT6
3DT6A		(3DT6)
3E5		(3C4);(DL96)
3E29	2295;3599	3E29;QQV5-P10
3EH7		3EH7;XF183
3EJ7		3EJ7;XF184
3FY5		3FY5;LC97
3G49P		5949
3G/501A		PL5545A
3G/502A		PL6807
3GK5		3GK5
3HA5		3HA5;LC900
3Q4	818	3Q4;DL95
3S4	484;2370; 820	3S4;DL92
3V4	2983	3V4;DL94

Type to be replaced	CV number	Replacement type
3V/340B		(PL5557)
3V/390A	5027	PL5559
3V/490A		(PL105)
3V/531E		(DCG12/30;(5870)
3WP1	3946	3WP1;DG7-36
3WP11		3WP11;DB7-36
4-65A	1905	4-65A;QB3/200
4/100BU		AZ50
4-125A	2963	4-125A;QB3/300GA
4-250A	2964	4-250A;QB3.5/750GA
4-400A	3879	4-400A;QB4/1100GA
4B13		QB2/250
4B26	1836	1163
4B32	2518	4B32;DCX4/5000
4BL8		4BL8;XCF80
4C35	1787	4C35;6268;4C35A
4C35A	5247	4C35A
4CM4		4CM4;PC86
4CX250B		4CX250B;QEL2/275
4CX250F		4CX250F;QEL2/275H
4D21	2963	4-125A;QB3/300GA
4DL4		4DL4;PC88
4EH7		4EH7;LF183
4EJ7		4EJ7;LF184
4EP2		4EP2;DN10-94
4EP7		4EP7;DP10-94
4EP11		4EP11;DB10-94
4EP31		4EP31;DH10-94
4ER5		4ER5;PC95
4ES8		4ES8;XCC189
4F15K		4X150A;QEL1/150
4F15R		4X150A;QEL1/150
4F21		QB3/300;6155
4FY5		4FY5;PC97
4G/280K		PL2D21;EN91; PL5727;M8204
4GJ7		4GJ7;XCF801
4GK5		4GK5
4GTP		(3546PW)
4H/135M		QEL1/50;4X150A
4H/136M		QEL1/150H;4X150D
4H/160M		QEL2/250;4X250B
4HA5		4HA5;PC900
4J50		4J50
4J52A	5018	4J52A
4KM50000LA		(YK1000)
4KM50000LA3		(YK1000)
4LP2		4LP2;DNM10-93
4LP7		4LP7;DPM10-93
4LP11		4LP11;DBM10-93
4LP31		4LP31;DHM10-93
4Q025		RG3-250
4X150A	2519	4X150A;QEL1/150
4X150D	3991	4X150D;QEL1/150H
4X250B	2487	4X250B;QEL2/250
4X500A		4X500A;QBL4/800
5/03HM		AL13-36
5/04HM		MF13-1
5/04J		(MF13-1)
5/04TM		MW13-35
5/62CM		DH13-78;5BHP31
5/62PM		DB13-78;5BHP11
5A/160H		EF91;6AM6;M8083
5A/170K		E180F;6688
5ADP1	5035	5ADP1;DG13-34
5ADP2		5ADP2;DN13-34
5ADP7	5125	5ADP7;DP13-34
5ADP11		5ADP11;DB13-34
5AQ4	593	5AQ4;GZ32
5AR4	1377	5AR4;GZ34
5B21		1164
5B/250A	124	QE06/50;807
5BHP1		5BHP1;DG13-78
5BHP2		5BHP2;DN13-78
5BHP7		5BHP7;DP13-78
5BHP11		5BHP11;DB13-78
5BHP31	5168	5BHP31;DH13-78

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Type to be replaced	*CV number*	*Replacement type*
5BKP7		5BKP7;DP13-97
5BKP11		5BKP11;DB13-97
5BKP31		5BKP31;DH13-97
5C21		PL5545A
5C22	2520	5C22;6279
5C/100A		QB2/250;813
5CBP2		5CBP2;D13-15GL
5CBP11		5CBP11;D13-15BE
5CBP31		5CBP31;D13-15GH
5CLP2		5CLP2;DN13-10
5CLP7		5CLP7;DP13-10
5CLP11		5CLP11;DB13-10
5CLP31		5CLP31;DH13-10
5CP1A		(DG13-2)
5CP7A	3954	(DP13-2)
5CP11A		(DB13-2)
5D22	2964	4-250A;QB3.5/750GA
5DHP1		MG13-10
5DHP32	5164	5DHP32;MM13-10
5ES8		5ES8;LCC189
5F22		QB3.5/750GA
5F23		QB4/1100GA
5FP4A	5248	MW13-35
5FP7A	3959	MF13-1
5GJ7		5GJ7;LCF801
5HG8		5HG8;LCF86
5J26	3602	5J26[1]
5T01A		MF13-1
5T4	1846	(GZ34);(5AR4)
5T33		(TB4/1250);(5868)
5U8		5U8
5U9		5U9;LCF201
5UP1		DG13-32
5V4GA		(GZ34);(5AR4)
5V4GB		(GZ34);(5AR4)
5V9		5V9;LCH200
5W4	1849	(5Y3GT)
5W4G		(5Y3GT)
5W4GT	503;842	(5Y3GT)
5X9		5X9;LCF200
5Y3G	1854	5Y3G
5Y3GA		(5Y3GT)
5Y3GB		5Y3GB
5Y3GT	1856	5Y3GT
5Z4	1864	GZ30
5Z4G	1863	GZ30
5Z4GT	2748	GZ30
6AB4		(EC92)
6AB8		6AB8;ECL80
6AD8		6AD8
6AF3		(EY81);(6R3)
6AG5		(6BA6);(EF93)
6AG5WA		(6BA6);(EF93)
6AG6G		(EL33)
6AJ8	2128	6AJ8;ECH81
6AK5	850	6AK5;EF95; 6AK5W;E95F; 5654;M8100
6AK5W	4010;5216	6AK5W;E95F; 5654;M8100
6AK8		6AK8;EABC80
6AL3		6AL3;EY88
6AL5	283	6AL5;EAA91; 6AL5W;E91AA; 5726;M8212
6AL5W	4007;5189	6AL5W;5726; E91AA;M8212
6AM5	136	6AM5;EL91;M8082
6AM6	138	6AM6;EF91; 6AM6S;M8083
6AM6S		6AM6S;M8083
6AN7		6AN7;ECH80
6AQ4	417	6AQ4;EC91;M8099
6AQ5	1862	6AQ5;EL90
6AQ5A		(6AQ5);(EL90)

[1]) *for certain applications DX267*

Type to be replaced	*CV number*	*Replacement type*
6AQ8		6AQ8;ECC85
6AR7GT		(EBF35)
6AS6	2522	6AS6;6AS6W; 5725;M8196
6AS6W	4011	6AS6W;5725
6AS7G		(6080)
6AS7GA		(6080)
6AS7GYB		(6080)
6AT6	452	6AT6;EBC90
6AU4GT		6AU4GTA
6AU4GTA		6AU4GTA
6AU6	2524	6AU6;EF94; 6AU6A
6AU6A		6AU6A
6AU6WA	4023	(6AU6);(EF94)
6AU6WB		(6AU6);(EF94)
6AU8		(6BL8);(ECF80)
6AU8A		(6BL8);(ECF80)
6AV6	2526	6AV6;EBC91
6AX4GT		6AX4GTB
6AX4GTA		6AX4GTB
6AX4GTB		6AX4GTB
6AX8		6U8;6U8A
6BA6	454	6BA6;EF93
6BA6W	5037;4009	6BA6W;5749
6BC5		(6BA6);(EF93)
6BD7		6BD7;EBC80
6BD7A		6BD7A;EBC81
6BE6	453	6BE6;EK90
6BE6W		(6BE6);(EK90)
6BE7		6BE7;EQ80
6BH5		6BH5;EF81
6BH6		(7693);(E90F)
6BJ6		(7694);(E99F)
6BJ6A		(7694);(E99F)
6BK6		6AV6;EBC91
6BK8		(6267);(EF86); (M8195)
6BL8	5215	6BL8;ECF80; 7643;E80CF
6BM8		6BM8;ECL82
6BN5	3526	6BN5;EL85
6BQ5	2975	6BQ5;EL84
6BR5	1352	6BR5;EM80
6BS8		(6DJ8);(ECC88); (6922);(E88CC)
6BT4	3891	6BT4;EZ40
6BT6		(6AT6);(EBC90)
6BW7		(6BX6);(EF80)
6BX6	1376	6BX6;EF80
6BY6		(6CS6);(EH90); (6687);(E91H)
6BY7	1375	6BY7;EF85
6BZ6		6BZ6
6C4	133	6C4;EC90; M8080
6C4W	2842	M8080
6C10		6CU7;ECH42
6C12		6AJ8;ECH81
6C16		6BL8;ECF80; 7643;E80CF
6C31		(ECH33)
6CA4	5072	6CA4;EZ81
6CA7	1741	6CA7;EL34
6CB6	3995	6CB6
6CB6A		6CB6A
6CD7	394	6CD7;EM34
6CE5		(6CB6)
6CF6		(6CB6)

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Type to be replaced	CV number	Replacement type
6CG7		6CG7
6CH6	2127	6CH6;EL821
6CJ5	3886	6CJ5;EF41
6CJ6	2721	6CJ6;EL81
6CK5	3889	6CK5;EL41
6CK6	2726	6CK6;EL83
6CM4		6CM4;EC86
6CM5	2940	6CM5;EL36
6CN6	450	6CN6;EL38
6CQ6	131	6CQ6;EF92; M8161
6CQ8		6CQ8
6CS6		6CS6;EH90
6CT7	3883	6CT7;EAF42
6CU5		6CU5
6CU7	3888	6CU7;ECH42
6CV7	3882	6CV7;EBC41
6CW5	5094	6CW5;EL86
6CW7	5281	6CW7;ECC84
6D2		EB91
6D4		6D4;EN93
6D5	1949	6D4;EN93
6DA5	5055	6DA5;EM81
6DA6	5156	6DA6;EF89
6DC8		6DC8;EBF89
6DJ8	5358	6DJ8;ECC88; (6922);(E88CC)
6DL4		6DL4;EC88
6DL5		6DL5;EL95
6DR8		6DR8;EBF83
6DS8		6DS8;ECH83
6DT6		6DT6
6DX8		6DX8;ECL84
6DY5		6DY5;EL82
6EC4		6EC4;EY500
6EH7		6EH7;EF183
6EJ7		6EJ7;EF184
6EL7		6BX6;EF80

Type to be replaced	CV number	Replacement type
6ES6		6ES6;EF97
6ES8		6ES8;ECC189
6ET6		6ET6;EF98
6EU7		6EU7
6F6G	1911	6F6G
6F12		6AM6;EF91; 6AM6S;M8083
6F16		6CJ5;EF41
6F19		6BY7;EF85
6F21		6CQ6;EF92 M8161
6F23		6BX6;EF80
6F24		(EF184);(6EJ7)
6F25		(EF183);(6EH7)
6F29		EF183;6EH7
6F30		EF184;6EJ7
6F50R		QBL4/800;4X500A
6FC7		6FC7;ECC89
6FD12		6DC8;EBF89
6FG6		6FG6;EM84
6FV5		6FV5;EL136
6FW8		(6ES8);(ECC189)
6FY5		6FY5;EC97
6G45		PL5545A
6GB3A		(6CM5);(EL36)
6GB5		6GB5;EL500
6GJ7		6GJ7;ECF801
6GK5		6GK5
6GK6		6GK6
6GM8		6GM8;ECC86
6GV8		6GV8;ECL85
6GW8		6GW8;ECL86
6H51		(DCG6/18);(6693)
6HA5		6HA5;EC900
6HG8		6HG8;ECF86
6HU6		6HU6;EM87
6J4	1763	(EC98);(M8248)
6J4WA	5311	(M8248)

Type to be replaced	CV number	Replacement type
6J6	858	6J6;ECC91;M8081
6J6A		(6J6);(ECC91);(M8081)
6JW8		6JW8;ECF802
6JX8		6JX8;ECH84
6K4	468	EC70;6778
6KG6		6KG6;EL505
6L12		6AQ8;ECC85
6L13		12AX7;ECC83;12AX7S;M8137
6L16		6CW7;ECC84
6L34		EC91;6AQ4;M8099
6LD3		6CV7;EBC41
6LD12		6AK8;EABC80
6LN8		6LN8;LCF80
6LX8		6LX8;LCF802
6M2		6CD7;EM34
6M5		6M5;EL80
6N3		6N3;EY82
6N8		6N8;EBF80
6P15		6BQ5;EL84
6P17		6AM5;EL91;M8082
6PX6G		(EL33)
6Q4	1886	6Q4;EC80
6Q7G	587	6Q7G
6Q7GT	589	6Q7GT
6R3		6R3;EY81
6R4	1865;1888	6R4;EC81
6RHH1		(6DJ8);(ECC88)
6RP15		(6BQ5);(EL84)
6S2	2966	6S2;EY86;6S2A;EY87
6S2A		6S2A;EY87
6SN7GT	1988	6SN7GT
6SN7GTB		6SN7GTB
6T8		(6AK8);(EABC80)
6U3		6U3;EY80
6U8	5065	6U8;ECF82
6U8A		6U8A
6U9		6U9;ECF201
6V4	1535	6V4;EZ80
6V9		6V9;ECH200
6X2	426	6X2;EY51
6X4	493	6X4;EZ90
6X9		6X9;ECF200
6Y9		6Y9;EFL200
7AHP1	2352	7AHP1;DG16-22
7AHP7	2498	7AHP7;DP16-22
7AHP11		7AHP11;DB16-22
7AN7	5192	7AN7;PCC84
7AU7		7AU7;XCC82
7D9		6AM5;EL91;M8082
7D10		EL821;6CH6
7DJ8		7DJ8;PCC88
7EF7		7EF7;PCC89
7ES8		7ES8;PCC189
7F16		6CJ5;EF41
7HG8		7HG8;PCF86
8A		(3554)
8A1	1282	DG7-36;3WP1
8A8		9A8;PCF80
8B8		8B8;XCL82
8CW5		8CW5;XL86
8D3		6AM6;EF91;6AM6S;M8083
8D8		(6267);(EF86);(M8195)
8DX8		8DX8;XCL84
8GJ7		8GJ7;PCF801
8GW8		8GW8;XCL86
8HG8		7HG8;PCF86
8NE31		(ZP1000)
8U9		8U9;PCF201
8X9		8X9;PCF200
9/03LB		AL22-10;9RP33
9A8		9A8;PCF80
9AB4		9AB4;UC92

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Type to be replaced	CV number	Replacement type
9AK8		9AK8;PABC80
9AQ8		9AQ8;PCC85
9D6		6CQ6;EF92;M8161
9ED4		9ED4;PD500
9GV8		9GV8;XCL85
9JW8		9JW8;PCF802
9Q205		(DCG6/18);(6693)
9RP33		9RP33;AL22-10
9U8		9U8
9V9		9V9;PCH200
10C14		19D8;UCH81
10CW5		10CW5;LL86
10DX8		10DX8;LCL84
10FD12		19FL8;UBF89
10GV8		10GV8;LCL85
10L14		UCC85
10LD3		14L7;UBC41
10LD12		UABC80
10LD13		UBC81
10NE40		(ZP1000)
10P18		45B5;UL84
10PL12		UCL82;50BM8
11E13		QQE03/12;6360
11R3		11R3;LY81
11Y9		11Y9;LFL200
12/03HB		AL31-10
12/04HM		MF31-55
12/04LK		MF31-22
12/44NM		MF31-95
12AC5		12AC5;UF41
12AJ7		12AJ7;HCH81
12AQ5		12AQ5
12AT6		12AT6;HBC90
12AT7	455	12AT7;ECC81;
		(12AT7WA);(E81CC)
		6201;M8162
12AT7WA	4024;5212	12AT7WA;E81CC;
		6201;M8162

Type to be replaced	CV number	Replacement type
12AU6	1961	12AU6;HF94
12AU7	491	12AU7;ECC82
		(12AU7WA);6189;M8136
12AU7WA	4003	12AU7WA;(M8136)
12AV6		12AV6;HBC91
12AX4GTB		12AX4GTB
12AX7	492	12AX7;ECC83
		12AX7S;M8137
12AX7S		12AX7S;(M8137)
12AX7WA	4004	(M8137)
12BA6	1928	12BA6;HF93
12BE6		12BE6;HK90
12BL6		12BL6
12BY7A		12BY7A
12CU5		12CU5
12DM7		(ECC83);(12AX7);
		(12AX7S);(7025);
		(M8137)
12EB20		(ZP1010)
12S7		12S7;UAF42
12T03A		MF31-95
12X4		12X4
13CM5		13CM5;XL36
13GB5		13GB5;XL500
14/04TB		MW36-67
14ABP4		14ABP4;AW36-21
14ABP4A		14ABP4A;AW36-20
14AHP4		14AHP4;AW36-81
14AHP4A		14AHP4A;AW36-80
14G6		14G6;UBC80;(UBC81)
14GW8		14GW8;PCL86
14K7		14K7;UCH42
14KP4		(MW36-44)
14KP4A		(MW36-44)
14L7		14L7;UBC41
14LP4		(MW36-44)
14Y7		14Y7;UCH80
15A6		15A6;PL83
15CW5		15CW5;PL84
15DQ8		15DQ8;PCL84

Type to be replaced	CV number	Replacement type
16/04HM		MF41-10
16A5		16A5;PL82
16A8		16A8;PCL82
16AQ3		16AQ3;XY88
16Y9		16Y9;PFL200
17		PL5557
17BQP4		17BQP4;MW43-69
17BTP4		17BTP4;AW43-80
17C8		17C8;UBF80
17CVP4		AW43-88
17DJP4		17BTP4; AW43-80
17EW8		17EW8;HCC85
17Z3		17Z3;PY81
18GB5		18GB5;LL500
18GV8		18GV8;PCL85
19AK8		19AK8;HABC80
19AU4GTA		19AU4GTA
19BR5		19BR5;UM80
19D8		19D8;UCH81
19DJP4		AW47-91
19FL8		19FL8;UBF89
19KF6		19KF6
19SU		19Y3;PY82
19X3		19X3;PY80
19Y3		19Y3;PY82
20A2		PL6574
20A3	797	PL2D21;PL5727;M8204
20AQ3		20AQ3;LY88
20CG		20CG
20CV	5120	20CV
21A1		PL6574
21A6	5077	21A6;PL81
21AP4		MW53-43/02
21B12A		PL5684
21CJP4		21CJP4;MW53-20
21CLP4		21CLP4:AW53-80
21DJP4		21CLP4; AW53-80
21DKP4		21CLP4; AW53-80
21DVP4		AW53-80;21CLP4
21ELP4		AW53-80;21CLP4
21ENP4		AW53-80;21CLP4
22AL3		20AQ3;LY88
23ABP4		(AW59-90)
23AMP4		(AW59-91)
23AQP4		(23CRP4);AW59-90
23AXP4		AW59-91
23BEP4		A59-16W
23CMP4		AW59-90;23CMP4
23CRP4		A59-16W
23DEP4		A59-11W
23DFP4		AW59-91
23DGP4		A59-16W
23DGP4A		A59-16W
23DHP4		A59-16W
23DRP4		A59-11W
23EBP4		AW59-90;A59-16W
23EJP4		AW59-91
23FQP4		A59-11W
23HBP4		A59-11W
23MP4		(23CRP4); (AW59-90)
23RGP4		A59-16W
23SP4		A59-16W
23VP4		(AW59-91)
24AXP4		AW61-88
25E5		25E5;PL36
25L6	552	25L6
25L6GT	553	25L6GT

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
27GB5		27GB5;PL500
27KG6		27KG6;LL505
28EB40/1B		(ZP1010)
28EC4		28EC4;LY500
30A5		30A5;HL94
30AE3		30AE3;PY88
30C1		9A8;PCF80
30L1		7AN7;PCC84
30P16		16A5;PL82
30P18		15CW5;PL84
31A3		31A3;UY41
31AV3		31AV3;UY89
31EB40		(ZP1000)
31EB70G		(ZP1000)
35FV5		35FV5;PL136
35W4		35W4;HY90
35Z5GT	568	35Z5GT
38A3		38A3;UY85
40KG6		40KG6;PL505
42EC4		42EC4;PY500
45A5	1977	45A5;UL41
45B5		45B5;UL84
45BA6		367
*50AVP		150AVP
*50AVP/02		XP1010
50BM8		50BM8;UCL82
50C5	1959	50C5;HL92
50L6GT	571	50L6GT
*51AVP		150AVP
*51UVP		150UVP
52AVP		52AVP
52CG	2896	52CG
53AVP		53AVP
53CG		53CG
53KU		(GZ34);(5AR4)
53UVP		53UVP
54AVP		54AVP
54KU		GZ32;5AQ4

Type to be replaced	CV number	Replacement type
54UVP		54UVP
*55AVP		56AVP
55N3		55N3;UY82
56AVP		56AVP
56AVP/03		56AVP/03
56AVP/05		56AVP/05
56CVP		56CVP
56TUVP		56TUVP
56TVP		56TVP
56UVP		56UVP
57		PL5559
57AVP		57AVP
58AVP		58AVP
58CG		58CG
58CV		58CV
58UVP		58UVP
60AVP		60AVP
61SV		61SV;7634
62DDT		6CV7;EBC41
62TH		6CU7;ECH42
62VP		6CJ5;EF41
63SPT		EF50
63TP		6AB8;ECL80
64ME		6CD7;EM34
64SPT		6BX6;EF80
65ME		6BR5;EM80
66KU		6BT4;EZ40
67BT		6CK5;EL41
75B1	284	75B1
75C1	2454	75C1;M8225
76NB3		76NB3
83A1		83A1;7980
85A1	431	85A1;OE3
85A2	449	85A2;OG3; M8098
90AG	2270	90AG
90AV	2132	90AV
90C1	5173	90C1;M8206

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
90CG		90CG
90CV		90CV
90NB3		90NB3
90NS		90NS
92AG		92AG
92AV		92AV
95A1	286	95A1
100C		100C
100CB		100CB
100E1		100E1
100NB		100NB
100R		8020
100TH	2552	100TH;TB3/350
105A		PL105
108C1	1833	OB2;OB2WA; M8224
120C		120C
120NB		120NB
121K		(MW31-74)
121VP		UF41;12AC5
141DDT		UBC41;14L7
141K		MW36-24
141TH		UCH42;14K7
150A1		150A1
150AV		150AV
150AVP		150AVP
*150AVP/02		XP1010
150B2	2225	150B2;6354;M8163
150C1		150C1
150C1K		150C1K
150C2	1832	OA2; OA2WA;M8223
150C3		150C3;OD3
150C4	1832	M8223
150CV		150CV
150CVP		150CVP
150UV		150UV
150UVP		150UVP
*152AVP		XP1110;(XP1115)

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
*152UVP		XP1118
153AVP		153AVP
153C		153C
155N		155N
155UG		155UG
163Pen		PL82;16A5
171DDP		UBF80;17C8
171G		171G
172		(PL105)
172K		(MW43-69);(17BQP4)
173K		(MW43-69);(17BQP4)
200CB		200CB
200HB		200HB
200LB		200LB
200NB		200NB
210-0159		ZX1061
212K		MW53-80
213P		R142
213Pen		PL81;21A6
238B		PL5555
250TH	2589	250TH;TB4/800
255FIM		(55850F)
255IND		(55850S)
255NOR		(55850S)
272		PL5557
287A		PL5557
300DC		62031
309		PL5557
311SU		UY41;31A3
323A,323B		(PL3C23)
328		328
329		329
340		340
367	2634	367
*373		AZ1
393A		(PL3C23)

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Type to be replaced	*CV number*	*Replacement type*
404A		5847
417A	2642	417A;5842
442BU		(1561)
451		451
451PT		UL41;45A5
452		452
460BU	2644	1561
502A		(PL2D21);(PL5727);(M8204)
*505		AZ1
*506		AZ1
*506K		AZ1
575A		(7136);(DCG6/18GB)
631		PL5559
651		PL5552A
652		PL5551A
653B		PL5555
655		PL5553B
656		PL5552A
657		PL5551A
673		(6693);(DCG6/18)
676		(PL105)
710		PL5684/C3JA
715		PL5557
723A/B	1795	723A/B
725A	722	725A
807	124	807;QE06/50
813	26	813;QB2/250
816	724	(866A);(DCG4/1000G)
829B		(5894);(QQE06/40)
832		832A;QQE04/20
832A	788	832A;QQE04/20
833A		833A
857B		(6786);(DCG7/100B)
866		866A;DCG4/1000G

Type to be replaced	*CV number*	*Replacement type*
866A	32	866A;DCG4/1000G
866B		(866A);(DCG4/1000G)
868	2680	(3554)
869;869A		(6508);(DCG9/20)
869B	2723	(6508);(DCG9/20)
872		872A;DCG5/5000GB
872A	642	872A;DCG5/5000GB
873		(DCG6/6000)
884		(PL2D21);(PL5727);(M8204)
885		(PL2D21);(PL5727);(M8204)
912NB4		912NB4
918		(3554)
927		(3546PW)
966		866A;DCG4/1000G
967		PL5557
1010		1010
1018		1018
1037		1037
1038		1038
1039		1039
1049		1049
1054		1054
1069K		1069K
1110		1110
1119		1119
1129		1129
1138		1138
1163	1836	1163
1164		1164
1173		1173
1174		1174
1176		1176

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
1188		1177
1257		PL5559
1267		PL1267/Z300T
1319		(55850AM)
1331		1331
*1560		5Y3GT
1561		1561
1607		PL1607
1625		(PE06/40E)
1637		EL32
1701		PL5557
1710		1710
1725A		1725A
1738		1738
1749A		1749A
*1759		1859+1289
1788		1788
*1801		1805;AZ1
*1802		AZ1
*1803		AZ1
1805		1805
*1807		AZ1
*1815		AZ50
*1817		AZ50
*1821		AZ1
*1823		1805;AZ1
1838		1838
1849		1849
1859		1859
1875		1875
1876	2718	1876
1877	1134	1877
1878		1878
1884		1884
1904H		1904H
1905		1905
1908		1908

Type to be replaced	*CV number*	*Replacement type*
*1909		1909H
1909A		1909A
1909H		1909H
1910		1910
1913		1913
1918		1918
1923		1923
1927		1927
1928		1928
1941A		1941A
2000		1163
2048		(55850)
2100A		8020
2183		1164
2273P		AL22-10
3069		866A;DCG4/1000G
3070		872A;DCG5/5000GB
3073Q		AL31-10
3078A		(6508);(DCG9/20)
3530		3530
3533A		3533A
*3534		3554
3538		3538
*3541		3533A
3545		3545
3545PW		3545PW
3546		3546
3546PW		3546PW
3554		3554
3572		866A;DCG4/1000G
3861B		QEL1/150;4X150A
3874A		QB2/250;813
3885A		3B28;DCX4/1000
4049D		(DCG4/5000)
4065	495	4065
4066	2730	4066
4067		4067
4068	2348	4068
4069		4069

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
4070		4070
4078A		(DCG9/20);(6508)
4078GA		(DCG9/20);(6508)
4078Z		(DCG9/20);(6508)
4152		4152
4260		PL5557
4261		PL5557
4349		4349
4369		4369
4370		4370
4371		4371
4372		4372
*4373		4369
4378		4378
4379		4379
4390		4390
4397		4397
4438		(XP1011)
4439		(XP1011)
4440		XP1011
4441		(XP1011)
4459		(56TVP)
4460		(XP1115); (XP1111)
4461		(XP1011)
4463		(XP1002)
4478		(55850AM)
4488		(55850AM)
*4590		EC50
4613		4613
4614		4614
*4636		AF7
4641		4641
4646		4646
*4648		DCG1/250; DCG4/1000G;866A
*4649		DCG4/1000ED
4650		4650

Type to be replaced	CV number	Replacement type
*4652		AX50
4654K		4654K
*4654P		4654K
4657		4657
4659		4659
4682		4682
4683		4683
4689		4689
4689K		4689K
4694		4694
4699		4699
5021B		DCG4/1000G;866A
5031		DCG5/5000GB;872A
5121		DCX4/1000;3B28
5544	2210	PL5544
5545	2215	PL5545
5551		PL5551A
5551A		PL5551A
5551A/652		PL5551A
5552		PL5552A
5552A		PL5552A
5552A/651		PL5552A
5553,5553A		PL5553B
5553B		PL5553B
5553B/655		PL5553B
5555,5555A		PL5555
5557	2957	PL5557
5559		PL5559
5586	3611	5586
5632		PL5632;C3J
5636	3928	5636;EF730
5639	2662	5639
5641		5641
5642	2241	5642;DY70
5643	5079	5643
5644	3987	5644
5651	2573;5186	5651;M8098
5654	4010;5216	5654;E95F; 6AK5W;M8100
5672	2238	5672

*** Obsolete type with replacement type**

Type to be replaced	CV number	Replacement type
5678	2254	5678;DF60
5684		PL5684/C3J/A
5696	3512	5696
5718	3930	5718;EC71
5719	4008	5719
5725	4011	5725;6AS6W
5726	4007;5189	5726(E91AA); (6AL5W);(M8212)
5727	4018	PL5727;M8204
5749	4009	5749;6BA6W
5750		(6BE6);(EK90)
5751	4017	5751
5762/7C24		(YD1120)
5763	2129	5763;QE03/10;M8096
5771		5771
5783		5783WA;M8190
5783W	3960;3933; 4066	5783WA;(M8190)
5819		(53AVP);(XP1000)
5822,5822A		PL5822A
5823		5823;Z900T
5840	3929	5840;(EF732)
5842	3789	5842;417A
5847	3905	5847;E182F
5855		5855;XR1-12
5861		5861;EC55
5867	1350	5867;TB3/750
5868	1351	5868;TB4/1250
5869		5869;(DCG6/6000)
5870		5870;DCG12/30
5876		5876
5876A		5876A
5893		5893
5894	2797	5894;QQE06/40
5895	1838	5895;QQC04/15
5899	475;477	5899;(EF731)
5902	4029	5902

Type to be replaced	CV number	Replacement type
5915		(6687);(E91H)
5920	5214	5920;E90CC
5923		5923;TBW6/6000
5924	3926	5924;TBL6/6000
5949	3521	5949
5949A		5949A
5976		5976
6007		6007;DL67
6008		6008;DF67
6011		(PL5684/C3JA)
6021	3986	6021;(ECC70)
6027		JP9-15
6027H		YJ1060
6057		(M8137)
6058	4025	(M8079)
6060		M8162
6062	4039	6062
6064	4014	M8083
6065	4015	M8161
6067		M8136
6073	2903	M8223
6074		M8224
6075		6075;QBW5/3500
6076	5219	6076;QBL5/3500
6077		6077;TBW12/100
6078		6078;TBL12/100
6079	3522	6079;QB5/1750
6080	2984	6080
6083		6083
6084	2729	6084;E80F
6085		6085;E80CC
6086		6086;18042
6096	4010;5216	5654;E95F; 6AK5W;M8100
6097	4007	5726;E91AA; 6AL5W;M8212
6097B		XP1000;(53AVP)
6097F		(153AVP);(XP1001)

Type to be replaced	CV number	Replacement type
6097G		(53AVP);(XP1000)
6099		M8081
6100	4058	M8080
6101	4031	M8081
6111		6111
6112		6112
6135	4022	M8080
6146	3523	6146;QE05/40
6155	2130	6155;QB3/300
6156	2131	6156;QB3.5/750
6159		6159;QE05/40H
6187		M8196
6189	4003	6189;12AU7WA;M8136
6198/A		(55850)
6199		150AVP
6201	4024;3508; 5212	6201;E81CC; 12AT7WA;M8162
6205	2432	6205;EF734
6206		6206
6211		6211
6218		6218;E80T
6227		6227;E80L
6252	2799	6252;QQE03/20
6255B		(56AVP/05)
6255G		(56UVP)
6255S		(56AVP/03)
6263		6263
6263A		6263A
6264		6264
6264A		6264A
6267	2901	6267;EF86; M8195
6268	1787	6268;4C35;4C35A
6279	2520	6279;5C22
6286		6286
6291		150AVP
6292		XP1000;(53AVP)
6308		(ZZ1000)
6326/A		(55850)
6334		56032
6342A		XP1001;(153AVP)
6347		(PL5552A)
6348		PL5552A
6354	2225	6354;150B2; M8163
6360,6360A	2798	6360;QQE03/12
6362		XP1111;(XP1110)
6363		XP1030
6364		(54AVP)
6365		(XP1113)
6370	5106	6370;E1T
6373	2105	6373;DL70
6374	2235	6374;EY84;M8091
6375	2275	6375;DC70
6391	476	6391;EF74
6443	4044	M8091
6463	5304	6463
6467		150AVP;(52AVP)
6476		Z502S
6487	467	6487;EF70
6488	466	6488;EF73
6489	469	6489;EA76
6508		6508;DCG9/20
6524		(6252);(QQE03/20)
6538		6538;Z800U
6539		6539;Z801U
6574	2253	PL6574
6587		(5C22);(6279)
6617		6617;TBW12/25
6618		6618;TBL12/25
6626		M8223
6627		M8224
6655A		XP1000;(53AVP)
6681		6681;E83CC
6686		6686;E81L
6687		6687;E91H

Type to be replaced	*CV number*	*Replacement type*
6688	3998	6688;E180F; (E186F);(7737)
6689		6689;E83F
6693		6693;DCG6/18
6700	5277	6700;ET51
6755		PL6755
6778		6778;EC70
6779	2434	6779;Z803U
6786		6786;DCG7/100B
6807		PL6807
6810A		(56AVP);(56AVP/05)
6810B		(56AVP);(56AVP/05)
6816		6816; YL1101
6844A		ZM1020
6850		(6252);(QQE03/20)
6883		6883;QE05/40F
6884		6884; YL1100
6894		(7136);(DCG6/18GB)
6895		(6693);(DCG6/18)
6903		XP1004;(53UVP)
6911		XP1005
6912		(55850)
6922	2492	6922;E88CC; (E188CC);(7308)
6923	5140	6923;EA52
6935		XP1111;(XP1110)
6939		6939;QQE02/5
6960		6960;TBW7/8000
6961		6961;TBL7/8000
6972		6972
6975	5249	6975
6977		6977;DM160
7004		7004;TBL2/300
7008		YJ1010
7025		7025;12AX7S;M8137
7028		7028
7034		4X150A;QEL1/150
7035		4X150D;QEL1/150H
7038A		(55850)
7046		(58AVP);(XP1040)
7062		7062;E180CC
7064		XP1000;(53AVP)
7065		150AVP
7090		7090
*7091		YJ1162
7092		7092;TB5/2500
7093		7093
7102		150CVP
7111		YJ1011
7119	5188	7119;E182CC
7136		7136;DCG6/18GB
7189		7189
7203		4CX250B;QEL2/275
7204		4CX250F; QEL2/275H
7213		7213;YL1280
7226/A		(55850)
7247		7247
7263/A		(55850)
7264		(56AVP);(56AVP/05); (56AVP/SP)
7265		(56TVP)
7291/A		(55850F)
7292		7292; YJ1160
7308	5231;4108	7308;E188CC
7316		7316;ECC186
7320		7320;E84L
7325		(55850)
7326		XP1002
7336		(55850)
7351		(55850)
7386		PL5545A
7377		7377;QQE04/5
7378		7378;QE08/200
7459		(YD1120)

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
7475	1070	7475
7527		7527;QB4/1100
7534		7534;E130L
7537		7537
7580		7580;QEL2/200
7580W		YL1170
7632		7632;ORP10
7633		7633;ORP11
7634		7634;61SV
7643		7643;E80CF
7645		(6939);(QQE02/5)
7650		7650; YL1110
7664		XP1004;(53UVP)
7693		7693;E90F
7694		7694;E99F
7696		XP1001;(153AVP)
7697		(55850)
7704		7704;QBL5/4000
7709		7709;Z70W
7710		7710;Z70U
7711		7711;Z71U
7713		7713;Z804U
7714		7714;Z805U
7721		D3a
7722		7722;E280F
7735A		(55850)
7737		7737;E186F
7746		(153AVP);(XP1001)
7751		7751;E235F
7753		7753;TBL6/4000
7764		(XP1113)
7767		XP1111;(XP1110)
7788		7788;E810F
7800		(TBL12/40)
7804		7804;TBL6/14
7805		7805;TBW6/14
7806		7806;TBL12/38
7807		7807;TBW12/38
7817		XP1000;(153AVP); (XP1001);(53AVP)
7818		XP1030;(XP1031)
7819		(54AVP)
7836		7836;QE08/200H
7843		YL1102;7843
7844		YL1103;7844
7850		(56AVP);(56AVP/05)
7854		7854;YL1060
7860		(XP1115)
7899		7899
7908		(XP1115)
7909		(XP1110);(XP1111)
7980		7980;83A1
7981		PL7981
7983		7983;QQC03/14
7986		7986;TB2.5/400
8008		8008;DCG5/5000GS
8008A		ZY1001
8020	2967	8020
8032		8032;QE05/40K
8042		8042;QC05/35
8053		XP1001;(53AVP); (XP1000)
8054		XP1031;(XP1030)
8055		54AVP
8062		150CVP
8063	5234	PL5684/C3JA
8078		TB4/1500
8108	5397	8108;EC157
8116		8116;YL1071
8117		8117;YL1070
8118		8118;YL1020
8119		8119;TBL2/400
8120		8120;TBL2/500
*8153		—
8163		YD1130;8163
8165		8165;QB3/200
8177		8177;QBL3.5/2000
8179		8179;QB5/2000

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
8223		8223;E288CC
8228		8228;ZZ1000
8233		8233;E55L
8253/6587A		(5C22);(6279)
8254		8254;EC1000
8255		8255;E88C
8268		8268;TBW7/9000
8269		8269;TBL7/9000
8270		ZT1000
8278		8278;EL503
8348		8348; YL1080
8356		YJ1040
8384		(55850N)
8408		8408; YL1130
8429		8429;YL1120
8436		8436;EC158
8438		8438;QB4/1100GA
8453		8453;ZM1050
8457		8457;YL1210
8458		8458;YL1240
8463		8463;YL1000
8483		(55850)
8484		(55850)
8505		8505;YL1250
8507		(55851);(55852)
8511		(55850)
8541		55851
8560		8560;YL1320
8566		55851
8572		(55851);(55852)
8573		(55851);(55852)
8577		8577;YL1220
8579		8579;YL1150
8580		8580;YL1190
8591		8591;TBH6/14
8592		8592;TBH7/8000
8593		8593;TBH7/9000
8594		8594;TBH12/38
8603		8603;YL1310
8604		55851S
8610		8610;TBH6/6000
8625		55851
8637		3637;YL1300
8654		8654;YL1230
9514B		(56AVP);(56AVP/05)
9514S		(56AVP/03)
9524B		(52AVP)
9530B		(54AVP)
9530Q		(54UVP)
9531A		(XP1031)
9531B		(XP1030)
9536B		XP1001;(153AVP)
9545B		(57AVP)
9552B		(53UVP);XP1004
9553		XP1005
9558B		(XP1002)
9578B		XP1030
9578U		(XP1030)
9578X		XP1030
9579B		(54AVP)
9579U		(54AVP)
9583B		54AVP
9584B		53AVP
9584X		53AVP
9593B		(56AVP);(56AVP/05)
9594B		(56AVP);(56AVP/05)
9601B		(52AVP)
9607B		(XP1002)
9609		(XP1110);(XP1111)
9618B		(54AVP)
9623B		(57AVP)
9697		55851
10667		(55850)
13201A		13201A
13201E		13201E

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
16907		16907
18014		18014
*18038		AZ1
18042		18042;6086
18045		18045
*18502		18503;18512
18503		18503
18504		18504
18505		18505
18506		18506
18507		18507
18508		18508
18509		18509
18510		18510
18511		18511
18512		18512
18513		18513
18514		18514
18515		18515
18516		18516
18517		18517
18518		18518
18520		18520
18522		18522
18524		18524
18525		18525
18526		18526
18529		18529
18533		18533
18536		18536
18537		18537
18538		18538
18545		18545
18546		18546
18548		18548
18550		18550
18552		18552
18553		18553
18600		18600
38116		1163

Type to be replaced	CV number	Replacement type
38166		866A;DCG4/1000G
38172		872A;DCG5/5000GB
*55008		—
55029		55029
55030		55030
55031/01		55031/01
55031/02		55031/02
55032/01		55032/01
55032/02		55032/02
*55035		2J42
*55040		725A
55085/01		55085/01
55085/02		55085/02
55085/03		55085/03
55085/04		55085/04
55100/01		55100/01
55100/02		55100/02
55100/03		55100/03
55100/04		55100/04
*55125		YJ1190
*55230		5J26
55305		55305
55306		55306
*55334/01		—
*55334/02		—
*55334/03		—
55335		55335
55340		55340
*55370		YK1010
*55390		2K25
*55391		723A/B
55807		55807
55809		55809
55850AM		55850AM
55850F		55850F
55850N		55850N
55850S		55850S
55850SR		55850SR

***** *Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
55851AM		55851AM
55851F		55851F
55851N		55851N
55851S		55851S
55851SR		55851SR
55852AM		55852AM
55852F		55852F
55852N		55852N
55852S		55852S
55852SR		55852SR
55875		55875
55875B		55875B
55875G		55875G
55875R		55875R
55876		55876
*56000		8020
56001		56001
56032		56032
62019		62019
62022		62022
62028		62028
62031		62031
68506	2775	1163
68508		1164
95108		95108
*95210		MW13-35
95322		95322
*95398		—
178148		1163
178149		1163
180238		1164
189048		1163
189049		1163
217283		1164

Type to be replaced	*CV number*	*Replacement type*
289414		1163
289416		1163
766776		1164
A28-13W		A28-13W
A47-11W		A47-11W
A59-11W		A59-11W
A59-12W		A59-11W
A59-16W		A59-16W
A65-11W		A65-11W
A4051		QE06/50;807
AA91E		5726;E91AA; 6AL5W;M8212
*AB1		AB2;ABC1
AB2		AB2
ABC1		ABC1
ABL1		ABL1
ACS4		QBL5/3500;6076
ACT70		YD1120
ACT100		(TBL6/14);(7804)
*AF2		EF9
AF3		AF3;(EF9)
AF7		AF7
AF22-10		AF22-10
AF31-10		AF31-10
AG3B28	1835	DCX4/1000;3B28
AG575A		(DCG6/18GB);(7136)
AG866A	32	DCG4/1000G;866A
AG869B		(DCG9/20);(6508)
AG872A	642	DCG5/5000GB;872A
AG5004		(DCG4/1000G);(866A)
AG5005		(DCG7/100)
AG5006		(DCG6/18);(6693)
AG5209		85A2;OG3;M8098
AG5210		OB2;OB2WA; M8224

** Obsolete type with replacement type*

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Type to be replaced	CV number	Replacement type
AG5211		OA2;150C2; OA2WA;M8223
AG8008		DCG5/5000GS;8008
AGR9950		5869;(DCG6/6000)
AGR9951		5870;DCG12/30
*AH1		EK2
AH201		(866A);(DCG4/1000G)
AH205		(DCG7/100)
AH213		(DCG9/20);(6508)
AH217		DCG5/5000GB;872A
AH221	5	(DCG4/5000)
AH238		DCG4/5000
AJ5551		PL5551A
AJ5551A		PL5551A
AJ5552		PL5552A
AJ5552A		PL5552A
AJ5553B		PL5553B
AJ6346		(PL5551A)
AJ6347		PL5552A
*AK1		EK2
AK2		AK2;(EK2)
*AL1		AL4
AL2		AL2;(AL4)
AL4		AL4
*AL5		4699
AL13-13		AL13-13
AL13-36	5282	AL13-36
AL22-10	5300	AL22-10;9RP33
AL31-10		AL31-10
*AM1		EM4
AN1	1128	AN1
AR10		(PL5552A)
AR10T		(PL5552A)
AR14		PL5551A
AR21		EBC33
ARP34		EF39
ARP35		EF50
AR14T		(PL5551A)
AR14TP		(PL5551A)
AR14TWS		(PL5551A)
ART10TP		(PL5552A)
ART10TWS		(PL5552A)
ARTH2		(ECH35)
ASG5007		(DCG12/30);(5870)
ASG5017		PL5557
ASG5023		PL3C23
ASG5044B		PL6755
ASG5045B		PL106
ASG5121		PL2D21;EN91; PL5727;M8204
ASG5155A		(PL255)
ASG5544		PL5544
ASG5545		PL5545
ASG5696		5696
ASG5727		PL5727;M8204
ASG5823		5823;Z900T
ASG5830		(DCG7/100)
ASG6011		PL5684/C3JA
ASG6574		PL6574
ASG6807		PL6807
ATS25		807;QE06/50
AU1		AZ50
AW13-36		AW13-36
AW17-20		AW17-20
*AW21-10		M21-11W
AW21-80		AW21-80
AW22-10		AW22-10
AW36-20		AW36-20;14ABP4A
AW36-21		AW36-21;14ABP4
AW36-48		AW36-48
AW36-80		AW36-80;14AHP4A
AW36-81		AW36-81;14AHP4
AW43-48		AW43-48
AW43-80		AW43-80;17BTP4
AW43-88		AW43-88
AW43-89		AW43-89

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
AW47-90		AW47-90
AW47-91		AW47-91
AW53-80		AW53-80;21CLP4
AW53-88		AW53-88
AW53-89		AW53-89
AW59-30		AW59-30;23ABP4
AW59-90		AW59-90;23CMP4
AW59-91		AW59-91
AW61-88		AW61-88
*AX1		AX50
AX3C23		PL3C23
AX4-125A	2130	6155;QB3/300
AX4-250A	2131	6156;QB3.5/750
AX50		AX50
AX105		PL105
AX195		AX195
AX224	1835	DCX4/1000;3B28
AX228		(DCX4/5000);(4B32)
AX230	2518	DCX4/5000;4B32
AX5551		PL5551A
AX5551A		PL5551A
AX5552		PL5552A
AX5552A		PL5552A
AX5553		PL5553A
AX5553B		PL5553B
AX5555		PL5555
AX5822		PL5822A
AX5822A		PL5822A
AX7585		PL5552A
AX9900		5866;TB2.5/300
AX9901		5867;TB3/750
AX9902		5868;TB4/1250
AX9903	2797	5894;QQE06/40
AX9904		5923;TBW6/6000
AX9904R		5924;TBL6/6000
AX9905		5895;QQC04/15
AX9906		6077;TBW12/100

Type to be replaced	*CV number*	*Replacement type*
AX9906R		6078;TBL12/100
AX9907		6075;QBW5/3500
AX9907R		6076;QBL5/3500
AX9908		6079;QB5/1750
AX9909		6083;PE1/100
AX9910		6252;QQE03/20
AX9911		4C35;4C35A
AX9912		5C22
AZ1	2860	AZ1
AZ4		AZ4
AZ11		AZ11
AZ12		AZ12
*AZ21		AZ1;AZ41
AZ31	2862	AZ31
AZ41	3892	AZ41
AZ50	1264	AZ50
B6H		(18533)
B65	1988	6SN7GT
B109		UCC85
B142	1927	(TB4/1250);(5868)
B152		ECC81;12AT7; 12AT7WA;E81CC; 6201;M8162
B309		ECC81;12AT7; 12AT7WA;E81CC; 6201;M8162
B319		(PCC84);(7AN7)
B329		ECC82;12AU7; 12AU7WA;6189; M8136
B339		ECC83;12AX7; 12AX7S;7025;M8137
B719		ECC85;6AQ8
B1135		TB3/750;5867
B5030		ZM1032
B5031		Z520M

*** Obsolete type with replacement type**

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Type to be replaced	*CV number*	*Replacement type*
B5032		Z521M
B5092		(ZM1020)
BA16-10B		BA16-10B
BF61		EL41;6CK5
BF62		EL42
BF451		UL41;45A5
BK24		PL5552A
BK24A		(PL5552A)
BK24B		(PL5552A)
BK34		PL5553B
BK34A		(PL5553B)
BK34B		(PL5553B)
BK42		PL5551A
BK42A		(PL5551A)
BK42B		(PL5551A)
BK46		PL5555
BK168B		(PL5822A)
BMQ10/14		(XP1118)
BMS10/14		(XP1110)
BMS11/23		(52AVP)
BR191B		YD1120
BR1126		YD1230
BT5		PL5559
BT17		(PL105)
BT19		(PL5557)
BT29		PL255
BT69		(DCG7/100B);(6786)
BT77		PL5545A
BT79		(3C45)
BT91		PL5544
C3J		PL5632/C3J
C3JA		PL5684/C3JA
C3m	5232	C3m
C6A		(PL5545A)
C6J		PL5545A
C6JA		(PL5545A)
C6L		(PL5545A)
C6M		(PL5545A)
C6P		(PL5545A)
C8		C8
C10		C10
C12FM		MW31-74
C17-1A		MW43-69;17BQP4
C21-1A		MW53-80
C21AA		(AW53-88)
C21KM		(AW53-80);(21CLP4)
C36-24		(MW36-44)
C143	26	QB2/250;813
C144	2666	(QQE06/40);(5894)
C178A		QQE06/40;5894
C180	788	QQE04/20;832A
C350		(QE06/50);(807)
*C443		AL4
*C453		AL4
C866A		DCG4/1000G;866A
C872		DCG5/5000GB;872A
C1108		QB3/300;6155
C1112		QB3.5/750;6156
C1134		QQE03/20;6252
C1136		QB4/1100;7527
*CB1		EBF2
*CB2		EBF2
CBL1		CBL1
CBL6		CBL6
CBL31		CBL31
*CC2		EBC3
CC81E		12AT7WA;E81CC; 6201;M8162
CC86E		6463
CCa		E88CC;6922
CCH35		CCH35
CD18		ZM1020
CE225		1163
CE226		1163

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
CE235		1164
CE305		(PL5557)
CE306		(PL5545A)
CE308		(PL105)
CE309		PL5557
CE311		PL3C23A
CE866A		DCG4/1000G;866A
CE872A		DCG5/5000GB;872A
CE5685/C6J		PL5545A
*CF1		EF6
*CF2		EF9;UF9
CF50		CF50
CK1		CK1;(ECH3)
*CK3		ECH3
CK1084		(ZM1080)
CK5651	3573;5186	5651;M8098
CK5654	4010;5216	5654;E95F; 6AK5W;M8100
CK5672	2238	5672
CK5678	2254	5678;DF60
CK5725	4011	5725;6AS6W; M8196
CK5726	4007;5189	5726;E91AA; 6AL5W;M8212
CK5783		5783WA;M8190
CK6021	3986	6021;ECC70
CL4		CL4
CL1002		(53AVP)
CL1003		XP1030
CL1005		150CVP
CL1006		XP1005
CL1008		(53UVP)
CL1009		XP1032
CL1012		150AVP
CL1015		(54AVP)
CL1090		(56AVP)(56AVP/05)
CR1100	5219	QBL5/3500;6076
CST2/12		(PL255)

Type to be replaced	*CV number*	*Replacement type*
CT1/2500	1401	PL5559
CVnrs see page 329		
CW1100		QBW5/3500;6075
*CY1		CY2
CY2		CY2
D2M9		EAA91;6AL5; 6AL5W;(E91AA); 5726
D3a		7721
D10-11BE		D10-11BE
D10-11GH		D10-11GH
D10-11GM		D10-11GM
D10-11GP		D10-11GP
D10-12BE		D10-12BE
D10-12GH		D10-12GH
D10-12GM		D10-12GM
D10-12GP		D10-12GP
D13-15BE		D13-15BE;5CBP11
D13-15GH		D13-15GH
D13-15GL		D13-15GP
D13-15GM		D13-15GM
D13-15GP		D13-15GP
D13-16BE		D13-16BE
D13-16GH		D13-16GH
D13-16GM		D13-16GM
D13-16GP		D13-16GP
D13-17BE		D13-17BE
D13-17GH		D13-17GH
D13-17GM		D13-17GM
D13-17GP		D13-17GP
D13-19BE		D13-19BE
D13-19GH		D13-19GH
D13-19GM		D13-19GM
D13-19GP		D13-19GP
D13-20BE		D13-20BE
D13-21BE		D13-21BE
D13-21GH		D13-21GH

** Obsolete type with replacement type*

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Type to be replaced	CV number	Replacement type
D13-21GL		D13-21GP
D13-21GM		D13-21GM
D13-21GP		D13-21GP
D13-23GH		D13-23GH
D13-24BE		D13-24BE
D13-26/1		D13-26/1
D13-26BE		D13-26BE
D13-26GH		D13-26GH
D13-26GP		D13-26GP
D13-27GH		D13-27GH
D14-10GH		D14-10GH
D77		EAA91;6AL5
D152		EAA91;6AL5
DA90	753	DA90;1A3
DAC21		DAC21
*DAC25		DAC21;DAF91;1S5; DAF96;1AH5
*DAC32		DAC21;DAF91;1S5; DAF96;1AH5
DAF40		DAF40
DAF41		DAF41
DAF91	784	DAF91;1S5
DAF92	3912	DAF92;1U5
DAF96		DAF96;1AH5
DB4-1		DB4-1
DB4-2		DB4-2
*DB7-1		DB7-5;3ALP11
*DB7-2		DB7-6
*DB7-3		DB7-5;3ALP11
*DB7-4		DB7-6
DB7-5		DB7-5;3ALP11
DB7-6		DB7-6
DB7-11		DB7-11
DB7-36		DB7-36;3WP11
DB7-78		DB7-78
DB7-91		DB7-91;3AFP11
DB10-6		DB10-6
DB10-78		DB10-78
DB10-94		DB10-94

Type to be replaced	CV number	Replacement type
DB13-2		DB13-2
DB13-10		DB13-10;5CLP11
*DB13-11		D13-20BE
DB13-34		DB13-34;5ADP11
*DB13-76		D13-15BE
DB13-78		DB13-78;5BHP11
*DB13-79		D13-21BE
DB13-97		DB13-97
DB16-22		DB16-22;7AHP11
DBM9-11		DBM9-11;3AZP11
*DC25		DF91;1T4; DF96;1AJ4;DAC21
DC70	2275	DC70;6375
*DC80		DC70;6375
DC90		DC90
DC96		DC96
DCC90	808	DCC90;3A5
DCG1/250		DCG1/250
DCG1.5/250		DCG1.5/250
DCG2/500		DCG2/500
DCG4/1000A		DCG4/1000A
DCG4/1000ED	1625	DCG4/1000ED
DCG4/1000G	32	DCG4/1000G;866A
DCG4/5000	1629	DCG4/5000
DCG5/30		DCG5/30
DCG5/5000EG		DCG5/5000EG
DCG5/5000GB	642	DCG5/5000GB;872A
DCG5/5000GS		DCG5/5000GS;8008
DCG6/18		DCG6/18;6693
DCG6/18GB		DCG6/18GB;7136
DCG6/6000		DCG6/6000;(5869)
DCG7/100		DCG7/100
DCG7/100B		DCG7/100B;6786
DCG9/20		DCG9/20;6508
DCG12/30		DCG12/30;5870
*DCH25		DK92;1AC6; DK96;1AB6
DCX4/1000	1835	DCX4/1000;3B28
DCX4/5000	2518	DCX4/5000;4B32

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
DD6		EAA91;6AL5
DDB47		Z806W
DDB52		Z302C
DDB70		Z504S
DDPP39S		CBL1
*DE2/200		DCG1/250; DCG4/1000G;866A
DET22	273	EC55;5861
DF21		DF21
DF22		DF22
*DF26		DAF91;1S5; DAF96;1AH5
*DF33		DF92;1L4
DF60	2254	DF60;5678
DF61N	2371	DF61N
DF62	2237	DF62;1AD4
DF63	2433	DF63
*DF64		—
*DF66		—
DF67		DF67;6008
DF72	2101	DF72
DF73	2103	DF73
DF91	785;1971	DF91;1T4
DF92	1758 2742;2795	DF92;1L4
DF96		DF96;1AJ4
DF97		DF97;1AN5
DG4-1	5131	DG4-1
DG4-2		DG4-2
*DG7-1		DG7-5;3ALP1
*DG7-2		DG7-6
*DG7-3		DG7-5;3ALP1
*DG7-4		DG7-6
DG7-5	2175	DG7-5;3ALP1
DG7-6	5269	DG7-6
DG7-31		DG7-31/01
DG7-31/01		DG7-31/01
DG7-32	2431	DG7-32;3AMP1
DG7-32/01		DG7-32/01;3AMP1A

Type to be replaced	CV number	Replacement type
DG7-36	3946	DG7-36;3WP1
DG10-2		DG10-2
DG10-3		DG10-3
DG10-5		DG10-5
DG10-6		DG10-6
DG10-74		DG10-74
DG13-2	2191	DG13-2
DG13-32		DG13-32
DG13-34	5035	DG13-34;5ADP1
DG13-78		DG13-78;5BHP1
DG16-22	2352	DG16-22;7AHP1
DH3-91	2302	DH3-91;1CP31
DH7-10		DH7-10;3BLP31
DH7-11		DH7-11;3BYP31
DH7-78		DH7-78;3BKP31
DH7-91		DH7-91;3AFP31
DH10-78		DH10-78
DH10-94		DH10-94;4EP31
DH13-10		DH13-10;5CLP31
*DH13-76		D13-15GH;5CBP31
DH13-78		DH13-78;5BHP31
*DH13-79		D13-21GH
DH13-97	5168	DH13-97;5BKP31
DH63	587	6Q7G
DH63(Met)		6Q7GT
DH77	452	EBC90;6AT6
DH109		UABC80
DH118		UBC41;14L7
DH119		UBC81
DH142		UBC41;14L7
DH147		EBC33
DH150		EBC41;6CV7
DH718		EBC41;6CV7
DH719		EABC80;6AK8
DHM9-11		DHM9-11;3AZP31
DHM10-93		DHM10-93;4LP31

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
DK21		DK21
DK40		DK40
DK91	782	DK91;1R5
DK92		DK92;1AC6
DK96		DK96;1AB6
DK97		(DK96);(1AB6)
DL21		DL21
*DL25		DL94;DL96
*DL35		DL94;DL96
*DL36		DL94;DL96
DL41		DL41
DL63	2913	(EBC33)
DL64	2331	DL64
DL67		DL67;6007
DL69	2361	DL69
DL70	2105	DL70;6373
*DL91		DL94;3V4;DL96;3C4
DL92	2370;484 820	DL92;3S4
DL93	807;2390	DL93;3A4
DL94	2983	DL94;3V4
DL95	818	DL95;3Q4
DL96		DL96;3C4
DL98	2240	DL98;3B4
DL192		(DL92);(3S4)
DL620	2238	5672
DL652		DL69
DLL21		DLL21
DM70	2980	DM70;1M3
DM71		DM71;1N3
DM160		DM160;6977
*DN7-1		DR7-5;DG7-5;3ALP1
*DN7-2		DR7-6;DG7-6
*DN7-3		DR7-5;DG7-5;3ALP1

Type to be replaced	CV number	Replacement type
*DN7-4		DR7-6;DG7-6
*DN7-5		DR7-5;DG7-5;3ALP1
DN7-11		DN7-11;3BYP2
DN7-36		DN7-36;3BWP2
DN7-78		DN7-78;3BKP2
*DN9-3		DR10-3;DG10-3
*DN9-4		DN10-78;DH10-78
*DN9-5		DR10-5;DG10-5
*DN10-3		DR10-3
*DN10-5		DR10-5
*DN10-6		DG10-6;DR10-6
DN10-78		DN10-78
DN10-94		DN10-94;4EP2
DN13-10		DN13-10;5CLP2
DN13-34		DN13-34;5ADP2
*DN13-76		D13-15GL
DN13-78		DN13-78;5BHP2
*DN13-79		D13-21GL
DN143		EBL21
DNM10-93		DNM10-93;4LP2
DP7-5	5171	DP7-5;3ALP7
DP7-6		DP7-6
DP7-10		DP7-10;3BLP7
DP7-11		DP7-11
DP7-78		DP7-78
DP7-91		DP7-91;3AFP7
DP10-6		DP10-6
DP10-78		DP10-78
DP10-94		DP10-94;4EP7
DP13-2		DP13-2
DP13-10		DP13-10;5CLP7
DP13-34		DP13-34;5ADP7
*DP13-76		D13-15GM

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
DP13-78		DP13-78
*DP13-79		D13-21GM
DP13-97		DP13-97;5BKP7
DP16-22	2498	DP16-22;7AHP7
DP61		EF95;6AK5; E95F;6AK5W; 5654;M8100
DPM9-11		DPM9-11;3AZP7
DPM10-93		DPM10-93;4LP7
DQ2		DCG4/1000G;866A
DQ2a		DCG4/1000ED
DQ4		DCG5/5000GB;872A
DQ4a		DCG5/5000EG
DQ5		(DCG6/18);(6693)
DQ5B		(DCG6/18GB)
DQ5C		(DCG6/18)
DQ6		(DCG9/20);(ZT1000)
DQ7		(DCG7/100B);(6786)
DQ45		(ZY1000)
*DR7-3		DR7-5
*DR7-4		DR7-6
DR7-5		DR7-5
DR7-6		DR7-6
DR10-6		DR10-6
DR13-2		DR13-2
DR869B		(6508):(DCG9/20)
DW4-500		1561
DX2		DXC4/1000;3B28
DX144		EC157;8108
DX145		EC157;8108
DX145A		EC157;8108
DX155		7093
DX184		55335
DX206		DX206
DX232		YD1110;8415
DX267		DX267
DX274		DX274;8603
DY51		DY51;1BG2
DY70	2241	DY70;5642

Type to be replaced	*CV number*	*Replacement type*
DY86		DY86;DY87
DY87		DY87;1S2A
DY802		DY802
E1T	5106	E1T;6370
E10-12BE		E10-12BE
E55L		E55L;8233
E80CC		E80CC;6085
E80CF		E80CF;7643
E80F	2729	E80F;6084
E80L		E80L;6227
E80T	5724	E80T;6218
E81CC	4024;5212; 3508	E81CC;6201; (12AT7WA);(M8162)
E81L		E81L;6686
E82CC		E82CC
E83CC		E83CC;6681
E83F		E83F;6689
E84L		E84L;7320
E86C		E86C
E88C		E88C;8255
E88CC	2492	E88CC;6922
E90CC	5214	E90CC;5920
E90F		E90F;7693
E91AA	4007;5189	E91AA;5726; (6AL5W);(M8212)
E91H		E91H;6687
E91N	4018	PL5727;M8204
E92CC		E92CC
E95F	4010;[illegible]216	E95F;5654; (6AK5W);(M8100)
E99F		E99F;7694
E125A		QB3/300;6155
E130L		E130L;7534
E180CC		E180CC;7062
E180F	3998	E180F;6688
E182CC	5188	E182CC;7119
E182F		E182F;5847
E186F		E186F;7737
E188CC	5231;4108	E188CC;7308
E235F		E235F;7751

* *Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
E235L		E235L
E236L		E236L
E250A		QB3.5/750;6156
E280F		E280F;7722
E282F		E282F
E288CC		E288CC;8223
*E428;*E438		ABC1
*E442		AF7
*E443H		AL4
*E444		ABC1;AF7
*E446		AF7
*E455		EF9
*E452T;*E462		AF7
*E463		AL4
*E499		AF7
E810F		E810F;7788
E900		TB4/800;250TH
E1485	807	DL93;3A4
E1955	797	PL2D21;EN91; PL5727;E91N;M8204
E2016		EF92;6CQ6;M8161
E2134		(EL86);(6CW5)
E2157	455	ECC81;12AT7; 12AT7WA;M8162; 6201;E81CC
E2163	491	ECC82;12AU7; 12AU7WA;6189; M8136
E2164	492	ECC83;12AX7; 12AX7S;7025;M8137
E2385		(EY86);(6S2)
EA50		EA50
EA52	5140	EA52;6923
EA53		EA53
EA76	469	EA76;6489
EAA91	283	EAA91;6AL5; (E91AA);(5726); 6AL5W;M8212
EAA901		E91AA;5726; (6AL5W);(M8212)

Type to be replaced	*CV number*	*Replacement type*
EAA901S		E91AA;5726;6AL5W
*EAB1		EBC3;EBC81;6BD7A
EABC80		EABC80;6AK8
EAC91	137	EAC91;M8097
*EAF41		EAF42;6CT7
EAF42	3883	EAF42;6CT7
EAF801		EAF801
*EB1		EBF2
EB4		EB4
EB34	1054	EB34
EB41	3881	EB41
EB91	140	EAA91;6AL5
EBC3	1428	EBC3
EBC33	1055	EBC33
EBC41	3882	EBC41;6CV7
EBC80		EBC80;6BD7
EBC81		EBC81;6BD7A
EBC90	452	EBC90;6AT6
EBC91	2526	EBC91;6AV6
EBF2	2925	EBF2
EBF32	501	EBF32
EBF35		EBF35
EBF80		EBF80;6N8
EBF81		(EBF89);(6DC8)
EBF83		EBF83;6DR8
EBF89		EBF89;6DC8
EBL1		EBL1
EBL21		EBL21
EBL31	2926	EBL31
*EC40		EC80;6Q4
EC50	2927	EC50
EC52		EC52
EC54		EC54
EC55		EC55;5861
*EC56		EC157;8108
*EC57		EC157;8108
EC70	468	EC70;6778
EC71	3930	EC71;5718
EC80	1886	EC80;6Q4
EC81	1865;1888	EC81;6R4

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
EC86		EC86;6CM4
EC88		EC88;6DL4
EC90	133	EC90;6C4;M8080
EC91	417	EC91;6AQ4; M8099
EC92		EC92
EC93		EC93
EC97		EC97;6FY5
EC98		EC98;M8248
EC157	5397	EC157;8108
EC158		EC158;8436
EC900		EC900;6HA5
EC1000		EC1000;8254
EC8010		EC8010
ECC33	2821	ECC33
ECC34		ECC34
ECC35	569	ECC35
ECC40	3884	ECC40
ECC70	3986	ECC70;6021
ECC81	455	ECC81;12AT7; E81CC;6201; 12AT7WA;M8162
ECC82	491	ECC82;12AU7; (12AU7WA);6189; M8136
ECC83	492	ECC83;12AX7; (12AX7S);(7025);(M8137)
ECC84	5281	ECC84;6CW7
ECC85		ECC85;6AQ8
ECC86		ECC86;6GM8
ECC88	5358	ECC88;6DJ8; (E88CC);(6922)
ECC89		ECC89;6FC7
ECC91	858	ECC91;6J6;M8081
ECC186		ECC186;7316
ECC189	5331	ECC189;6ES8

Type to be replaced	*CV number*	*Replacement type*
ECC801		E81CC;6201; 12AT7WA;(M8162)
ECC801S		E81CC;6201; 12AT7WA;(M8162)
ECC802		12AU7WA;6189; (M8136)
ECC802S		12AU7WA;6189; (M8136)
ECC803		12AX7S;7025;M8137
ECC803S		12AX7S;7025;(M8137)
ECC808		ECC808
ECC960		E90CC;5920
ECC962		E92CC
ECC2000		ECC2000
ECF1		ECF1
ECF80	5215	ECF80;6BL8 E80CF;7643
ECF82	5065	ECF82;6U8
ECF86		ECF86;6HG8
ECF200		ECF200;6X9
ECF201		ECF201;6U9
ECF801		ECF801;6GJ7
ECF802		ECF802;6JW8
*ECH2		ECH3
ECH3	2929	ECH3
ECH4		ECH4
ECH21		ECH21
ECH33	2930	ECH33
ECH35	1347;1581	ECH35
*ECH41		ECH42;6CU7
ECH42	3888	ECH42;6CU7
ECH71		(ECH21)
ECH80		ECH80;6AN7
ECH81	2128	ECH81;6AJ8
ECH83		ECH83;6DS8
ECH84		ECH84;6JX8

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
ECH113		ECH42;6CU7
ECH200		ECH200;6V9
ECL11		ECL11
ECL80		ECL80;6AB8
ECL82		ECL82;6BM8
ECL83		ECL83
ECL84		ECL84;6DX8
ECL85		ECL85;6GV8
ECL86		ECL86;6GW8
ED500		ED500
EE17		PL5557
EE575A		DCG6/18GB
EE866		866A;DCG4/1000G
EE869B		(6508);(DCG6/20)
EEP1		EEP1
*EF1		EF6
*EF2		EF9;EF89;6DA6
*EF5		EF9;EF89;6DA6
EF6		EF6
*EF8		EF9;EF89;6DA6
EF9		EF9
EF22	303	EF22
*EF31		EF9;EF89;6DA6
EF37A	5080;358	EF37A
EF39	1053	EF39
EF40	3885	EF40
EF41	3886	EF41;6CJ5
EF42	3887	EF42
EF43		EF43
EF54	380;1136	EF54
EF55	173	EF55
EF70	467	EF70;6487
EF73	466	EF73;6488
EF74	472;476	EF74;6391

Type to be replaced	*CV number*	*Replacement type*
EF80	1376	EF80;6BX6
EF81		EF81;6BH5
EF83		EF83
EF85	1375	EF85;6BY7
EF86	2901	EF86;6267;M8195
EF89	5156	EF89;6DA6
EF91	138	EF91;6AM6; 6AM6S;M8083
EF92		EF92;6CQ6;M8161
EF93	454	EF93;6BA6
EF94	2524	EF94;6AU6; 6AU6A
EF95	850	EF95;6AK5;6AK5W; 5654;E95F;M8100
EF96		(EF91);(6BA6)
EF97		EF97;6ES6
EF98		EF98;6ET6
EF183		EF183;6EH7
EF184		EF184;6EJ7
EF730	3928	EF730;5636
EF731	477;475	EF731;5899
EF732	3929	EF732;5840
EF734		EF734;6205
EF861		E180F;6688
EF905		E95F;5654; 6AK5W;M8100
EFL200		EFL200;6Y9
EFM1		EFM1
EFM11		EFM11
*EH2		ECH3;ECH4
EH90		EH90;6CS6
EH900		(E91H);(6687)
*EK1		EK2
EK2	1426	EK2
*EK3		EK2

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
EK32	1057	EK32
EK90	453	EK90;6BE6
*EL1		EL2
EL2	1429	EL2
EL3N		EL3N
*EL5		4699
*EL6		4699
EL11		EL11
EL12		EL12
EL31	2888	EL31
EL32	1052;5233	EL32
EL33	2938	EL33
EL34	1741	EL34;6CA7
EL36	2940	EL36;6CM5
EL37	586	EL37
EL38		EL38;(EL505)
EL41	3889	EL41;6CK5
EL42	3890	EL42
*EL43		EL83;6CK6
*EL44		EL81;6CJ6
EL50	2941	EL50
EL51		EL51
EL60		EL60
EL71		EL71;5902
EL80		EL80;6M5
EL81	2721	EL81;6CJ6
EL82		EL82;6DY5
EL83	2726	EL83;6CK6
EL84	2975	EL84;6BQ5
EL85	3526	EL85;6BN5
EL86	5094	EL86;6CW5
EL90	1862	EL90;6AQ5
EL91	136	EL91;6AM5; M8082
EL95		EL95;6DL5
EL136		EL136;6FV5
EL183		EL183
EL360		EL360
EL500		EL500;6GB5

Type to be replaced	CV number	Replacement type
EL503		EL503;8278
EL505		EL505;6KG6
EL508		EL508
EL803	5093	(EL83);(6CK6)
EL821	2127	EL821;6CH6
EL822	2382	EL822
EL861		E81L;6686
EL-C3J		PL5632/C3J
EL-C3JA		PL5684/C3JA
EL-C6A		(PL5545A)
EL-C6H-1		(PL5545A)
EL-C6J		(PL5545A)
EL-C6JA		(PL5545A)
EL-C6JK		(PL5545A)
EL-C6L		(PL5545A)
EL-C6M		(PL5545A)
ELL80		ELL80
EM1		EM1
*EM3		EM4
EM4	1434	EM4
*EM11		EM34;6CD7
EM34	394	EM34;6CD7
EM80	1352	EM80;6BR5
EM81	5055	EM81;6DA
EM84		EM84;6FG6
EM87		EM87;6HU6
EN32	2253	PL6574
EN33		EN33
EN70	474	EN70
EN91	797	EN91;PL2D21; PL5727;M8204
EN92	3512	5696
EN93	1949	EN93;6D4
EQ80		EQ80;6BE7
ER21A		Z805U;7714
ES85		(TB2.5/300);(5866)

*** Obsolete type with replacement type**

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Type to be replaced	CV number	Replacement type
ES204A		TB3/750;5867
ES833		(TB4/1250);(5868)
ES833A		(TB4/1250);(5868)
ESU103		DCX4/1000;3B28
ESU150		(DCG4/5000)
ESU200	5	(DCG4/5000)
ESU575		(DCG6/18GB);(7136)
ESU673		(DCG6/18);(6693)
ESU866	32	DCG4/1000G;866A
ESU866ES		DCG4/1000ED
ESU872	642	DCG5/5000GB;872A
ESU8008		DCG5/5000GS;8008
ET51	5277	ET51;6700
ET1000		TB4/800;250TH
EW3H		(18505);(18506)
EY51	426	EY51;6X2
EY70	473	EY70
EY80		EY80;6U3
EY81		EY81;6R3
EY82		EY82;6N3
EY83		(EY81);(6R3);
EY84	2235	EY84;6374;M8091
EY86	2966	EY86;6S2; EY87;6S2A
EY87		EY87;6S2A
EY88		EY88;6AL3
EY91	135	EY91
EY500		EY500;6EC4
*EZ1		EZ80;6V4;EZ2
EZ2		EZ2
*EZ3		EZ80;6V4;EZ2
*EZ4		EZ81;6CA4;GZ34;5AR4
*EA11		EZ2;EZ80;6V4
*EZ12		EZ81;6CA4;GZ34;5AR4
EZ35	574	EZ35
EZ40	3891	EZ40;6BT4
EZ41		EZ41

Type to be replaced	CV number	Replacement type
EZ80	1535	EZ80;6V4
EZ81	5072	EZ81;6CA4
EZ90	493	EZ90;6X4
F16-10LD		F16-10LD
F21-10LD		F21-10LD
F31-10LC		F31-10LC
F41-10LC		F41-10LC
F41-11LC		F41-11LC
F353		872A;DCG5/5000GB
F353A		872A;DCG5/5000GB
F366A		866A;DCG4/1000G
F369A		(6508);(DCG9/20)
F369B		(6508);(DCG9/20)
F672B		872A;DCG5/5000GB
F869B		(6508);(DCG9/20)
FG17	2957	PL5557
FG27A		(PL5559)
FG57		PL5559
FG97		(PL5557)
FG98A		(PL5557)
FG105		PL105
FG172		(PL105)
FS9A		150AVP
FS10A/70		XP1030
FS12-A47		(53AVP)
FS12-A70·		(XP1030)
FTL3-2		(TBL7/8000);(6961)
FW4-500	1264	AZ50
FX219	2520	5C22;6279
FX225	1787	4C35;6268;4C35A
FX227	372	3C45
FX229	3521	5949
FX231		5C22;6279
*FZ1		EZ2;EZ80;6V4
G1		3554
G4		(3554);(3546PW)
G5H		(18503);(18512)

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
G9		(3554)
G10/1d		DCG4/1000G;866A
G10/1dv		DCX4/1000;3B28
G10/4d		(DCG5/5000GB)
G20/5d		(DCG9/20);(6508)
G24H		(18545)
G48		1163
G49		1163
G108/1K		OB2;OB2WA; M8224
G150/4K		OA2;OA2WA; M8223
G4120		1561
GA50		90AG
GA90		ZM1020
GC10B	2271	Z303C
GD83M		83A1;7980
GD85M/S		85A2;OG3;M8098
GD85WR		(ZZ1000)
GD90M		90C1;M8206
GD100A/S		7475
GD100B		7475
GD100B/S		7475
GD150A/S		150C3;OD3
GD150M		OA2;OA2WA;M8223
GD150M/S		150C2
GL2D21		PL2D21;EN91; PL5727;M8204
GL3C23		PL3C23A
GL8		GL8
GL57		PL5559
GL238A		PL5555
GL238B		PL5555
GL414		PL5559
GL415		PL5550
GL575A		(7136);(DCG6/18GB)
GL673		(6693);(DCG6/18)
GL807		807;QE6/50
GL813		813;QB2/250
GL829B		(5894);(QQE06/40)
GL832A		832A;QQE04/20
GL866A		866A;DCG4/1000G
GL872A		872A;DCG5/5000GB
GL5544		PL5544
GL5545		PL5545A
GL5551		PL5551A
GL5551/FG271		PL5551A
GL5551A		PL5551A
GL5552		PL5552A
GL5552/FG235A		PL5552A
GL5552A		PL5552A
GL5553		PL5553B
GL5553B		PL5553B
GL5555		PL5555
GL5555/FG238A		PL5555
GL5557		PL5557
GL5559		PL5559
GL5632		PL5632/C3J
GL5720		(PL5559)
GL5727		PL5727;M8204
GL5822		PL5822A
GL5822A		PL5822A
GL5855		(PL255)
GL6011		(PL5684/C3jA)
GL6159		6159;QE05/40H
GL6346		(PL5551A)
GL6347		(PL5552A)
GL6348		(PL5553B)
GL6511		(PL5822A)
GL6807		PL6807
GLE10000/025/1		DCG4/1000ED
GLE13000/1.5/6		DCG5/5000GB;872A
GLE15000/3/12		DCG6/18;6693
GLE20000/2.5/10		DCG9/20;6508
GN3		ZM1020
GN4		ZM1020
GN6		ZM1080
GR10A		Z503M
GR10M		ZM1022

Type to be replaced	*CV number*	*Replacement type*
GR16		ZC1040;(Z805U); (7714)
GR41		(Z70W)
GR43		(Z70U)
GRG250/3000		PL5557
GS10C	2325	Z502S
GS10C/S		Z502S
GTR83X		(ZZ1000)
GU1		(DCG1/250)
GU12		(DCG4/1000G);(866A)
GU18		(DCG4/5000)
GU20/21		(DCG4/5000)
GU21SP		(DCG4/5000)
GXU1		DCX4/1000;3B28
GXU2		DCX4/5000;4B32
GY86		GY86
GY87		GY87
GY501		GY501;3BH2
GZ30	2748	GZ30
GZ32	593	GZ32;5AQ4
GZ33		GZ33
GZ34	1377	GZ34;5AR4
GZ37	378	GZ37
GZ41		GZ41
HBC90		HBC90;12AT6
HBC91		HBC91;12AV6
HC4		(18509)
HCC85		HCC85;17EW8
HCH81		HCH81;12AJ7
HF61		EF41
HF62		EF42
HF93	1928	HF93;12BA6
HF94	1961	HF94;12AU6
HF121		UF41
HF255		(6508);(DCG9/20)
HF258		(DCG4/1000G); (866A)
HK90		HK90;12BE6
HL92	1959	HL92;50C5
HL94		HL94;30A5
HMO4		EK90;6BE6
HP6	138	EF91;6AM6; M8083
HT17		PL5557
HT415		5C22
HVR2	1134	1877
HY90		HY90;35W4
HZ90		12X4
J213AAA		1163
JNT1-500	3602	5J26
JP2-0.2		7090
JP2-1A		DX206
JP2-2.5A		YJ1162
JP2-2.5W		YJ1160
JP2-5W		YJ1190
JP8-02B		JP8-02B
JP9-2.5		7028
JP9-2.5B		YJ1000
JP9-2.5D		JP9-2.5D
JP9-2.5E		JP9-2.5E
JP9-7	3676	2J42
JP9-7A	370	JP9-7A
JP9-7D		JP9-7D
JP9-15	3997	JP9-15
JP9-15B		JP9-15B
JP9-15D	5123	JP9-15D
JP9-50	2852	2J56
JP9-50A		2J55
JP9-75		JP9-75
JP9-80	5018	4J52A

Type to be replaced	CV number	Replacement type
JP9-250		4J50
JP35-30		7093
JPT9-01	2420	JPT9-01
JPT9-60	3560;5134	2J51A
K50A		K50A
K51A		K51A
K81A		K81A
K1209		(54AVP)
K1213		(XP1030)
K1295		(53AVP)
K1299		(153AVP)
K1306		(53UVP)
K1361		150AVP;(52AVP)
K1384		(57AVP)
K1390		XP1030
K1391		(54AVP)
K1430		(150CVP)
K1566		(XP1118)
K1927		XP1002
K1961		XP1001
K2199		XP1001
K2244		(56TVP)
K2253		XP1030
K2276		150CVP
KB2		KB2
KBC1		KBC1
KF3		KF3
KK2		KK2
KL4		KL4
KM2290		XP1005
KM2334		(56AVP/05)
KM2368		(58AVP);(XP1040)
KS7-85		KS7-85
KS9-20	1795	723A/B
KS9-20A	2792	2K25

Type to be replaced	CV number	Replacement type
KS9-20B		KS9-20B
KS9-20D		KS9-20D
KS9-30		6975
KS9-40		KS9-40
KS9-40D		KS9-40D
KS35-50		55335
KT8		(QE06/50);(807)
KT32	1287	25L6GT
KT63	1966	6F6G
KT66		EL37
KU676		(PL5632);(C3J)
L77	133	EC90;6C4;M8080
LA9-3B		LA9-3B
LB3-250B		LB3-250B
LB4-8		55340
LB6-10		LB6-10
LB6-20		LB6-20
LC900		LC900;3HA5
LCC189		LCC189;5ES8
LCF80		LCF80;6LN8
LCF86		LCF86;5HG8
LCF200		LCF200;5X9
LCF201		LCF201;5U9
LCF801		LCF801;5GJ7
LCF802		LCF802;6LX8
LCH200		LCH200;5V9
LCL84		LCL84;10DX8
LCL85		LCL85;10GV8
LF183		LF183;4EH7
LF184		LF184;4EJ7
LFL200		LFL200;11Y9
LL86		LL86;10CW5
LL500		LL500;18GB5
LL505		LL505;27KG6
LN119		UCL82
LN152		ECL80;6AB8
LN309		PCL82;16A8
LN329		PCL83; (PCL82);(16A8)

Type to be replaced	*CV number*	*Replacement type*
LY81		LY81;11R3
LY88		LY88;20AQ3
LY500		LY500;28EC4
LZ319		(PCF80);(9A8)
LZ329		PCF80;9A8
M6H		(18524)
M21-11W		M21-11W
M21-12W		M21-12W
M36-11W		M36-11W
M36-13W		M36-13W
M501		(55100)
M501A/B		(55100)
M502	2284	4J50
M503A	1866	JP9-7D
M508	370	JP9-7A
M513		(JP9-15)
M513B		JP9-15
M519		(55085)
M526	3676	2J42
M541		5J26
M542	3611	5586
M551	5018	4J52A
M559		Yj1040
M575		6972
M8079	4025	M8079;5726;E91AA
M8080	4058	M8080
M8081	4031	M8081
M8082	4063	M8082
M8083	4014	M8083
M8091	4044	M8091
M8097	4059	M8097
M8098	4048	M8098
M8099	4070	M8099
M8100	4010	M8100;5654; 6AK5W;E95F
M8136	4003	M8136;(6189); 12AU7WA
M8137	4004	M8137;(7025);(12AX7S)

Type to be replaced	*CV number*	*Replacement type*
M8157	483	M8157
M8161	4015	M8161
M8162	4024	M8162;(12AT7WA); (6201);(E81CC)
M8163	4104;5132	M8163
M8190	4066,3960	M8190;(5783WA)
M8195	4085	M8195
M8196	4011	M8196;(6AS6W);(5725)
M8204	4018	M8204
M8206		M8206
M8212	4007	M8212;(E91AA); (6AL5W);(5726)
M8214	4035	M8214
M8223	4020;4100	M8223;OA2WA
M8224	4028;4101	M8224;OB2WA
M8225	4080	M8225
M8248	5311	M8248
MAG3		2J42
MAG4		JP9-15
MB13-38		MB13-38
MC6-16		MC6-16
MC13-16		MC13-16
ME1001	273	EC55;5861
ME1100		723A/B
ME1101		2J42
ME1101A		JP9-15
ME1101D		JP9-7D
ME1401	495;2269	4065
ME1402	2730	4066
ME1403	2348	4068
ME1404		4069
ME1503		(4C35A)
ME1504		PL5559
MF13-1	1868;3959	MF13-1
MF13-39		MF13-1
MF22-75	2372	MF22-75
MF31-22		MF31-22
MF31-55	429	MF31-55
MF31-95	1869;2328	MF31-95

Type to be replaced	CV number	Replacement type
MF41-10		MF41-10
MG6-2		MG6-2
MG10H		(18520)
MG13-10		MG13-10
MG13-11	2497	MG13-11
MG13-38		MG13-38
Mi1050		PL5551A
Mi1100		PL5552A
MK13-16		MK13-16
ML4-125A		4-125A;QB3/300GA
ML4-250A		4-250A;QB3.5/750GA
ML4-400A		4-400A;QB4/1100GA
ML41-10		ML41-10
ML53-10		ML53-10
ML813		813;QB2/250
ML833A		(5868);(TB4/1250)
ML866A		866A;DCG4/1000G
ML869B		(6508);(DCG9/20)
ML872A		872A;DCG5/5000GB
ML8008		8008;DCG5/5000GS
MM13-10	5164	MM13-10;5DHP32
M010		ET51;6700
MT17		PL5557
MT57	612	PL5559
MT105		PL105
MT5544	2210	PL5544
MT5545	2215	PL5545A
MT5557		PL5557
MT5559		PL5559
MU6-2		MU6-2
MU13-38		MU13-38
MV6-5	1976	MV6-5
MW6-2	1737	MW6-2
MW6-5		MW6-5
*MW13-32		MW13-38
MW13-35		MW13-35
MW13-38		MW13-38
*MW22-14		MW22-16
MW22-16		MW22-16

Type to be replaced	CV number	Replacement type
*MW31-7		MW31-74
*MW31-14		MW31-74
*I1W31-16		MW31-74
MW31-74		MW31-74
*MW36-22		MW36-44
*MW36-24		MW36-44
MW36-44		MW36-44
MW36-67		MW36-67
*MW43-43		MW43-69;17BQP4
MW43-48		MW43-48
*MW43-64		MW43-69;17BQP4
MW43-69		MW43-69;17BQP4
MW53-20		MW53-20
*MW53-43		MW53-43/02;21AP4
MW53-43/02		MW53-43/02
MW53-80		MW53-80
MW61-80		MW61-80
MX113		MX113
MX114		18506
MX118		18537
MX120		18520
MX120/01		18520/01
MX122		18538
MX124		18524
MX124/01		18525
MX133		18533
MX135		ZP1000
MX136		ZP1010
MX145		18545
MX146		18503
MX147		18504
MX148		18505
MX149		18506
MX151		18509
MX152		18515
MX153		18516
MX157		18515/17
MX158		18516/18

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Type to be replaced	*CV number*	*Replacement type*
MX163		18529
MX164		18550
MX166		18536
MX167		18546
MX170		18510
MX175		18508
MX177		18552
MX178		18553
MX966B		DCG4/1000G;866A
MY6-2		MY6-2
MY13-38		MY13-38
N17	820	DL92;3S4
N18	818	DL95;3Q4
N19		DL94;3V4
N25		DL96;3C4
N66		EL37
N77	136	EL91;6AM5;M8082
N119		UL84
N142		UL41;45A5
N144		EL91;6AM5;M8082
N150		EL41;6CK5
N151		EL42
N152		PL81;21A6
N153		PL83;15A6
N154		PL82;16A5
N155		EL85;6BN5
N308		(PL36);(25E5)
N309		(PL83);(15A6)
N329		PL82;16A5
N339		(PL81);(21A6)
N359		PL81;21A6
N379		PL84;15CW5
NL575A		DCG6/18GB
N709		EL84;6BQ5
N727		EL90;6AQ5;M8245
NL673		(6693);(DCG6/10)

Type to be replaced	*CV number*	*Replacement type*
NL710		(PL5684);PL5559
NL714		(PL3C23)
NL715		PL5557
NL720		PL5684
NL730		(PL6755)
NL778		(PL106)
NL803		ZM1080
NL869B		(6508);(DCG9/20)
NL1022		PL5822A
NL1022A		PL5822A
NL1051		PL5551A
NL1051A		PL5551A
NL1052		PL5552A
NL1052A		PL5552A
NL1053		PL5553B
NL1053A		PL5553B
NL1082		(ZX1061)
NL5030		ZM1032
NL5551		PL5551A
NL5552		PL5552A
NL5684/Ne		(PL5684)
NL5822		PL5822A
NL6989/C6J/KL		PL5545
NL8421/5092		ZM1020
NU807		807;QE06/50
NU813		813;QB2/250
NU832		832A;QQE04/20
NU866A		866A;DCG4/1000G
NU872A		872A;DCG5/5000GB
OA2	1832	OA2;OA2WA;M8223
OA2WA	4020;4100	OA2WA;M8223
OA3		(75C1)
OA4		PL1267/Z300T
OA4G	752	PL1267/Z300T
OB2	1833	OB2;OB2WA;M8224
OB2WA	4028;4101	OB2WA;M8224

Type to be replaced	*CV number*	*Replacement type*
OC3		(4687K)
OD3		OD3;150C3
OE3	431	85A1;OE3
OG3	449	85A2;OG3;M8098
*OH3		90C1
ORP10		ORP10;7632
ORP11		ORP11;7633
ORP12		ORP12
ORP13		ORP13
*ORP14		RPY14
ORP30		ORP30
ORP50		ORP50
ORP60		ORP60
ORP61		ORP61
ORP62		ORP62
ORP63		ORP63
*ORP80		RPY13
ORP90		ORP90
ORP93		ORP93
ORP94		ORP94
OT400		(TB4/1250);(5868)
P2-12		QQE04/20;832A
P2-40B		(QQE06/40);(5894)
P6		1163
P15		1164
P810		55850
P842		55851
PA5021		DCG4/1000G;866A
PABC80		PABC80;9AK8
PB2/200		PB2/200
PB2/500		PB2/500
PB3/800		PB3/800
PC86		PC86;4CM4
PC88		PC88;4DL4
PC92		PC92
PC95		PC95;4ER5
PC97		PC97;4FY5
PC900		PC900;4HA5
PCC84	5192	PCC84;7AN7
PCC85		PCC85;9AQ8
PCC88		PCC88;7DJ8
PCC89		PCC89;7EF7
PCC189		PCC189;7ES8
PCF80		PCF80;9A8
PCF82		PCF82;(PCF80)
PCF86		PCF86;7HG8
PCF200		PCF200;8X9
PCF201		PCF201;8U9
PCF801		PCF801;8GJ7
PCF802		PCF802;9JW8
PCH200		PCH200;9V9
PCL41		(PCL82);(16A8)
PCL81		(PCL82);(16A8)
PCL82		PCL82;16A8
PCL83	5144	PCL83
PCL84		PCL84;15DQ8
PCL85		PCL85;18GV8
PCL86		PCL86;14GW8
PD500		PD500;9ED4
PE05/25		PE05/25
PE06/40E		PE06/40E
PE06/40N		PE06/40N
PE06/40P		PE06/40P
PE1/100		PE1/100;6083
PF83		PF83
PF86		PF86
PFL200		PFL200;16Y9
PJ23		(3554)
PL2D21		PL2D21;EN91; PL5727;M8204
*PL3C23		PL3C23A
PL3C23A		PL3C23A
PL5		PL5
PL10		PL10
PL17		PL5557
PL21		PL2D21;PL5727

** Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
PL33		PL33
PL36		PL36;25E5
PL57		PL5559
PL81	5077	PL81;21A6
PL82		PL82;16A5
PL83		PL83;15A6
PL84		PL84;15CW5
PL105		PL105
PL106		P106
PL136		PL136;35FV5
PL150		PL150
PL255		PL255
PL260		PL260
PL323		PL3C23
PL345	372	3C45
PL435	1787	4C35;6268;4C35A
PL500		PL500;27GB5
PL505		PL505;40KG6
PL508		PL508
PL522	2520	5C22;6279
PL820		PL820
PL1267	1992	PL1267/Z300T
PL1607		PL1607
PL5544	2210	PL5544
*PL5545	2215	PL5545A
PL5545A		PL5545A
*PL5551		PL5551A
PL5551A		PL5551A
*PL5552		PL5552A
PL5552A		PL5552A
PL5553B		PL5553B
PL5555		PL5555
PL5557	2957	PL5557
PL5559		PL5559
PL5632		PL5632/C3J
PL5684		PL5684/C3JA
PL5727	4018	PL5727,M8204
*PL5822		PL5822A

Type to be replaced	CV number	Replacement type
PL5822A		PL5822A
PL6011		PL5684/C3JA
PL6549		(QB3/200)
PL6574	2253	PL6574
*PL6755		PL6755A
PL6755A		PL6755A
PL6807		PL6807
PL7981		PL7981
PM04		EF93;6BA6
PM05		EF95;6AK5
PM07		EF91;6AM6; 6AM6S,M8083
PM61		(XP1113)
PM84		PM84
PM101		(XP1110);(XP1111)
PP6BG		(EL33)
PP6BS		EL3N
PTW255		(55850)
PTW2255		55852
PV30S		CY2
PV495		(AZ1)
PV4100		(AZ1)
PV4200		1561
PY31		PY31
PY80		PY80;19X3
PY81		PY81;17Z3
PY82		PY82;19Y3
PY83		PY83
PY88		PY88;30AE3
PY500		PY500;42EC4
PY800		PY800
PZ30		PZ30
Q160-1		(QB3/300);(6155)
Q400-1		(QB4/1100);(7527)
QA2400		M8161
QA2401		M8080
QA2402		M8082

* *Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
QA2403		M8083
QB2/250	26	QB2/250;813
QB3/200	1905	QB3/200;4-65A
QB3/300	2130	QB3/300;6155
QB3/300GA	2963	QB3/300GA;4-125A
QB3.5/750	2131	QB3.5/750;6156
QB3.5/750GA	2964	QB3.5/750GA;4-250A
QB4/1100		QB4/1100,7527
QB4/1100GA		QB4/1100GA,4-400A
QB5/1750	3522	QB5/1750;6079
QB5/2000		QB5/2000
QBL3.5/2000		QBL3.5/2000;8177
QBL4/800		QBL4/800;4X500A
QBL5/3500		QBL5/3500;6076
QBL5/4000		QBL5/4000;7704
QBW5/3500		QBW5/3500;6075
QC05/35		QC05/35;8042
QE03/10		QE03/10;5763;M8096
QE04/10	309;483;1510	QE04/10;M8157
QE05/40	3523	QE05/40;6146
QE05/40F		QE05/40F;6883
QE05/40H		QE05/40H;6159
QE05/40K		QE05/40K;8032
QE06/50	124	QE06/50;807
QE08/200		QE08/200;7378
QE08/200H		QE08/200H;7836
QEL1/150	2519	QEL1/150;4X150A
QEL1/150H		QEL1/150H;4X150D
QEL2/200		QEL2/200;7580
QEL2/275		QEL2/275;4CX250B
QEL2/275H		QEL2/275H;4CX250F
QQC03/14		QQC03/14;7983
QQC04/15	1838	QQC04/15;5895
QQE02/5		QQE02/5;6939
QQE03/12	2798	QQE03/12;6360

Type to be replaced	CV number	Replacement type
QQE03/20	2799	QQE03/20;6252
QQE04/5		QQE04/5;7377
QQE04/20	788	QQE04/20;832A
QQE06/40	2797	QQE06/40;5894
QQV02-6		QQE02/5;6939
QQV03-10	2798	QQE03/12;6360
QQV03-20A	2799	QQE03/20;6252
QQV04-15	788	QQE04/20;832A
QQV04-16		QQE04/5;7377
QQV06-40A	2797	(QQE06/40);(5894)
QQV07-40	2666	QQV07/40;829B
QQV5-P10	2295;3509	QQV5-P10;3E29
QQZ03-10		QQC03/14;7983
QQZ03-20		YL1020;8118
QQZ04-15	1838	QQC04/15;5895
QS75-20		75B1
QS83-3		(85A2);(OG3);M8098
QS92-10		7475
QS95-10		95A1
QS150-40		150C3;OD3
QS1200	2225	150B2;6354;M8163
QS1207	1832	OA2;QA2WA;M8224
QS1208	1833	OB2;OB2WA;M8224
QS1209		85A2
QS1210		OA2WA;M8223
QS1211		OB2WA;M8224
QS1212		M8098
QS1213		M8142
QS1215		90C1
QS1250		(5823);(Z900T)
QS2404		M8079
QS2406		M8162;6201; E81CC;12AT7WA
QV03-12	2129	QE03/10;5763
QV04-7	309;510	QE04/10
QV05-10	3990	QV05-10;2E26

Type to be replaced	*CV number*	*Replacement type*
QV05-25	124	QE06/50;807
QV06-20	3523	QE05/40;6146
QV06-20B		QE05/40F;6883
QV06-20C		QE05/40H;6159
QV08-100		QE08/200
QV08-100B		YL1290
QV1-150A	2519	QEL1/150;4X150A
QV1-150D		QEL1/150H;4X150D
QV2-250C		QEL2/275;4CX250B
QY2-100	26	QB2/250;813
QY3-65	1905	QB3/200;4-65A
QY3-125	2130	QB3/300;6155
QY3-125B	2963	QB3/300GA;4-125A
QY3-1000A		QBL3.5/2000;8177
QY4-250	2131	QB3.5/750;6156
QY4-250B	2964	QB3.5/750GA;4-250A
QY4-400		QB4/1100;7527
QY4-400B		QB4/1100GA;4-400A
QY4-500A		QBL4/800;4X500A
QY5-500	3522	QB5/1750;6079
QY5-800		QB5/2000;8179
QY5-3000A		QBL5/3500;6076
QY5-3000W		QBW5/3500;6075
QZ06-20		QC05/35;8042
R1	1443	(AZ1)
R3	1039	1561
R6A		1163
R12	426	EY51;6X2
R12A		EY51;6X2
R14		PZ30
R15A		1164
R17		(EY82);(6N3)
R18	2235	EY84;6374;M8091
R19		(DY86);(1S2); (DY87);(1S2A)
R52		(GZ34)
R120		(1725A)
R142		R142

Type to be replaced	*CV number*	*Replacement type*
R243	273	EC55;5861
R290		K81A
RG1-125		(DCG4/1000G);(866A)
RG1-250	3667	DCG1/250
RG3-250	1625	DCG4/1000ED
RG3-250A	32	DCG4/1000G;866A
RG3-1250		DCG4/5000
RG4-1250	5	RG4-1250
RG4-3000		DCG6/18;6693
RG250/1000		DCG1/250
RG250/3000		DCG4/1000G;866A
RG1000/3000		DCG5/5000GB;872A
RHK6332		723A/B
RK807		QE6/50;807
RK866		DCG4/1000G;866A
RL17		PL5557
RL21		PL2D21;EN91;PL5727
RL57		PL5559
RL105		PL105
RL1267		PL1267/Z300T
RL16989/Ne		(PL5545)
RPY13		RPY13
RPY14		RPY14
RPY17		RPY17
RPY18		RPY18
RPY19		RPY19
RPY20		RPY20
RPY27		RPY27
RR3-250	1835	DCX4/1000;3B28
RR3-1250		DCX4/5000;4B32
RR3-1250A	2399	RR3-1250A
RR3-1250B		DCX4/5000;4B32
RS612		(TB2.5/400)
RS613		TB2.5/300;5866
RS614		TB2.5/400
RS630		TB3/750;5867
RS631		TB4/1250;5868
RS685		QB3/300;6155
RS686		QB3.5/750;6156
RS687		QB5/1750;6079

Type to be replaced	*CV number*	*Replacement type*
RS1002A		QB4/1100;7527
RS1003		(YL1200)
RS1006B		TB2.5/400
RS1007		QB3/300;6155
RS1009		QQE06/40;5894
RS1011L		(TBL6/20)
RS1011W		(TBW6/20)
RS1016		TB4/1250;5868
RS1019		QQE03/20;6252
RS1026		TB3/750;5867
RS1029		QQE03/12;6360
RS1036		TB4/1500
RS1041W		YD1010
RS1046		TB5/2500;7092
RS2021L		YD1001
RS2021W		YD1000
RT59-H4		A59-11W
RV120/350		1561
RV120/350S		AZ1
RV120/500		1561
RV120/500S		AZ4
RV200/600		(AZ50)
RX120A		1164
RY12-100	2967	8020
S1.5/80dv		PL5545
S15/5d		(DCG12/30);(5870)
S15/40		(DCG7/100)
S15/40i		(DCG7/100)
S856		OA2;OA2WA;M8223
S860		OB2;OB2WA;M8224
SBS		PL5551A
SCS		PL5552A
SCS3		PL5822A
SD61		EA50
SDR		PL5555
SDS		PL5553B
SP4		SP4

Type to be replaced	*CV number*	*Replacement type*
SP6		EF91;6AM6
SR6		ZZ1000
SR44		ZZ1000
SR55		OB2
SR56		OA2
SRS360		TB3/750;5867
SRS361		TB2.5/300;5866
SRS362		TB4/1250;5868
SRS455		QB3/300;6155
SRS456		QB3.5/750;6156
SRS457		QB5/1750;6079
SRS4451		QQE06/40;5894
SRS4452		QQE3/20;6252
ST11		7475
Ste1000/2.5/15		PL5559
STe1300/01/05		PL2D21;PL5727;EN91
Stel1500/15/45		(DCG7/100)
Ste2500/6/40		PL105
STV85/10		85A2;OG3
STV108/30		OB2;OB2WA;M8224
STV150/30		OA2;OA2WA;M8223
SU61		EY51;6X2
T2M05		ECC91;6J6;M8081
T130-1		(TB2.5/400)
T300-1		(TB4/1250);(5868)
T350-1		(TB3/750);(5867)
T813		813;QB2/250
T866A		866A;DCG4/1000G
T872A		872A;DCG5/5000GB
*TA12/20000K		TAW12/20
TAL12/10		TAL12/10
TAL12/20		TAL12/20
TAL12/35		TAL12/35
TAW12/10		TAW12/10
TAW12/20		TAW12/20
TAW12/35G		TAW12/35G
TB2/500		TB2/500
TB2.5/300	1924	TB2.5/300;5866
TB2.5/400		TB2.5/400;7986
TB3/350	2552	TB3/350;100TH

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
TB3/750	1350	TB3/750;5867
*TB3/1000		TB4/1250;5868
TB3/2000		TB3/2000
TB4/800	2589	TB4/800;250TH
TB4/1250	1351	TB4/1250;5868
TB4/1500		TB4/1500
TB5/2500		TB5/2500;7092
TBH6/14		TBH6/14;8591
TBH6/6000		TBH6/6000;8610
TBH7/8000		TBH7/8000;8592
TBH7/9000		TBH7/9000;8593
TBH12/25		TBH12/25
TBH12/38		TBH12/38;8594
TBH12/100		TBH12/100
TBL2/300		TBL2/300;7004
TBL2/400		TBL2/400;8119
TBL2/500		TBL2/500;8120
TBL6/14		TBL6/14;7804
TBL6/20		TBL6/20
TBL6/4000		TBL6/4000;7753
TBL6/6000	3926	TBL6/6000;5924
TBL7/8000		TBL7/8000;6961
TBL7/9000		TBL7/9000
TBL12/25		TBL12/25;6618
TBL12/38		TBL12/38;7806
TBL12/40		TBL12/40;7800
TBL12/100		TBL12/100;6078
TBL15/125		TBL15/125
TBW6/14		TBW6/14;7805
TBW6/20		TBW6/20
TBW6/6000		TBW6/6000;5923
TBW7/8000		TBW7/8000;6960
TBW7/9000		TBW7/9000
TBW12/25		TBW12/25;6617
TBW12/38		TBW12/38;7807
TBW12/100		TBW12/100;6077
TBW15/125		TBW15/125
*TC2/250		TB3/750;5867
*TC2/3000		TB3/750;5867

Type to be replaced	*CV number*	*Replacement type*
TD03-10	273	TD03-10
TD03-10G		EC55;5861
TD2-300A		TBL2/300;7004
TD2-400A		TBL2/400
TD2-500A		TBL2/500;8120
TFZ103B		(PL5544)
TFZ106B		(PL5545)
TG30		3C45
TG57		PL5559
TG200B		4C35A
TG1000		5C22
TG3000		5949
*TH1		TH91
*TH2		TH92
*TH3		TH93
*TH4		TH94
*TH5		TH95
TH91		TH91
TH92		TH92
TH93		TH93
TH94		TH94
TH95		TH95
TH100TH		100TH;TB3/350
TH250TH		250TH;TB4/800
TH813	26	813;QB2/250
TH1450		4J50
TH1526		5J26
TH1725A		725A
TH2203		6975
TH2225		2K25
TH5021B		866A;DCG4/1000G
TH5021V		DCG4/1000ED
TH5031B		872A;DCG5/5000GB
TH5031V		DCG5/5000EG
TH5040		(6508);(DCG9/20)
TH5090		(7136);(DCG6/18GB)
TH5130		(6693);(DCG6/18)

* *Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
TH5521V/B		3B28;DCX4/1000
TH6011		PL5557
TH6031		PL5559
TH6050		(PL5559)
TH6120		PL105
TH6220		PL5545A
TH6220A		PL5545A
TH6230		PL3C23
TH6345		3C45
TH6435		4C35A
TH6522		5C22
TH6907		5949
TH7020		PL5551A
TH7021		(PL5551A)
TH7030		PL5552A
TH7031		(PL5552A)
TH7040		PL5553B
TH7041		(PL5553B)
TH9800		(55850)
TH9801		(55850)
TH9804		(55850)
TH9805		(55850N)
TH9807		(55850S)
TH9808		(55850N)
TH9809		(55850S)
TH9810		(55850)
TH9811		(55850)
TQ1/2		PL3C23A
TQ2		(PL5557)
TQ2/3		(PL6755A)
TQ2/6		(PL106)
TQ2/12		(PL255)
TQ6		(5870);(DCG12/30)
TQ7		(DCG7/100)
TS49		C3m
TS51/EF95		EF95;6AK5; E95F;5654; 6AK5W;M8100
TS52/ECC91		ECC91;6J6;M8081

Type to be replaced	*CV number*	*Replacement type*
TS53/18042		18042;6086
TS54/E83F		E83F;6689
TS56/18014		18014
TT10		QB2/250
TT15		(QQE04/20);(832A)
TT16		QB3/300GA;4-125A
TT16D		QB3/300;6155
TT17		PL5557
TT20		QQE03/20;6252
TX2/3		PL5544
TX2/6		PL5545A
TX2/61		PL5545A
TX12-20A		(TAL12/20)
TX12-20W		(TAW12/20)
TX920		PL5559
TXM100		PL2D21;EN91;PL5727
TY2-125	1924	TB2.5/300;5866
TY2-150		TB2.5/400
TY3-250	1350	TB3/750;5867
TY4-350		(TB4/1250);(5868)
TY4-400		TB3/750;5867
TY4-400C		YD1220;TY4-400C
TY4-500	1351	TB4/1250;5868
TY5-500		TB4/1500
TY6-12A		TBL6/20
TY6-12W		TBW6/20
TY6-800		TB5/2500;7092
TY6-1250A		TBL6/4000;7753
TY6-3000A		YD1230
TY6-5000A		TBL6/6000;5924
TY6-5000B		YD1120
TY6-5000W		TBW6/6000;5923
TY7-6000A		TBL7/8000;6961
TY7-6000W		TBW7/8000;6960
TY8-15A		TBL6/14;7804
TY8-15H		TBH6/14;8591
TY8-15W		TBW6/14;7805

Type to be replaced	CV number	Replacement type
TY8-6000A		TBL7/9000;8269
TY8-6000W		TBW7/9000;8268
TY8-6000H		TBH7/9000;8593
TY12-15A		TBL12/40
TY12-20A		TBL12/38;7806
TY12-20H		TBH12/38;8594
TY12-20W		TBW12/38;7807
TY12-25A		TBL12/25;6618
TY12-25W		TBW12/25;6617
TY12-50A		TBL12/100;6078
TY12-50W		TBW12/100;6077
TY12-120W		YD1010
TY74		(PL5557)
TY76		(PL5559)
TY77		(PL5559)
TY78		(PL5559)
TY84		(PL5559)
TY85		(PL105)
TY6030		(PL5559)
TY6050		(PL5559)
TY6100		(PL5559)
TY6120		(PL105)
TY6220		(PL5545)
U9		(1561)
U10	1443	(1561);(AZ1)
U12		(1561)
U12/14		(1561)
U14		(1561)
U18		AZ50
U18/20	1264	AZ50
U20	31	(AZ50)
U30		U30
U43		EY51;6X2
U49		EY86;6S2;EY87;6S2A
U50		(5Y3GT)
U54		(GZ37)
U70		(EZ35)
U78	493	EZ90;6X4
U119		UY85;38A3

Type to be replaced	CV number	Replacement type
U142		UY41;31A3
U143		AZ31
U145		(UY41);(31A3)
U147		EZ35
U150		EZ40;6BT4
U151		EY51;6X2
U152		PY80;19X3
U153		PY81;17Z3
U154		PY82;19Y3
U192		PY82;19Y3
U309		(PY80);(19X3)
U319		(PY82);(19Y3)
U381		UY85;38A3
U709		EZ81;6CA4
UABC80		UABC80
UAF42		UAF42;12S7
UBC41		UBC41;14L7
UBC80		UBC80;14G6
UBC81		UBC81
*UBF11		UBF80;17C8
UBF80		UBF80;17C8
UBF89		UBF89;19FL8
UBL1		UBL1
UBL21		UBL21
UC92		UC92;9AB4
UCC85		UCC85
UCH4		UCH4
*UCH11		UCH81;19D8
UCH21		UCH21
*UCH41		UCH42;14K7
UCH42		UCH42;14K7
UCH71		(UCH21)
UCH80		UCH80;14Y7
UCH81		UCH81;19D8
UCL11		UCL11
UCL82		UCL82;50BM8

* *Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
UE966A		866A;DCG4/1000G
UE967		PL5557
UE972A		872A;DCG5/5000GB
*UF11		UF41;12AC5
UF21		UF21
UF41		UF41;12AC5
UF42		UF42
UF80		UF80
UF85		UF85
UF86		UF86
UF89		UF89
UL41	1977	UL41;45A5
UL44		UL44
UL84		UL84;45B5
UM4		UM4
UM80		UM80;19BR5
UM84		UM84
UU9	1855	(EZ40);(6BT4)
UU12		EZ81;6CA4
UX866		866A;DCG4/1000G
*UY1		UY1N;UY85;38A3
UY1N		UY1N
UY3		UY3
UY11		UY11
*UY21		UY1N;UY85;38A3
UY41		UY41;31A3
UY42		UY42
UY82		UY82;55N3
UY85		UY85;38A3
UY89		UY89;31AV3
UY92		UY92
UY807		807
V2M70		EZ90;6X4
V40		8020
V41		AZ41
V61		EZ40;6BT4
V311		(UY41);(31A3)

Type to be replaced	*CV number*	*Replacement type*
V312		(UY42)
V741	133	EC90;6C4;M8080
V884	131	EF92;6CQ6; M8161
V886	136	EL91;6AM5;M8082
V1103		6360;QQE03/12
VA203B		6975
VH550		DCG4/1000ED
VH550H		DCG4/1000G;866A
VH7400		DCG5/5000GB;872A
VH7400A		DCG5/5000EG
VJ5551		PL5551A
VJ5551A		PL5551A
VJ5552A		PL5552A
VJ5553		PL5553B
VJ5553B		PL5553B
VMP11/30		(150AVP)
VMP11/44		(56AVP)
VMP11/44A		(153AVP);(XP1001)
VMP11/44B		(53AVP);(XP1000)
VMP11/44C		(53AVP);(XP1000)
VMP11/111		(54AVP)
VMP11/170		(57AVP)
VMP13/44		(56AVP/05)
VMQ11/44		(53UVP);(XP1004)
VMQ13/44		(56UVP)
VP6		EF92;6CQ6;M8161
VR53		EF93
VR55		EBC33
VR57		EK32
VR105-30		OB2;OB2WA;M8224
VR150-30	216	150C3;OD3
VS70		7475
[1])VT39		(6508);(DCG9/20)
VT39A		(6508);(DCG9/20)

*[1]) American VT-numbers unless otherwise stated [2]) British VT-numbers * Obsolete type with replacement type*

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Type to be replaced	*CV number*	*Replacement type*	*Type to be replaced*	*CV number*	*Replacement type*
VT42A		(872A);	WD119		UBF89;19FL8
		(DCG5/5000GB)	WD142		UAF42;12S7
VT46		(866A);	WD150		EAF42;6CT7
		(DCG4/1000G)	WD709		EBF80;6N8
VT46A		866A;DCG4/1000G	WE12		EM4
[2])VT60A		(807);(QE06/50)	WE17		PL5557
[2])VT79		(807);(QE06/50)	WE289A		1163
VT88		(832A);(QQE04/20)	WL2D21		PL2D21;EN91;
VT88A		832A;QQE04/20			PL5727;M8204
VT100		807;QE06/50	WL17		PL5557
			WL57		PL5559
VT100A		(807);(QE06/50)	WL105		PL105
VT118		832A;QQE04/20	WL172		(PL105)
VT144		QB2/250	WL414		(PL255)
[2])VT197		(DCG4/5000)	WL502A		(PL5727);(M8204)
			WL575A		(DCG6/18GB);(7136)
[2])VT199		807;QE06/50	WL624		(PL105)
[1])VT218		100TH;TB3/350	WL631		PL5559
VT220		TB4/800;250TH	WL622A		(PL5559)
VT259		(5894);(QQE06/40)	WL676		(PL105)
VT267	2967	8020	WL807		807;QE06/50
VT286		832A;QQE04/20	WL813		813;QB2/250
VT510		QE04/10	WL866A		866A;DCG4/1000G
VTP7386		(PL5545)	WL869B		6508;(DCG9/20)
VU134		1877	WL872A		872A;DCG5/5000GB
VX32B		(4065)	WL885		(PL2D21);(EN91);
VX41		(4066)			(PL5727);(M8204)
[3])VX550A		DCX4/1000;3B28	WL5551		PL5551A
[3])VX7400		DCX4/5000;4B32	WL5551/652		PL5551A
W17	785	DF91;1T4	WL5551A		PL5551A
W25		DF96;1AJ4	WL5551A/652		PL5551A
W77	131	EF92;6CQ6;M8161	WL5552		PL5552A
W81		EF22	WL5552/651		PL5552
W142		UF41;12AC5	WL5552A		PL5552A
W143		EF22	WL5552A/651		PL5552A
W147		EF39			
W150		EF41;6CJ5	WL5553		PL5553B
W719		EF85;6BY7	WL5553/655		PL5553B
W727		6BA6;EF93	WL5553A/655		PL5553B
W729		(EF85);(6BY7)	WL5553B/655		PL5553B

[1]) *American VT-numbers unless otherwise stated* [2]) ***British VT-numbers*** [3]) ***SFR***

Type to be replaced	CV number	Replacement type
WL5555		PL5555
WL5555/653B		PL5555
WL5557/17		PL5557
WL5559/57		PL5559
WL5685		(PL5545A)
WL5720		(PL5559)
WL5822		PL5822A
WL5822A		PL5822A
WL6376		(ZP1010)
WL6998		(ZP1000)
WL7306		PL5684
WL289-416D		1163
WT210-0001		PL2D21;EN91; PL5727;M8204
WT210-0015		PL5557
WT210-0018		(150C1K)
WT210-0056		PL5559
WT210-0062		PL5557
WT210-0069		PL5557
WT210-0071		PL5551A
WT210-0072		(PL5552A)
WT210-0073		(PL5553B)
WT210-0074		PL105
WT210-0079		PL105
WT210-0091		(PL1267/Z300T)
WT272		PL5557
WTT108		PL3C23
WTT111		PL5559
WTT117		PL5557
WTT118		PL105
X17	782	DK91;1R5
X18		(DK92);(1AC6)
X20		DK92;1AC6
X25		DK96;1AB6
X61M	1347	ECH35
X77	453	6BE6;EK90
X81		(ECH21)

Type to be replaced	CV number	Replacement type
X119		UCH81;19D8
X142		UCH42;14K7
X143		ECH21
X150		ECH42;6CU7
X719		ECH81;6AJ8
X727		6BE6;EK90
XB767A		(PL2D21);(EN91); (PL5727);(M8204)
XC31		(Z70U)
XC97		XC97;2FY5
XC900		XC900;2HA5
XCC82		XCC82;7AU7
XCC189		XCC189;4ES8
XCF80		XCF80;4BL8
XCF801		XCF801;4GJ7
XCH81		XCH81;3AJ8
XCL82		XCL82;8B8
XCL84		XCL84;8DX8
XCL85		XCL85;8GV8
XCL86		XCL86;8GW8
XF80		XF80;3BX6
XF85		XF85;3BY7
XF86		XF86;2HR8
XF183		XF183;3EH7
XF184		XF184;3EJ7
XG1-2500		PL5559
XG2		EN70
XG2-12		PL255
XG2-25		PL260
XG2-500	1144	(PL5557)
XG2-6400		(PL105)
XG5-500	2957	PL5557
XG15-10		6786;DCG7/100B
XG15-12		(DCG7/100B)
XGQ2-6400		PL105
XH3-045	372	3C45

Type to be replaced	*CV number*	*Replacement type*
XH8-100	1787	4C35A
XH16-200	2520	5C22
XH25-500	3521	5949
XL36		XL36;13CM5
XL86		XL86;8CW5
XL500		XL500;13GB5
XN3		ZM1080
XP1000		XP1000
XP1001		XP1001
XP1002		XP1002
XP1003		XP1003
XP1004		XP1004
XP1005		XP1005
XP1010		XP1010
XP1011		XP1011
XP1015		XP1015
XP1020		XP1020
XP1021		XP1021
XP1023		XP1023
XP1030		XP1030
XP1031		XP1031
XP1032		XP1032
XP1033		XP1033
XP1040		XP1040
XP1060		150AVP
XP1070		XP1030
XP1090		XP1000;53AVP
XP1110		XP1110
XP1111		XP1111
XP1113		XP1113
XP1114		XP1114
XP1115		XP1115
XP1116		XP1116
XP1117		XP7117
XP1118		XP1118
XP1120		XP1120
XP1121		XP1121

Type to be replaced	*CV number*	*Replacement type*
XP1122		XP1122
XP1123		XP1123
XP1130		XP1130
XP1131		XP1131
XP1140		XP1140
XP1141		XP1141
XP1150		XP1150
XR1-12		XR1-12;5855
*XR1-1600		PL5684/C3JA
XR1-1600A	5234	PL5684/C3JA
XR1-3200	2210	PL5544
XR1-3200A		PL7981
XR1-6400	2215	PL5545A
XR1-6400A		PL6807;(PL5545A)
XR81		55335
XY88		XY88;16AQ3
Y25		DM71;1N3
Y119		UM80;19BR5
YD1000		YD1000
YD1001		YD1001
YD1002		YD1002
YD1010		YD1010
YD1012		YD1012
YD1051		YD1051
YD1110		YD1110
YD1120		YD1120
YD1130		YD1130;8163
YD1140		YD1140
YD1141		YD1141
YD1142		YD1142
YD1150		YD1150
YD1152		YD1152
YD1160		YD1160
YD1161		YD1161
YD1162		YD1162
YD1170		YD1170
YD1171		YD1171
YD1172		YD1172
YD1220		YD1220;TY4-400C
YD1230		YD1230

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
YH1080		YH1080
YH1090		YH1090
YH1100		YH1100
YJ1000		YJ1000
YJ1010		YJ1010
YJ1011		YJ1011
YL1020		YJ1020
YJ1021		YJ1021
YJ1030		YJ1030
YJ1040		YJ1040
YJ1050		YJ1050
YJ1060		YJ1060
YJ1071		YJ1071
YJ1080		YJ1080
YJ1082		YJ1082
YJ1120		YJ1120
YJ1140		YJ1140
YJ1150		YJ1150
YJ1160		YJ1160
YJ1162		YJ1162
YJ1170		YJ1170
YJ1180		YJ1180
YJ1190		YJ1190
YK1000		YK1000
YK1001		YK1001
YK1002		YK1002
YK1010		YK1010
YK1061		YK1061
YK1062		YK1062
YK1090		YK1090
YK1091		YK1091
YL1000		YL1000;8463
YL1010		YL1010
YL1011		YL1011
YL1012		YL1012
YL1020		YL1020;8118
YL1030		YL1030
YL1060		YL1060;7854
YL1070		YL1070;8117
YL1071		YL1071;8116
YL1080		YL1080;8348
YL1090		YL1090
YL1001		YL1091
YL1100		YL1100;6884
YL1101		YL1101;6816
YL1102		YL1102;7843
YL1103		YL1103;7844
YL1110		YL1110;7650
YL1120		YL1120;8429
YL1121		YL1121
YL1122		YL1122
YL1130		YL1130;8408
YL1140		YL1140
YL1150		YL1150;8579
YL1170		YL1170;7580W
YL1190		YL1190;8580
YL1200		YL1200
YL1210		YL1210;8457
YL1220		YL1220;8577
YL1230		YL1230;8654
YL1240		YL1240;8458
YL1250		YL1250;8505
YL1270		YL1270
YL1280		YL1280;7213
YL1290		YL1290
YL1300		YL1300;8637
YL1310		YL1310;8603
YL1320		YL1320;8560
YX1172		YX1172
YX1220		YX1220
*Z50T		Z71U;7711
Z70U		Z70U;7710
Z70W		Z70W;7709
Z71U		Z71U;7711
Z77	138	EF91;6AM6;M8083
Z90		EF50
Z142		UF42
Z150		EF42
Z152		EF80;6BX6
Z225		(DCG4/1000G)

** Obsolete type with replacement type*

Type to be replaced	*CV number*	*Replacement type*
Z300T	1992	PL1267/Z300T
Z302C		Z302C
Z303C	2271	Z303C
Z329		(EF80);(6BX6)
Z500T		Z500T
Z502S	2325	Z502S
Z504S		Z504S;ZM1070
Z505S		Z505S;ZM1060
*Z510M		ZM1020
*Z520M		ZM1020
*Z521M		ZM1021
*Z522M		ZM1040
*Z550M		ZM1050
Z700U		Z70U;7710
Z700W		Z70W;7709
Z701U		Z71U;7711
Z719		EF80;6BX6
Z729	2901	EF86;6267;M8195
Z800U		Z800U;6538
Z801U		Z801U;6539
Z803U	2434	Z803U;6779
*Z804U		—
Z805U		Z805U;7714
Z806W		Z806W
Z860X		(Z803U)
Z861X		(Z805U);(7714)
Z900T	5122	Z900T;5823
Z901T		Z801T
Z5823		Z900T;5823
ZA1000		ZA1000
ZA1001		ZA1001
ZA1002		ZA1002
ZA1003		ZA1003
ZA1004		ZA1004
ZA1005		ZA1005
ZC1010		(Z70W)

Type to be replaced	*CV number*	*Replacement type*
ZC1030		ZC1030
ZC1031		ZC1040
ZC1040		ZC1040
ZD17	784	DAF91;1S5
ZD25		DAF96;1AH5
ZD152		EBF80;6N8
ZM1020		ZM1020
ZM1021		ZM1021
ZM1022		ZM1022
ZM1023		ZM1023
ZM1024		ZM1024
ZM1025		ZM1025
ZM1030		ZM1030
ZM1031		ZM1031
ZM1032		ZM1032
ZM1033		ZM1033
ZM1040		ZM1040
ZM1041		ZM1041
ZM1042		ZM1042
ZM1043		ZM1043
ZM1050		ZM1050;8453
ZM1060		ZM1060;Z505S
ZM1070		ZM1070;Z504S
ZM1080		ZM1080
ZM1081		ZM1081
ZP1000		ZP1000
ZP1001		ZP1001
ZP1010		ZP1010
ZP1020		ZP1020
ZP1080		ZP1080
ZP1081		ZP1081
ZP1083		ZP1083
ZT1000		ZT1000;8270
ZT1001		ZT1001
ZT1011		PL5684/C3JA

* *Obsolete type with replacement type*

Type to be replaced	CV number	Replacement type
ZX1000		ZX1000
ZX1060		ZX1060
ZY1000		ZY1000
ZY1001		ZY1001;8008A
ZY1002		ZY1002
ZZ1000		ZZ1000;8228
ZZ1010		(90C1)
ZZ1020		(ZZ1000)

CV number	Comparable type
CV5	RG4-1250
CV26	QB2/250;813
CV31	FW4-800
CV32	DCG4/1000G;866A
CV124	QE06/50;807
CV131	6CQ6;EF92
CV133	6C4;EC90
CV135	EY91
CV136	EL91;6AM5
CV137	EAC91
CV138	6AM6;EF91
CV152	DCG4/5000
CV173	EF55
CV273	CV273
CV283	6AL5;EAA91
CV284	75B1
CV286	95A1
CV303	EF22
CV309	QEO4/10
CV358	EF37A
CV370	JP9-7A
CV372	(3C45)
CV378	GZ37
CV380	EF54
CV394	EM34;6CD7
CV417	6AQ4;EC91
CV424	QQE06/40;5894
CV426	EY51;6X2
CV429	MF31-55
CV431	85A1;OE3
CV449	85A2;OG3
CV450	6CN6;EL38
CV452	6AT6;EBC90
CV453	EK90;6BE6
CV454	EF93;6BA6
CV455	ECC81;12AT7
CV466	EF73;6488
CV467	EF70;6487
CV468	EC70;6778
CV469	6489;EA76
CV472	EF74;6391
CV473	EY70
CV474	EN70
CV475	EF731;5899
CV476	EF74;6391
CV477	EF731;5899
CV483	QE04/10
CV484	3S4;DL92
CV491	ECC82;12AU7
CV492	ECC83;12AX7
CV493	EZ90;6X4
CV495	4065
CV501	EBF32
CV552	25L6
CV553	25L6GT
CV568	35Z5GT
CV569	ECC35
CV571	50L6GT
CV586	EL37
CV587	6Q7G
CV589	6Q7GT
CV593	GZ32;5AQ4
CV635	(TB4/1250P);(5868)
CV642	DCG5/5000GB;872A
CV722	725A
CV753	1A3;DA90
CV782	1R5;DK91
CV784	1S5;DAF91
CV785	1T4;DF91
CV788	QQE04/20;832A
CV797	PL2D21;EN91; PL5727;M8204
CV807	3A4;DL93
CV808	3A5;DCC90
CV818	3Q4;DL95
CV820	3S4;DL92
CV850	EF95;6AK5
CV858	6J6;ECC91
CV1052	EL32
CV1053	EF39
CV1054	EB34
CV1055	EBC33
CV1057	EK32
CV1070	7475

CV number	Comparable type
CV1128	AN1
CV1134	1877
CV1136	EF54
CV1264	AZ50
CV1347	ECH35
CV1350	TB3/750;5867
CV1351	TB4/1250;5868
CV1352	6BR5;EM80
CV1355	RG4-1250
CV1375	6BY7;EF85
CV1376	6BX6;EF80
CV1377	5AR4;GZ34
CV1426	EK2
CV1428	EBC3
CV1429	EL2
CV1434	EM4
CV1449	DCG5/5000GB;872A
CV1453	4378
CV1510	QE04/10
CV1535	6V4;EZ80
CV1572	QE06/50;807
CV1581	ECH35
CV1625	DCG4/1000ED; RG3-250
CV1629	DCG4/5000
CV1737	MW6-2
CV1741	6CA7;EL34
CV1758	1L4;DF92
CV1787	4C35A
CV1795	723A/B
CV1830	1B3GT
CV1832	OA2;150C2;150C4
CV1833	OB2
CV1835	DCX4/1000;3B28
CV1836	1163
CV1838	QQC04/15;5895
CV1854	5Y3G
CV1856	5Y3GT
CV1862	6AQ5;EL90
CV1865	EC81;6R4
CV1866	CV1866
CV1868	MF13-1
CV1869	MF31-95
CV1886	EC80;6Q4
CV1887	6B6G
CV1888	EC81;6R4
CV1893	6B8G
CV1905	QB3/200;4-65A
CV1911	6F6G
CV1924	TB2.5/300;5866
CV1928	HF93;12BA6
CV1949	EN93;6D4
CV1959	HL92;50C5
CV1961	HF94;12AU6
CV1971	1T4;DF91
CV1976	MV6-5
CV1977	45A5;UL41
CV1988	6SN7GT
CV1992	PL1267/Z300T
CV2101	DF72
CV2103	DF73
CV2105	6373;DL70
CV2127	EL821;6CH6
CV2128	6AJ8;ECH81
CV2129	QE03/10;5763;M8096
CV2130	QB3/300;6155
CV2131	QB3.5/750;6156
CV2132	90AV
CV2133	90CG
CV2134	90CV
CV2175	DG7-5;3ALP1
CV2191	DG13-2
CV2210	PL5544
CV2215	PL5545A
CV2225	150B2;6354
CV2235	EY84;6374
CV2237	1AD4;DF62
CV2238	5672
CV2240	3B4;DL98
CV2241	5642;DY70
CV2253	PL6574
CV2254	DF60;5678
CV2270	90AG
CV2271	Z303C
CV2275	DC70;6375
CV2284	(4J50)
CV2295	QQV5-P10;3E29
CV2302	DH3-91;1CP31
CV2325	Z502S
CV2328	MF31-95
CV2331	DL64
CV2348	4068
CV2352	DG16-22;7AHP1
CV2361	DL69
CV2370	3S4;DL92
CV2371	DF61
CV2372	MF22-75
CV2382	EL822
CV2390	3A4;DL93
CV2399	RR3-1250A
CV2420	JPT9-01
CV2431	DG7-32;3AMP1
CV2432	6205
CV2433	DF63
CV2434	Z803U;6779
CV2454	75C1
CV2466	QQE02/5;6939
CV2487	QEL2/250;4X250B
CV2492	6922;E88CC
CV2497	MG13-11
CV2498	DP16-22;7AHP7
CV2507	1U4
CV2516	2C39A
CV2518	DCX4/5000;4B32
CV2519	QEL1/150;4X150A
CV2520	6279;5C22
CV2522	6AS6
CV2524	6AU6;EF94

CV number	Comparable type
CV2526	EBC91;6AV6
CV2552	100TH;TB3/350
CV2573	5651
CV2589	250TH;TB4/800
CV2634	367
CV2642	417A;5842
CV2662	5639
CV2718	1876
CV2721	EL81;6CJ6
CV2726	6CK6;EL83
CV2729	6084;E80F
CV2730	4066
CV2742	1L4;DF92
CV2748	GZ30
CV2753	PL5684/C3JA
CV2792	2K25
CV2795	1L4;DF92
CV2797	QQE06/40;5894
CV2798	QQE03/12;6360
CV2799	QQE03/20;6252
CV2821	ECC33
CV2852	2J56
CV2860	AZ1
CV2862	AZ31
CV2876	PL5727;M8204
CV2888	EL31
CV2896	52CG
CV2901	6267;EF86
CV2925	EBF2
CV2926	EBL31
CV2927	EC50
CV2929	ECH3
CV2930	ECH33
CV2938	EL33
CV2940	6CM5;EL36
CV2941	EL50
CV2957	PL5557
CV2963	QB3/300GA;4-125A
CV2964	QB3.5/750GA;4-250A

CV number	Comparable type
CV2966	EY86;6S2
CV2967	8020
CV2975	EL84;6BQ5
CV2980	1M3;DM70
CV2983	3V4;DL94
CV3508	M8162;E81CC; 6201;12AT7WA
CV3512	5696;EN92
CV3521	5949
CV3522	6079;QB5/1750
CV3523	QE05/40;6146
CV3526	EL85;6BN5
CV3560	2J51
CV3599	QQV5-P10;3E29
CV3602	5J26
CV3611	5586
CV3676	2J42
CV3789	5842;417A
CV3879	QB4/1100GA;4-400A
CV3881	EB41
CV3882	EBC41;6CV7
CV3883	EAF42;6CT7
CV3884	ECC40
CV3885	EF40
CV3886	EF41;6CJ5
CV3887	EF42
CV3888	ECH42;6CU7
CV3889	6CK5;EL41
CV3890	EL42
CV3891	EZ40;6BT4
CV3892	AZ41
CV3893	4X150G;QV1-150G
CV3905	5847
CV3912	1U5;DAF92
CV3926	TBL6/6000;5924

CV number	Comparable type
CV3928	5636;EF730
CV3929	EF732;5840
CV3930	EC71;5718
CV3933	5783WA
CV3946	3WP1;DG7-36
CV3959	MF13-1
CV3960	5783WA;M8190
CV3986	6021;ECC70
CV3987	5644
CV3990	2E26;QV05-10
CV3991	4X150D
CV3995	6CB6
CV3997	JP9-15
CV3998	E180F;6688
CV4003	M8136;6189; 12AU7WA
CV4004	M8137
CV4007	5726;E91AA; 6AL5W;M8212
CV4008	5719
CV4009	5749;6BA6W
CV4010	6AK5W;E95F; 5654;M8100
CV4011	6AS6W;5725;M8196
CV4014	M8083
CV4015	M8161
CV4017	5751
CV4018	PL5727;M8204
CV4019	M8245
CV4020	M8223;OA2WA
CV4024	6201;E81CC; 12AT7WA;M8162
CV4025	5726;E91AA;M8079
CV4028	OB2WA;M8224
CV4031	M8081
CV4039	M8214
CV4044	M8091
CV4048	M8098

CV number	Comparable type
CV4058	M8080
CV4059	M8097
CV4063	M8082
CV4066	M8190;5783WA
CV4070	M8099
CV4080	M8225
CV4085	M8195
CV4100	M8223;OA2WA
CV4101	M8224;OB2WA
CV4104	M8163
CV5037	6BA6W;5749
CV4108	E188CC;7308
CV5018	4J52A
CV5027	PL5559
CV5035	DG13-34;5ADP1
CV5055	6DA5;EM81
CV5065	6U8;ECF82
CV5072	6CA4;EZ81
CV5077	PL81;21A6
CV5079	5643
CV5080	EF37A
CV5094	6CW5;EL86
CV5106	6370;E1T
CV5120	20CV
CV5122	Z900T;5823
CV5123	JP9-15D
CV5125	DP13-34
CV5131	DG4-1
CV5134	2J51A
CV5135	JP9-15
CV5132	M8163
CV5140	6923;EA52
CV5144	PCL83
CV5156	6DA6;EF89
CV5157	DP13-2
CV5164	MM13-10;5DHP32
CV5168	DH13-97;5BKP31
CV5171	DP7-5;3ALP7
CV5173	90C1
CV5186	5651
CV5188	7119;E182CC
CV5189	5726;6AL5W; E91AA;M8212
CV5190	M8245
CV5192	PCC84;7AN7
CV5212	12AT7WA;E81CC; 6201;M8162
CV5214	5920;E90CC
CV5215	6BL8;ECF80
CV5216	6AK5W;E95F; 5654;M8100
CV5231	7308;E188CC
CV5232	C3m
CV5233	EL32
CV5234	XR1-1600A;8063
CV5244	MB13-1
CV5247	4C35A
CV5249	6975
CV5269	DG7-6
CV5277	6700;ET51
CV5278	Z510M
CV5281	6CW7;ECC84
CV5282	AL13-36
CV5300	AL22-10;9RP33
CV5302	DH7-91
CV5311	M8248
CV5331	ECC189;6ES8
CV5358	6DJ8;ECC88
CV5397	EC157
CV5724	E80T;6218
CV5915	ECH21
CV6007	3C45

MILITARY SPECIFICATION TYPES

ELECTRON TUBES

A. UNITED KINGDOM CV-SPECIFICATION TYPES ELECTRON TUBES

Type No.	*Our type*	*Nato Stock No.*
CV5	RG 4-1250	**5960-99-000**-0005
CV9	AL60	-0009
CV26	813;QB2/250	-0026
CV31	FW4/800	-0031
CV32	866A; DCG4/1000G	-0032
CV66	EC54	-0066
CV124	807	-0124
CV131	EF92; 6CQ6	-0131
CV133	6C4: EC90	-0133
CV135	EY91	-0135
CV136	EL91; 6AM5	-0136
CV137	EAC91	-0137
CV138	6AM6; EF91	-0138
CV140	EB91	-0140
CV152	DCG4/5000	-0152
CV173	EF55	-0173
CV181	ECC32	-0181
CV188	7475	-0188
CV200	MZ2-200	-0200
CV216	150C3	-0216
CV242	GMG25; GS18	-0242
CV248	GS16	-0248
CV273	EC55; 5861	-0273
CV283	6AL5; EAA91	-0283
CV284	75B1	-0284
CV286	95A1	-0286
CV287	150B3	-0287
CV302	ECH22	-0302
CV303	EF22	-0303
CV304	EL22	-0304
CV305	EF51	-0305
CV309	QE04/10	-0309
CV313	QYS50-P40	-0313
CV327	EF52	-0327
CV346	7Z4; EZ22	-0346
CV347	EBC21	-0347
CV354	TD03-5	-0354
CV358	EF37A	-0358
CV366	6AG7	-0366
CV370	JP9-7A	-0370

Type No.	*Our type*	*Nato Stock No.*
CV372	3C45	**5960-99-000**-0372
CV375	EA50; 2B35	-0375
CV378	GZ37	-0378
CV380	EF54	-0380
CV385	DL71	-0385
CV386	DF70	-0386
CV387	DL72	-0387
CV394	EM34; 6CD7	-0394
CV397	TD04-20	-0397
CV405	55CG	-0405
CV417	6AQ4; EC91	-0417
CV424	QQV06-40A; 5894	-0424
CV425	OA71	-0425
CV426	EY51; 6X2	-0426
CV429	MF31-55	-0429
CV431	85A1	-0431
CV432	ME1400	-0432
CV443	DF70	-0443
CV444	MZ1-75	-0444
CV449	85A2	-0449
CV450	EL38; 6CN6	-0450
CV452	6AT6; EBC90	-0452
CV453	6BE6; EK90	-0453
CV454	6BA6; EF93	-0454
CV455	12AT7; ECC81	-0455
CV465	EF72	-0465
CV466	EF73; 6488	-0466
CV467	EF70; 6487	-0467
CV468	EC70; 6K4	-0468
CV469	EA76	-0469
CV471	EL71	-0471
CV472	EF74	-0472
CV473	5641; EY70	-0473
CV474	8033; EN70	-0474
CV475	5899; EF731	-0475
CV476	EF74	-0476
CV477	5899; EF731	-0477
CV483	QE04/10	-0483
CV484	3S4; DL92	-0484
CV491	12AU7; ECC82	-0491

Type No.	Our type	Nato Stock No.
CV492	12AX7; ECC83	**5960-99-000**-0492
CV493	6X4; EZ90	-0493
CV495	4065	-0495
CV501	EBF32	-0501
CV511	6V6GT	-0511
CV521	R4410	-0521
CV569	ECC35; 6SL7GT	-0569
CV572	6X5G	-0572
CV574	6X5GT; EZ35	-0574
CV586	EL37	-0586
CV593	GZ32	-0593
CV635	833	-0635
CV642	DCG5/5000GB; 872A	-0642
CV647	884	-0647
CV688	TD3.5-12	-0688
CV729	5V4G	-0729
CV753	1A3; DA90	-0753
CV782	1R5; DK91	-0782
CV783	1S4; DL91	-0783
CV784	1S5; DAF91	-0784
CV785	1T4; DF91	-0785
CV788	832A; QQE04/20	-0788
CV797	PL2D21; EN91	-0797
CV807	3A4; DL93	-0807
CV808	3A5; DCC90	-0808
CV818	3Q4; DL95	-0818
CV819	DL33	-0819
CV820	3S4; DL92	-0820
CV850	6AK5; EF95	-0850
CV858	6J6; ECC91	-0858
CV1039	1W4-500	-1039
CV1052	EL32	-1052
CV1053	EL39	-1053
CV1054	EB34	-1054
CV1055	EBC33	-1055
CV1056	EF36	-1056
CV1057	EK32	-1057
CV1064	DW4-500	-1064
CV1070	7475	-1070
CV1072	DCG1.5/250	-1072

Type No.	Our type	Nato Stock No.
CV1091	EF50	**5960-99-000**-1091
CV1092	EA50	-1092
CV1128	AN1	-1128
CV1134	1877	-1134
CV1136	EF54	-1136
CV1137	EC52	-1137
CV1144	XG2-500	-1444
CV1197	EC53	-1197
CV1252	MY3-275	-1252
CV1264	AZ50	-1264
CV1285	ECC31	-1285
CV1286	EL35	-1286
CV1347	ECH35	-1347
CV1350	5867; TB3/750	-1350
CV1351	5868; TB4/1250	-1351
CV1352	EM80; 6BR5	-1352
CV1376	6BX6; EF80	-1376
CV1377	GZ34; 5AR4	-1377
CV1397	ACR21	-1397
CV1400	C1C	-1400
CV1401	CL33	-1401
CV1402	CY31	-1402
CV1433	EC31	-1433
CV1510	QE04/10	-1510
CV1535	6V4; EZ80	-1535
CV1547	VCR524A	-1547
CV1581	ECH35	-1581
CV1625	DCG4/1000ED	-1625
CV1626	RG1-240A	-1626
CV1629	DCG4/5000	-1629
CV1737	MW6-2	-1737
CV1741	EL34; 6CA7	-1741
CV1758	1L4; DF92	-1758
CV1787	4C35; 6268	-1787
CV1789	5FP14	-1789
CV1795	723A/B	-1795
CV1818	DAC32	-1818
CV1832	OA2	-1832
CV1833	OB2	-1833
CV1835	3B28; DCX4/1000	-1835

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Type No.	Our type	Nato Stock No.
CV1836	1163	**5960-99-000**-1836
CV1838	QQC04/15;5895	-1838
CV1862	6AQ5; EL90	-1862
CV1863	5Z4GT	-1863
CV1865	6R4; EC81	-1865
CV1866	JP9-7D	-1866
CV1868	MF13-1; 5FP7A	-1868
CV1869	MF31-95	-1869
CV1886	6Q4; EC80	-1886
CV1889	TYS4-500	-1889
CV1905	4-65A; QB3/200	-1905
CV1924	5866; TB2.5/300	-1924
CV1928	12BA6; HF93	-1928
CV1949	6D4; EN93	-1949
CV1971	DF91; 1T4	-1971
CV1976	MV6-5	-1976
CV1977	45A5; UL41	-1977
CV1988	6SN7GT	-1988
CV1992	PL1267; Z300T	-1992
CV2101	DF72	-2101
CV2102	DL75	-2102
CV2103	DF73	-2103
CV2104	DAF70	-2104
CV2105	6373; DL70	-2105
CV2106	DL66	-2106
CV2107	DF66	-2107
CV2127	6CH6; EL821	-2127
CV2128	ECH81; 6AJ8	-2128
CV2129	5763; QE03/10	-2129
CV2130	6155; QB3/300	-2130
CV2131	6156; QB3.5/750	-2131
CV2132	90AV	-2132
CV2133	90CG	-2133
CV2134	90CV	-2134
CV2175	DG7-5; 3ALP1	-2175
CV2191	DG13-2	-2191
CV2195	EF91	-2195
CV2204	TD03-10F	-2204
CV2210	PL5544	-2210
CV2215	PL5545	-2215

Type No.	Our type	Nato Stock No.
CV2225	150B2; 6354	**5960-99-000**-2225
CV2229	JP9-250	-2229
CV2235	6374; EY84	-2235
CV2236	Z800U	-2236
CV2237	1AD4; DF62	-2237
CV2238	5672	-2238
CV2240	3B4; DL98	-2240
CV2241	5642; DY70	-2241
CV2253	PL6574	-2253
CV2254	5678; DF60	-2254
CV2255	Z801U	-2255
CV2259	DL68	-2259
CV2260	DF64	-2260
CV2269	ME1401	-2269
CV2270	90AG	-2270
CV2271	Z303C	-2271
CV2275	DC70; 6375	-2275
CV2281	VX9041	-2281
CV2284	4J50A	-2284
CV2288	DL66	-2288
CV2295	3E29	-2295
CV2299	DL73	-2299
CV2302	1CP31; DH3-91	-2302
CV2314	MP31-55	-2314
CV2325	Z502S	-2325
CV2328	MF31-95	-2328
CV2331	DL64	-2331
CV2348	4068	-2348
CV2352	DG16-22; 7AHP1	-2352
CV2361	DL69	-2361
CV2370	3S4; DL92	-2370
CV2371	DF61	-2371
CV2372	MF22-75	-2372
CV2373	JP9-180	-2373
CV2382	EL822	-2382
CV2387	VX8124	-2387
CV2389	EF750	-2389
CV2390	3A4; DL93	-2390
CV2399	RR3-1250A	-2399
CV2411	VX8194	-2411

Type No.	Our type	Nato Stock No.
CV2416	QV20-P18B	**5960-99-000**-2416
CV2420	JPT9-01	-2420
CV2424	JP9-250	-2424
CV2425	JP9-250	-2425
CV2426	JP9-250	-2426
CV2427	JP9-250	-2427
CV2431	DG7-32; 3AMP1	-2431
CV2432	6205	-2432
CV2433	DF63	-2433
CV2434	Z803U; 6779	-2434
CV2466	QQE02/5; 6939	-2466
CV2469	VCRX407	-2469
CV2492	E88CC; 6922	-2492
CV2493	E88CC; 6922	-2493
CV2497	MG13-11	-2497
CV2498	DP16-22; 7AHP7	-2498
CV2507	1U4	-2507
CV2516	2C39A	-2516
CV2518	4B32; DCX4/5000	-2518
CV2519	4X150A; QEL1/150	-2519
CV2520	5C22; 6279	-2520
CV2522	6AS6	-2522
CV2524	6AU6; EF94	-2524
CV2573	5651	-2573
CV2666	829B; QQV07-40	-2666
CV2721	6CJ6; EL81	-2721
CV2726	EL83; 6CK6	-2726
CV2730	4066	-2730
CV2742	DF92; 1L4	-2742
CV2748	5Z4GT; GZ30	-2748
CV2752	4PR60A	-2752
CV2792	2K25	-2792
CV2795	DF92; 1L4	-2795
CV2797	5894; QQE06/40	-2797
CV2798	6360; QQE03/12	-2798
CV2799	6252; QQE03/20	-2799
CV2821	ECC33	-2821
CV2862	AZ31	-2862
CV2876	PL5727; 2D21W	-2876
CV2888	EL31	-2888

Type No.	Our type	Nato Stock No.
CV2896	52CG	**5960-99-000**-2896
CV2901	EF86; 6267	-2901
CV2926	EBL31	-2926
CV2932	2C42	-2932
CV2938	EL33	-2938
CV2940	EL36; 6CM5	-2940
CV2957	PL5557	-2957
CV2963	QB3/300GA; 4-125A	-2963
CV2964	QB3.5/750GA; 4-250A	-2964
CV2966	EY86; 6S2	-2966
CV2967	8020	-2967
CV2975	EL84; 6BQ5	-2975
CV2980	DM70; 1M3	-2980
CV2983	DL94; 3V4	-2983
CV2984	6080	-2984
CV2993	KU25	-2993
CV3512	5696; EN92	-3512
CV3521	5949	-3521
CV3523	6146; QE05/50	-3523
CV3526	EL85; 6BN5	-3526
CV3540	HT415	-3540
CV3560	2J51A	-3560
CV3569	2J42	-3569
CV3599	QQV5-P10; 3E29	-3599
CV3676	2J42	-3676
CV3798	OA3	-3798
CV3881	EB41	-3881
CV3882	EBC41; 6CV7	-3882
CV3883	EAF42; 6CT7	-3883
CV3884	ECC40	-3884
CV3885	EF40	-3885
CV3886	EF41; 6CJ5	-3886
CV3887	EF42	-3887
CV3888	ECH42; 6CU7	-3888
CV3889	EL41; 6CK5	-3889
CV3891	EZ40; 6BT4	-3891
CV3892	AZ41	-3892
CV3893	4X150G	-3893
CV3926	5924; TBL6/6000	-3926
CV3928	5636	-3928

Type No.	*Our type*	*Nato Stock No.*
CV3929	5840	**5960-99-000**-3929
CV3930	5718	-3930
CV3946	3WP1; DG7-36	-3946
CV3953	4J78	-3953
CV3954	5CP7A; 5CP7	-3954
CV3959	MF13-1; 5FP7A	-3959
CV3960	5783WA	-3960
CV3986	6021	-3986
CV3987	5644	-3987
CV3990	2E26	-3990
CV3997	2J42A	-3997
CV3998	E180F; 6688	-3998
CV3999	MW22-22	-3999
CV4002	M8140	-4002
CV4003	12AU7WA; 6189	-4003
CV4004	12AX7WA	-4004
CV4007	5726; 6AL5W; 6097; E91AA	-4007
CV4010	5654; 6AK5W; 6096; E95F	-4010
CV4011	5725; 6AS6W	-4011
CV4014	6064	-4014
CV4015	6065	-4015
CV4018	2D21W; PL5727; E91N	-4018
CV4019	M8245	-4019
CV4020	OA2WA	-4020
CV4024	12AT7WA; 6201 E81CC	-4024
CV4025	6058	-4025
CV4028	OB2WA	-4028
CV4029	5902	-4029
CV4031	M8081	-4031
CV4033	12AT7WA	-4033
CV4034	12AU7WA	-4034
CV4035	12AX7WA	-4035
CV4036	M8141	-4036
CV4039	M8096	-4039
CV4044	M8091	-4044
CV4048	M8098	-4048
CV4049	M8237	-4049
CV4050	M8180	-4050
CV4054	M8142	-4054
CV4058	M8080	-4058
CV4059	M8097	-4059
CV4063	M8082	**5960-99-000**-4063
CV4066	M8190	-4066
CV4067	M8167	-4067
CV4070	M8099	-4070
CV4076	M8179	-4076
CV4080	M8225	-4080
CV4084	6065	-4084
CV4085	EF86	-4085
CV4086	EF86	-4086
CV4098	M8234	-4098
CV4100	OA2WA	**-037**-2254
CV4104	150B2	-2292
CV4501	7432	**-000**-4501
CV4502	7433	-4502
CV4503	7434	-4503
CV4504	7435	-4504
CV4505	7436	-4505
CV4507	7437	-4507
CV4508	7438	-4508
CV4516	5783WA	-4516
CV5023	6D4	-5023
CV5055	EM81; 6DA5	-5055
CV5072	EZ81; 6CA4	-5072
CV5077	PL81; 21A6	-5077
CV5080	EF37A	-5080
CV5110	EF39	-5110
CV5120	20CV	-5120
CV5131	DG4-1	-5131
CV5140	EA52; 6923	-5140
CV5144	PCL83	-5144
CV5156	Er89; 6DA6	-5156
CV5164	MM13-10	-5164
CV5231	E88CC; 6922	
CV5232	C3M	
CV5244	MB13-1; 5FP11	**-037**-2113
CV5277	ET51; 6700	-2184
CV5311	6J4WA	-2264
CV5724	E80T	-2554
CV5962	TD03-10D	-3167
CV6007	3C45	-2083
CV6094	DM160	-2516
CV6099	6929	-2574
CV6108	YJ1070	-2968
CV6122	QY3-65	-3328

Type number	*Spec. sheet*	*Nato Stock No.*
0A2WA	**MIL-E-1**/290C	**5960-00**-503-4880
0B2WA	940E	-624-4718
0D3	196	-188-8573
1A3	19A	-188-3527
1AD4	20E	-188-0829
1B3GT	748C	-193-5087
1L4	232A	-100-5130
1R5	325A	-188-3954
1S5	327B	-188-3952
1T4	328A	-188-3595
1U4	626A	-188-3593
1U5	327B	-188-0844
1X2B	1111A	-543-1921
2E26	338D	-188-8569
2J42	667E	-107-7590
2J49	945B	-144-3878
2J50	945B	-188-0858
2J51A	846G	-636-0370
2J55	297A	-242-5135
2J56	937E	-166-7649
2K25	982	-107-7605
2K26	JAN-1A	-188-0860
3A4	108A	-188-8617
3A5	33B	-188-8627
3B4	34C	-188-8615
3B28	753D	-108-0252
3C23	610B	-188-0846
3C45	111B	-108-0259
3E29	212B	-114-3834
3Q4	343	-188-3540
3S4	326A	-100-5163
3V4	343	-180-3524
3WP1	267D	-270-5511
4-400A	887	-243-5018
4B32	891	-188-0944
4C22/HF100	1435A	-166-7653
4C35A	806D	-552-8277
4D21	776	-188-0921
4J50	1431	-230-5324
4J50A	979C	

Type number	*Spec. sheet*	*Nato Stock No.*
4J52A	**MIL-E-1**/800C	**5960-00**-669-6807
5ADP1	689D	-296-0517
5ADP7	689D	-296-0512
5C22	115E	-548-9851
5D22	812A	-188-0948
5J26	205C	-107-8133
5JP1A	274B	-170-4586
5R4GY	344A	-188-3945
5Z3	223E	-188-8601
6AT6	119A	-166-7675
6AV6	51C	-188-0873
6B8G	513	-188-3554
6BQ5	1309 (NAVY)	-607-0092
6C4	55B	-503-4871
6CB6	1245A	-230-5307
6D4	781B	-108-0263
6J7GT	520A	-188-8522
6U8A	1168A (NAVY)	-543-0966
12AT6	119A	-188-3604
12AT7WA	3E	-262-0167
12AT7WB	1097D	-615-5528
12AU6	1091 (NAVY)	-262-0296
12BA6	436	-166-7665
12BE6	571A	-166-7646
12K7GT	634	-114-3811
12SN7GT	63A	-100-7083
12SQ7GT	124	-114-3817
12SX7GT	63A	-144-3865
25L6GT	596A	-100-7110
35L6GT	617	-100-7121
35W4	441	-188-0902
35Z5GT	616A	-100-7123
50L6GT	596A	-100-7305
80	347B	-100-7320
120	910A	-114-4668
203WA	814A	-188-8579
211W	815	-166-7643
250TH	878A	-114-3826
575A	1440A	-188-8630
750TL	907A	-188-3900

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Type number	Spec. sheet	Nato Stock No.
805	**MIL-E-1**/921A	**5960-00**-114-4881
807	99B	-114-4868
813	928B	-114-3843
829B	853	-107-8147
832A	215	-116-9966
833A	933	-116-9965
845W	816A	-193-5127
869B	913	-114-3862
880	950A	-188-3918
891R	1007	-188-3931
5586	770	-166-7629
5636	168G	-230-5226
5639	169G	-230-5228
5641	170C	-189-5927
5643	757G	-577-3016
5644	181D	-262-0184
5654	4F	-262-1357
5657	770	-166-7693
5667	306A	-188-3971
5672	280C	-188-6588
5676	79A	-193-5135
5678	281D	-188-6565
5684/C3J/A	375B	-228-3786
5696	917B	-188-6593
5718	172D	-228-3793
5719	173F	-228-0636
5725	6G	-237-6917
5726/6AL5W	7F	-262-0185
5727/7D21W	83C	-284-9285
5749/6BA6W	8D	-264-2089
5751	10F	-193-5145
5763	85B	-188-3915
5783WA	87D	-284-7166
5840	140D	-230-5241
5842	466	-247-8748
5847	467	-261-8670
5893	96F	-262-0226
5894	152A	-248-8502
5896	174D	-248-3091
5899	97K	-256-9989

Type number	Spec. sheet	Nato Stock No.
5902	**MIL-E-1**/175F	**5960-00**-248-3090
6021	188D	-261-8679
6111	189D	-262-0132
6112	190E	-280-5585
6159	863 (NAVY)	-688-6298
6189	246G	-636-2218
6205	140D	-548-3072
6206	97K	-615-9972
6211	905C (NAVY)	-296-3371
6252	1515	-556-1273
6286	270B (Sig. C)	-296-1120
6360	1308B	-729-5376
6688	1225A	-820-8717
6700	1058B	-504-7572
6922	1168B (NAVY)	-676-9016
6939	1221A	-729-2463
6975	1081	-754-9775
6977	1466A (EL)	-682-2701
7034/4X150A	160J	-681-9523
7035/4X150D	160J	-264-3001
7035W	1481 (NAVY)	
7203/4CX250B	889C	
7204/4CX250F	889C	-617-6281
7204W	1482 (NAVY)	
7308	1301A (NAVY)	-806-5614
7580W	1385C	
7586	1397B	-755-0184
7587	1434C	
7609	1331A	-840-1055
7737	1451 (NAVY)	
7788	1458 (NAVY)	
7895	1433C	
8002R	1008	-188-3929
8020	761A	-114-3846
8165/4-65A	876C	-243-5017

Type number	*Spec. sheet*	*Nato Stock No.*
6BL8	**MMR-1**/0022 (ARMY)	**5960-17**-006-7268
6BT4	39 (ARMY)	-007-8430
6BX6	50 (ARMY)	-005-9520
6CA4	53 (ARMY)	-024-3473
6CA7	12A (ARMY)	-005-9522
6CK5	19A (ARMY)	-007-8437
6CK6	40 (ARMY)	-007-6070
6CT7	16B (ARMY/AF)	-017-3667
6CU7	0015 (ARMY)	-017-0063
6CV7	008 (ARMY)	-001-9970
6DC8	31 (ARMY)	-022-7847
6ES8	61 (ARMY)	-024-4376
6R4	17A (ARMY)	-007-5353
6S2A	29 (ARMY)	-024-1720
6V4	51 (NethAF)	-005-9524
9AQ8	67A (ARMY)	-007-6883
15A6	65A (ARMY)	-005-9530
16A8	30 (ARMY)	-025-0587
21A6	0023 (ARMY)	-005-9529
45A5	57 (ARMY)	-006-6189
52AVP	69	-029-5881
53AVP	69	-029-5882
54AVP	69	-029-5883
90C1	54 (ARMY)	-024-3472
150AVP	48	-029-5884
367	13B (ARMY)	-024-3475
5920	45 (ARMY)	-007-8412
6084	003 (NAVY)	-015-2891
6085	01	-005-9442
6227	2C	-005-9443
6508	42 (ARMY)	-024-3657
6686	004	-005-9444
6689	005	-007-7331
6977	46A	-026-1809
7008/YJ1010	44B	-029-5885
7062	64 (ARMY)	-005-9520
7308	79	-029-5886
7377	76	-029-5887
7534	33A	-702-2645
7537	37	-702-2647

Type number	*Spec. sheet*	*Nato Stock No.*
7643	**MMR-1**/59 (ARMY)	**5960-17**-024-4374
7737	32A	-029-5501
7788	81	-029-5888
8042	80	-029-5889
8108	38D	-029-5889
8120	83	
8153	47	-029-5890
8453	34C	-029-5891
56032	56 (ARMY)	-023-9412
AZ41	55 (ARMY)	-024-3474
DB7-6	0014 (ARMY)	-029-5877
DG7-6	0014 (ARMY)	-005-9429
DL67	77 (ARMY)	-005-9437
DP7-6	0014 (ARMY)	-029-5878
EC92	68A (ARMY)	-015-2072
ECC2000	78	-029-5879
EF6	25 (ARMY)	-005-6608
EF40	27A (ARMY)	-024-1725
EF42	28 (ARMY)	-024-1726
YJ1150	86	-029-2351
YJ1180	84	-029-2352
ZZ1000	82	-029-5880

SEMICONDUCTOR DEVICES

TYPE DESIGNATION CODES AND SYMBOLS

CODE VOOR TYPEAANDUIDING

Deze code voor type-aanduiding heeft betrekking op alle halfgeleiders met een of meer grenslagen, op fotogeleiders en op Hall-generatoren.

De type-aanduiding bestaat uit:

TWEE LETTERS GEVOLGD DOOR EEN SERIENUMMER

De eerste letter duidt op het gebruikte halfgeleidermateriaal.

A Germanium (een of meer grenslagen)

B Silicium (een of meer grenslagen)

R Halfgleidermateriaal voor fotogeleiders of Hall-generatoren

De tweede letter duidt op de constructie en/of voornaamste toepassing van de halfgeleider.

A Diode (uitgezonderd tunnel-, stralingsgevoelige, gelijkricht-, spanningsreferentie- of spanningsregeldioden)

C transistors voor l.f.-toepassingen (uitgezonderd vermogenstransistors)

D Vermogenstransistor voor l.f.-toepassingen[1])

E Tunneldiode

F Transistor voor h.f.-toepassingen (uitgezonderd vermogenstransistors)

H Meetsonde

K Hall-generator in een open magnetisch circuit (b.v. magnetogram- of signaalsonde)

L Vermogentransistor voor h.f. toepassingen[1])

M Hall-generator in een gesloten elektrisch bekrachtigd magnetisch circuit (b.v. Hall-modulator of vermenigvuldiger)

P Stralingsgevoelige cel

R Regel- en schakeltransistor met doorslag (uitgezonderd vermogenstransistoren)

S Schakeltransistor (behalve vermogenstransistors)

T Vermogenregel- en -schakeltransistor met doorslag[1])

U Vermogenschakeltransistor[1])

Y Gelijkrichtdiode

Z Spanningsreferentie- of spanningsregeldiode (zener-diode)

[1]) Een transistor of diode is een vermogenstransistor of -diode, indien de thermische weerstand tussen het kristal en de montagebodem gelijk is aan of kleiner is dan 15°C/W.

Het serienummer bestaat uit:

a) drie cijfers voor halfgeleiders die voornamelijk bestemd zijn voor niet-professionele opname- en weergaveapparaten, zoals radio- en televisie-ontvangers, platenspelers, bandrecorders en laagfrequent-versterkers, smalfilm-projectoren, hoorapparaten en dergelijke.
Deze halfgeleiders hebben een nummer tussen 100 en 999.

b) een letter en twee cijfers voor gelijkrichters die voornamelijk bestemd zijn voor andere toepassingen.
Deze halfgeleiders worden aangeduid met de letter X, Y of Z, gevolgd door een getal tussen 10 en 99.

VOORBEELDEN

AF114 h.f. germanium-transistor, voornamelijk bestemd voor „niet-professionele" toepassingen
BYY15 Silicium-gelijkrichter, voornamelijk bestemd voor „industriële toepassingen".

TYPE-AANDUIDING VOOR HALFGELEIDERREEKSEN

Gewoonlijk duidt een typenummer, dat in overeenstemming met de gemeenschappelijke, op bladzijde 346 beschreven code is toegewezen, op een bepaalde halfgeleider of combinatie van twee of meer gelijksoortige halfgeleiders, ondergebracht in dezelfde niet demontabele omhulling.
Het kan echter ook gebruikt worden als het hoofdbestanddeel van de type-aanduiding voor een reeks van varianten van een grondtype dat uitdrukkelijk tot een van de volgende halfgeleidercategorieën behoort:

a) spanningsreferentie of spanningsregeldiodes (zenerdiodes)
b) gelijkrichtdiodes (tweede letter Y)
c) thyristors (tweede letter T)

Het hoofdbestanddeel dat voor de gehele reeks gelijk is, wordt nader bepaald door een achtervoegsel, dat door een streepje van het hoofdbestanddeel gescheiden is.

a) Het achtervoegsel voor zenerdiodes bestaat uit:
Een letter, de typische zenerspanning en, indien van toepassing, de letter R[1]).
De eerste letter duidt de nominale tolerantie van de zenerspanning in procenten aan.
De volgende letters zijn toegewezen:

A	1%	B	2%	C	5%	D	10%	E	15%

De typische zenerspanning heeft betrekking op de nominale stroom voor de gehele serie. De letter V wordt gebruikt om de eventuele decimale komma aan te geven.

b) Het achtervoegsel voor gelijkrichtdioden bestaat uit:
Een getal en, indien van toepassing, de letter R[1])
Het getal duidt de repeterende piekspanning in tegenrichting in volts aan.

c) Het achtervoegsel voor thyristors bestaat uit:
Een getal en, indien van toepassing, de letter R[1]).
Het getal duidt, al naar gelang welke waarde het kleinste is, op de repeterende piekspanning in tegenrichting of de repeterende piekspanning in niet geleidende toestand.

[1]) De letter R geeft tegengestelde polariteit aan (pen = anode). De normale uitvoering (pen = cathode) is niet speciaal aangeduid.

VOORBEELDEN:

BZY88 serie : Reeks silicium-zenerdioden voor industriële toepassingen.

BZY88-C9V1 : Het speciale type uit de reeks met een typische zenerspanning van 9,1 V ±5%.

BYX13-1200R: Het speciale tegenpolariteitstype uit een reeks siliciumgelijkrichters met een repeterende pieksperspanning van 1200 V.

BTX13-200 : Het speciale type uit een reeks siliciumregelgelijkrichters (thyristors), waarvan de lagere repeterende piekspanning 200 V is.

OUD SYSTEEM

De eerste letter is altijd „O" en duidt op een halfgeleider. De tweede (en derde) letter(s) duidt (duiden) op de algemene klasse.

A	– diode of gelijkrichter	C	– transistor
AP	– fotodiode	CP	– fototransistor
AZ	– zenerdiode	RP	– fotogeleider

De groep cijfers vormt een serienummer dat een specifiek ontwerp of ontwikkeling aanduidt.

VOORBEELDEN:	OA81	Halfgeleiderdiode
	OAZ200	Zenerdiode
	OC72	Transistor

LETTERSYMBOLEN VOOR HALFGELEIDERS

UITGEZONDERD GELIJKRICHTDIODEN EN THYRISTORS

Dit systeem is gebaseerd op de aanbevelingen van de Internationale Elektrotechnische Commissie, gepubliceerd in I.E.C. Publicatie 148.

GROOTHEDEN

1. Ogenblikswaarden van de met de tijd variërende stroom, spanning of vermogen worden aangeduid door het gebruik van een kleine letter.

   Voorbeelden: i, v, p

2. Maximale (piek-), gemiddelde, gelijkstroom- en effectieve waarden worden door hoofdletters aangeduid.

   Voorbeelden: I, V, P

INDICES BIJ GROOTHEDEN

1. Totale waarden worden aangeduid door hoofdletterindices.

   Voorbeelden: I_C, I_{CM}, I_{CAV}, i_C, V_{EB}

2. Waarden van wisselstroomcomponenten worden aangeduid door kleine-letterindices.

   Voorbeelden: i_c, I_c, v_{eb}, V_{eb}

3. Ter onderscheiding van maximale (piek-), gemiddelde, gelijkstroom- en effectieve waarden worden de volgende indices toegevoegd.

Voor maximale (piek-) waarden	: M of m
Voor gemiddelde waarden	: AV of av (alleen wanneer men onderscheid moet maken tussen gelijkstroom en gemiddelde)
Voor gelijkstroomwaarden	: geen extra index
Voor effectieve waarden	: (rms)

   Voorbeelden: I_C, I_{cm}, I_{CAV}, $I_{c(\mathrm{rms})}$, $I_{C(\mathrm{rms})}$

4. Lijst van indices (voorbeelden, zie fig. 1)

A, a	=	Anodeaansluiting
K, k	=	Katodeaansluiting
E, e	=	Emitteraansluiting
B, b	=	Basisaansluiting

C, *c*	=	Collectoraansluiting
(BR)	=	Doorslagwaarde
X, *x*	=	Gespecificeerde schakeling
M, *m*	=	Maximale (piek-) waarde
AV, av	=	Gemiddelde waarde
(rms)	=	Effectieve waarde
F, *f*	=	Voorwaarts-, resp. doorlaatrichting
R, *r*	=	Als eerste index: tegenrichting. Als tweede index: repeterend
O	=	Als derde index: de niet genoemde aansluiting is onderbroken
S	=	Als tweede index: Niet repeterend Als derde index : De niet vermelde aansluiting en de referentieaansluiting kortgesloten
Z	=	Zener (vervangt *R* om werkelijke zenerspanning, stroom of vermogen van spanningsreferentie- of spanningsreguleerdioden aan te geven)

5. Toepassingsvoorbeelden van de regels:
Fig. 1 geeft als funktie van de tijd een transistor-collectorstroom die samengesteld is uit gelijkstroom en signaal.

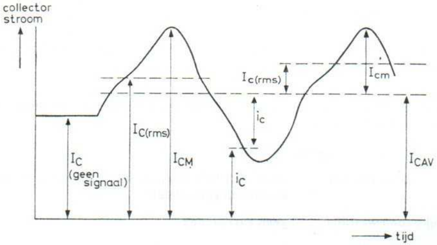


Fig. 1

LIJST VAN SYMBOLEN IN ALFABETISCHE VOLGORDE UITGEZONDERD GELIJKRICHTDIODEN EN THYRISTORS

Lettersymbool	*Definitie*
C_d[1])	Diodecapaciteit
d	Vervorming
F	Ruisgetal
f	Frequentie
f_{hfb}, f_{hfe}, f_{yfe}	Afsnijfrequentie (de frequentie waarbij de door de index aangeduide parameter 0,7 van zijn lagefrequentiewaarde heeft)
f_T	Overdrachtsfrequentie (produkt van versterking en bandbreedte)
G_p	Vermogensversterking
h_{FB}, h_{FC}, h_{FE}	Statische waarde van de voorwaartsstroom-overdrachtsverhouding of gelijkstroomversterkingsfaktor (bij constante uitgangsspanning)
h_{fb}, h_{fc}, h_{fe}	Voorwaartsstroom-overdrachtsverhouding voor kleine signalen of stroomversterkingsfaktor voor kleine signalen (uitgang voor wisselstroom kortgesloten)
I_B, I_C, I_E	Totale gelijkstroom (of gemiddelde)
I_{BM}, I_{CM}, I_{EM}	Maximale (piek-)waarde van de totale stroom
I_{CBO}	Collector lekstroom (open emittor)
I_F	Totale doorlaatstroom van een diode (gelijkstroom of gemiddelde)
I_{FAV}	Totale gemiddelde doorlaatstroom van een diode (om, indien nodig, gemiddelde en gelijkstroom te onderscheiden)
I_{FM}	Doorlaatpiekstroom van een diode
I_R	Totale lekstroom van een diode
I_{RRM}	Repeterende piekstroom van een diode in tegenrichting
I_{RSM}	Niet-repeterende peikstroom van een diode in tegenrichting
I_Z	Zenerstroom (gelijkstroom of gemiddelde)
I_{ZM}	Piek-zenerstroom

[1]) Als uitzondering op de algemene regel voor elektrische parameters worden capaciteiten met de hoofdletter aangeduid.

LIJST VAN SYMBOLEN IN ALFABETISCHE VOLGORDE UITGEZONDERD GELIJKRICHTDIODEN EN THYRISTORS

Lettersymbool	*Definitie*
I_{ZS}	Niet-repeterende zenerstroom
P_i, P_o	Ingangs-, resp. uitgangsvermogen van een gespecificeerde schakeling
P_{tot}	Totale dissipatie
P_Z	Zenerdissipatie
P_{ZM}	Zener-piekdissipatie
P_{ZSM}	Niet-repeterende zener-piekdissipatie
Q_s	Herstelde lading
r_D	Inwendige serieweerstand van een diode
R_{th}	Thermische weerstand
$R_{th\ j-a}$	Thermische weerstand van laagovergang naar omgeving
$R_{th\ j-mb}$	Thermische weerstand van laagovergang naar montagebodem
$R_{th\ j-c}$	Thermische weerstand van laagovergang naar omhulling
$R_{th\ mb-h}$	Thermische weerstand van montagebodem naar koelplaat
R_z	Dynamische differentiaalweerstand van een zenerdiode
S_Z	Temperatuurcoëfficiënt van de werkspanning van een zenerdiode
T_{amb}	Omgevingstemperatuur
T_{case}	Temperatuur van de omhulling
t_d	Vertragingstijd
t_f	Afvaltijd
t_{fr}	Hersteltijd van een diode in doorlaatrichting
T_i	Laagovergangstemperatuur
t_{off}	Uitschakeltijd ($t_{off} = t_s + t_f$)
t_{on}	Inschakeltijd ($t_{on} = t_d + t_r$)
t_r	Stijgtijd
t_{rr}	Hersteltijd van een diode in tegenrichting
t_s	Opbouwtijd van de lading

LIJST VAN SYMBOLEN IN ALFABETISCHE VOLGORDE UITGEZONDERD GELIJKRICHTDIODEN EN THYRISTORS

Lettersymbool	*Definitie*
V_{BB}, V_{CC}, V_{EE}	Voedingspanning
V_{BE}, V_{CB}, V_{CE}, V_{EB}	Totale waarde van de spanning (gelijkspanning of gemiddelde)
$B_{BE\mathrm{sat}}$, $V_{CE\mathrm{sat}}$	Verzadigingsspanning bij gespecificeerde verzadigingscondities
$B_{\mathrm{(BR)}}$	Doorslagspanning
V_{CBO}, V_{CEO}, V_{EBO}	Spanning van de door de eerste index aangegeven aansluiting ten opzichte van de referentieaansluiting (tweede index), terwijl de derde aansluiting onderbroken is
V_F	Gelijkspanning van een diode in doorlaatrichting
V_{FM}	Piekspanning van een diode in doorlaatrichting
V_i, V_o	Ingangs- resp. uitgangsspanning van een gespecificeerde schakeling
V_R	Gelijkspanning van een diode in tegenrichting
V_{RM}	Piekspanning van een diode in tegenrichting
V_{RSM}	Niet-repeterende piekspanning van een diode in tegenrichting
V_Z	Werkspanning (zenerspanning) van een zenerdiode

LETTERSYMBOLEN
VOOR VERMOGENSDIODEN EN THYRISTORS

GROOTHEDEN

1. Ogenblikswaarden van met de tijd variërende stroom, spanning of vermogen worden aangeduid door het gebruik van kleine letters.

Voorbeelden: *i*, *v*, *p*

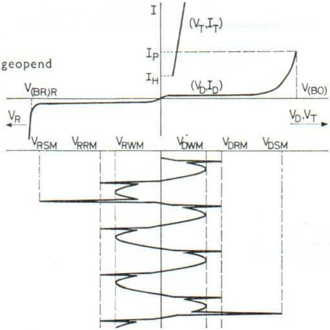
2. Maximale (piek-), gemiddelde, gelijkstroom- en effectieve waarden worden aangeduid door hoofdletters.

Voorbeelden: *I*, *V*, *P*

INDICES BIJ DE GROOTHEDEN

1. Totale waarden worden aangeduid door de hoofdletterindices.
2. Waarden van wisselstroomcomponenten worden aangeduid door kleineletterindices.
3. Voor vermogengelijkrichtdioden en thyristors worden de aansluitingen niet als index aangegeven, de poortaansluiting van thyristors uitgezonderd.
4. Lijst van indices:

A, *a*	=	Anodeaansluiting
K, *k*	=	Katodeaansluiting
G, *g*	=	Poortaansluiting
F, *f*	=	Voorwaarts-, resp. doorlaatrichting[1]
D, *d*	=	Doorlaatrichting, niet geleidend[1]): niet geopend (door poortspanning of -stroom)
T, *t*	=	Doorlaatrichting, geleidend[1]): geopend (door poortspanning of -stroom)
R, *r*	=	Als eerste index: tegenrichting Als tweede index: repeterend
AV, av	=	Gemiddelde waarde
M, *m*	=	Maximale (piek- of top-) waarde
(rms)	=	Effectieve waarde
(BR)	=	Doorslag-
(BO)	=	Overslag-
H	=	Houd-
P	=	Opname-
Q	=	Uitschakel-
S	=	Als tweede index: Niet repeterend
W	=	Werk



5. Toepassingsvoorbeelden van de regels.
Fig. 2 geeft als funktie van de tijd een vereenvoudigde thyristorkarakteristiek samen met een anode-katodespanning (geen poortsignaal).

[1]) Bij de anode-katodespanning van thyristors wordt *F* vervangen door *D* of *T*, om een onderscheid te maken tussen „niet-geleidend" (niet geopend) en „geleidend" (geopend).

LIJST VAN SYMBOLEN IN ALFABETISCHE VOLGORDE VOOR GELIJKRICHTDIODEN (R) EN THYRISTORS (T)

Ogenblikswaarden (*i, p v,*) en wisselstroomcomponenten (kleine-letter-indices) zijn weggelaten.

Lettersymbool	R	T	*Beschrijving*
I_D	—	T	Gelijkstroom in niet-geleidende toestand
I_F	R	T	Totale stroom in doorlaatrichting (gelijkstroom of gemiddelde)
I_{FRM}	R	—	Repeterende piekstroom in doorlaatrichting
I_{FSM}	—	T	Niet-repeterende piekstroom in doorlaatrichting
I_H	—	T	Houdstroom
I_{GT}	—	T	Poortstroom voor het openen van alle eenheden
I_T	—	T	Gelijkstroom in geleidende toestand in doorlaatrichting
I_{TAV}	—	T	Gemiddelde stroom in geleidende toestand in doorlaatrichting
I_{TRM}	—	T	Repeterende piekstroom in geleidende toestand in doorlaatrichting
I_{TSM}	—	T	Niet-repeterende piekstroom in geleidende toestand in doorlaatrichting
P_{RRM}	R	T	Repeterend piekvermogen in tegenrichting
P_{RSM}	R	T	Niet-repeterend piekvermogen in tegenrichting
$V_{(BO)R}$	—	T	Overslagspanning in tegenrichting
V_D	—	T	Gelijkspanning in niet-geleidende toestand
V_{DRM}	—	T	Repeterende piekspanning in niet-geleidende toestand
V_{DSM}	—	T	Niet-repeterende piekspanning in niet-geleidende toestand
V_{DWM}	—	T	Werktopspanning in niet-geleidende toestand
V_{GD}	—	T	Poort-katodespanning, die geen enkele eenheid opent
V_{GT}	—	T	Poort-katodespanning, die alle eenheden opent
V_{RRM}	R	T	Repeterende piekspanning in tegenrichting
V_{RSM}	R	T	Niet-repeterende piekspanning in tegenrichting
V_{RWM}	—	—	Topwerkspanning in tegenrichting
V_T	R	T	Gelijkspanning in geleidende toestand in doorlaatrichting
t_{off}	—	T	Uitschakeltijd
t_{on}	—	T	Inschakeltijd

BESCHRIJVING VAN SIGNAALDIODEN

Type	*Beschrijving*
AA119	AM-detector
2-AA119	FM-verhoudingsdetector, balans-paar
AAY11	OA86 in DO-7 omhulling
AAY21	Snelschakelende, goed geleidende puntcontactdiode
AAY30	Versie van OA47 voor hogere spanning
AAY32	Snellere versie van OA47
AAZ12	Snelschakelende lagendiode
AAZ13	Zeer-snelschakelende goudcontact-diode
AAZ15	OA5 in DO-7 omhulling
AAZ17	OA7 in DO-7 omhulling
AAZ18	OA9 in DO-7 omhulling
BA100	Universele siliciumdiode
BA102	Variabele-capaciteitsdiode
BA114	Siliciumstabiliseerdiode voor lage spanning
BAY32	Planaire universele siliciumdiode in DO-7 omhulling
BAY33	Planaire universele of schakel-siliciumdiode in DO-7 omhulling
BAY38	Zeer-snelschakelende, planaire epitaxiediode
BAY39	Snelle, goed geleidende, planaire epitaxiediode in DO-7 omhulling
BPY10	Siliciumfotocel voor het lezen van ponsband of -kaarten
BY100	TV-gelijkrichter
BY114	TV-gelijkrichter
BY118	Siliciumseriespaardiode

Type	*Beschrijving*
BY127	TV-gelijkrichter in plastic omhulling
OA5	Goedgeleidende goedcontactdiode voor hoge spanning in enkelvoudige schakeling
OA7	Snelschakelende goudcontactdiode voor enkelvoudige schakeling
OA9	Snelschakelende, goed geleidende goudcontactdiode voor enkel-voudige schakeling
OA31	Germaniumvermogengelijkrichter
OA47	Semi-snelle goudcontactdiode
OA70	Videodetector
OA79	AM-detector
2-OA79	FM-verhoudingsdetector, balans-paar
OA81	Diode voor hoge tegenspanning
OA85	Diode voor hoge tegenspanning, met lagere doorlaatweerstand
OA86	Semi-snelschakelende puntcontact-diode voor hoge spanning
OA90	Videodetector, DO-7 omhulling
OA91	Universele diode, DO-7 omhulling
OA92	Snelschakelende puntcontactdiode voor lage spanning, DO-7 omhulling
OA95	Universele diode, DO-7 omhulling
OA200	Universele siliciumdiode, DO-7 omhulling
OA202	Miniatuur siliciumdiode voor hoge spanning
OAP12	Germaniumfotodiode voor enkel-voudige schakeling

BESCHRIJVING VAN TRANSISTORS

Type	*Beschrijving*
AC125	Voorversterker, stuurtrap
AC126	Voorversterker, stuurtrap
AC127	NPN, voorversterker, stuurtrap
AC127/128	Uitgangstransistors, complementair balanspaar (1,2 W)
AC127/132	Uitgangstransistors, complementair balanspaar (0,5 W)
AC128	Uitgangstransistor
2-AC128	Uitgangstransistors, balanspaar
AC130	Symmetrisch, NPN
AC132	Uitgangstransistor
2-AC132	Uitgangstransistors, balanspaar
AC172	Ruisarme NPN-transistor
AC187	NPN-uitgangstransistor, klasse B
AC187/188	Complementair balanspaar (2W)
AC188	PNP-uitgangstransistor, klasse B
AD139	Vermogenuitgangstransistor
2-AD139	Balanspaar
AD149	Vermogentransistor
2-AD149	Balanspaar
AD161	NPN-uitgangstransistor
AD162	PNP-uitgangstransistor
2-AD162	Uitgangstransistors, balanspaar
AD161/162	Complementair balanspaar (4W)
ADY26	Transistor voor groot vermogen, 80 V, 25 A
ADZ11	Transistor voor groot vermogen, 40 V, 15 A
ADZ12	Transistor voor groot vermogen, 80 V, 15 A
AF102	Ruisarme VHF-versterker
AF114	FM-voorversterker
AF115	FM-mengtrap (oscillator) AM-mengtrap (oscillator voor kortegolfontvangst tot 26 MHz)
AF116	FM-MF-versterker AM-mengtrap (oscillator tot 16 MHz)
AF117	AM-mengtrap (oscillator tot 6 MHz) AM-MF-versterker
AF118	Videoversterker
AF121	MF-beeld- en FM-transistor met grote versterking
AF124	FM-voorversterker
AF125	FM-mengtrap (oscillator) AM-mengtrap (oscillator voor kortegolfontvangst tot 26 MHz)
AF126	FM-MF-versterker AM-mengtrap (oscillator tot 16 MHz)

Type	*Beschrijving*
AF127	AM-mengtrap (oscillator tot 6 MHz) AM-MF-versterker
AF139	Voorversterker, mengtrap en oscillator tot 860 MHz
AF178	VHF-mengtrap en oscillator
AF179	MF-videoversterker
AF180	VHF-HF-versterker met regeling van de voorwaartsversterking
AF181	MF-videoversterker
AF185	AM-mengtrap/oscillator en MF-versterker
AF186	UHF-versterker met regeling van de voorwaartsversterking en mengtrap-oscillator
AFY19	Legeringsdiffusie-transistor voor HF-zendtrappen met semigroot vermogen
AFZ12	Legeringsdiffusie-VHF-versterker
ASY26	Semi-snelle schakeltransistor
ASY27	Semi-snelle transistor met grotere versterking
ASY28	Semi-snelle NPN-schakeltransistor
ASY29	Semi-snelle NPN-transistor met grotere versterking
ASY31	Semi-snelle schakeltransistor
ASY32	Semi-snelle transistor met grotere versterking
ASY73	Symmetrische, semi-snelle NPN-schakeltransistor met kleine versterking
ASY74	Symmetrische, semi-snelle NPN-schakeltransistor met semi-grote versterking
ASY75	Symmetrische, semi-snelle NPN-schakeltransistor met grote versterking
ASY76	Langzame schakeltransistor voor semi-groot vermogen
ASY77	Langzame schakeltransistor voor semi-groot vermogen, hogere spanning
ASY80	Langzame schakeltransistor voor semi-groot vermogen, grotere stroomversterking
ASZ15	Vermogenschakeltransistor voor hoge spanning
ASZ16	Vermogenschakeltransistor met grote versterking
ASZ17	Vermogenschakeltransistor met semi-grote versterking

BESCHRIJVING VAN TRANSISTORS

Type	Omschrijving
ASZ18	Vermogentransistor voor hoge spanning, semi-grote versterking
ASZ20	Brede-bandversterker en stroommodusschakelaar
ASZ21	Snelle spanningsmodusschakeltransistor
ASZ23	Snelle lawineschakeltransistor
AU103	Lijnafbuiging-, uitgangstransistor
AU104	Vermogenschaktransistor
AUY10	Snelle schakeltransistor voor groot vermogen
BC107	NPN-laagfrequenttransistor
BC108	Planaire NPN-, epitaxielaag-frequenttransistor
BC109	Ruisarme planaire NPN-epitaxietransistor
BC112	NPN-microminiatuur-laagfrequenttransistor voor hoorapparaten
BC110	Uitgangstransistor
BCY11	Uitgangstransistor voor hoge spanning
BCY12	Universele uitgangstransistor
BCY30	Legeringstransistor, klein signaal, hoge spanning, kleine versterking
BCY31	Legeringstransistor, klein signaal, hoge spanning, semi-grote versterking
BCY32	Legeringstransistor, klein signaal, hoge spanning, grote versterking
BCY33	Legeringstransistor, klein signaal, lage spanning, kleine versterking
BCY34	Legeringstransistor, klein signaal, lage spanning, semi-grote versterking
BCY38	Legeringstransistor, semi-groot vermogen, lage spanning, kleine versterking
BCY39	Legeringstransistor, semi-groot vermogen, hoge spanning, kleine versterking
BCY40	Legeringstransistor, semi-groot vermogen, lage spanning, grote versterking
BCY54	Legeringstransistor, semi-groot vermogen, semi-hoge spanning, semi-grote versterking
BCZ10	Voorversterker, stuurtrap
BCZ11	Voorversterker, stuurtrap, grote versterking

Type	Omschrijving
BCZ12	Voorversterker, stuurtrap, hoge spanning
BDY10	Diffusie-NPN-vermogentransistor
BDY11	Diffusie-NPN-vermogentransistor, hoge spanning
BF109	NPN-mesatransistor, videoversterker
BF115	Planaire NPN-epitaxietransistor voor AM/FM autoradio's
BF167	NPN-MF-versterker met voorwaartsversterkingsregeling voor TV
BF173	NPN-videotransistor, tweede MF-trap
BFY10	NPN-mesatransistor
BFY11	NPN-mesatransistor, semi-grote versterking
BFY44	Planaire NPN-, epitaxiezendtransistor
BFY50	Planaire NPN-, epitaxietransistor
BFY51	Planaire NPN-, epitaxietransistor
BFY52	Planaire NPN-, epitaxietransistor
BFY55	Planaire NPN-, epitaxietransistor
BFY67	Planaire NPN-transistor
BFY70	Planaire NPN-VHF-epitaxietransistor voor semi-groot vermogen
BLY14	Planaire NPN-VHF-epitaxievermogentransistor
BLY17	NPN-HF-diffusievermogentransistor
BSX21	NPN-dubbele-diffusie-mesa-schakeltransistor voor hoge spanning, stuurtrap voor indicatorbuizen
BSY10	NPN-mesaschakeltransistor voor hoge spanning
BSY11	NPN-mesaschakeltransistor met grote versterking
BSY38	Zeer snelle planaire NPN-epitaxieschakeltransistor
BST39	Zeer snelle, planaire NTN-epitaxieschakeltransistor met grotere versterking
OC22	HF-vermogenversterker
OC23	HF-vermogenschakeltransistor
OC24	HF-vermogenzendtransistor
OC44	AM-mengtrap (oscillator voor midden- en langegolfontvangst)
OC45	AM/MF-versterker

BESCHRIJVING VAN TRANSISTORS

Type	Beschrijving
OC58	Voorversterker met semi-grote versterking voor hoorapparaten
OC59	Stuurtrap met grote versterking voor hoorapparaten
OC60	Uitgangstransistor voor hoorapparaten
OC71 2-OC72	Voorversterker stuurtrap, semi-grote versterking (300 mW in klasse B)
OC74	Uitgangstransistor (1W in klasse B)
OC75	Voorversterker stuurtrap, grote versterking
OC76	Langzame schakeltransistor voor semi-groot vermogen
OC77	Langzame schakeltransistor voor semi-groot vermogen, hogere spanning
OC80	Langzame schakeltransistor voor semi-groot vermogen, grotere stroom
OC122	HF-versterker, semi-groot vermogen
OC123	Schakeltransistor, semi-groot vermogen

Type	Beschrijving
OC139	Semi-snelle, symmetrische NPN-schakeltransistor, kleine versterking
OC140	Semi-snelle, symmetrische NPN-schakeltransistor, semi-grote versterking
OC141	Semi-snelle, symmetrische NPN-schakeltransistor, grote versterking
OCP70	Germanium-fototransistor
OM200	Geïntegreerde schakeling voor hoorapparaten (80 dB)
2N929	Planaire NPN-siliciumtransistor, ruisarm
2N930	Planaire NPN-siliciumtransistor, ruisarm
2N1100	Groot vermogen, 100 V, 15 A
2N2569	Planaire NPN-silicium-epitaxie-transistor, interruptor
2N2570	Planaire NPN-silicium-epitaxie-transistor, interruptor-
40809	LF-transistorpakket, transformatorloze uitgang (1,2 W)

DIODES

GERMANIUM SIGNAL DIODES

	Type	Case next pages. No.	1)	Maximum ratings V_{RM} (V)	V_R (V)	I_{FM} (mA)	I_F 2) (mA)
			T_{amb} (°C)→	max.	25		25
detector							
AM/FM	**AA119** m)	101	PC	45	30	100	35
video	**OA70**	102	PC	22.5	15	150	50
AM/FM	(**OA79**) m)	102	PC	45	30	100	35
video	**OA90**	101	PC	30	20	45	30
general purpose	**OA5**	103	GB	50	100	350	130
	OA81	102	PC	100	90	150	50
	OA85	102	PC	100	90	150	50
	OA91	101	PC	100	90	150	50
	OA95	101	PC	100	90	150	50
switch	**AAY11**	101	PC	90	60	150	35
	AAY21	101	PC	15	15	50	20
	AAY30	101	GB	50	30	400	110
	AAY32	101	GB	30	30	150	110
	AAZ12	103	J	30	30	500	220
	AAZ13	101	GB	8	8	50	30
	AAZ15	101	GB	100	75	250	140
	AAZ17	101	GB	75	50	250	140
	AAZ18	101	GB	20	20	300	180
	OA7	103	GB	25	25	250	140
	OA9	103	GB	25	25	500	270
	OA47	101	GB	25	25	150	110
	OA86	102	PC	90	60	150	35
	OA92	101	PC	15	15	50	34

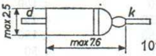
1) PC = point contact, GB = gold bonded, J = junction diode.
2) at V_{RM} = 0 V. m) matched pairs 2-AA119, 2-OA79

Max. ratings			*Forward voltage*				*Reverse current*	
I_{FAV} at V_{RMmax} 3) (mA)	(mA)	(mA)	V_F at (V)	I_F (mA)	V_F at (V)	I_F (mA)	I_R at V_{Rmax} (μA)	(μA)
25	*60*	*75*	*25*		*25*		*25*	*60*
10	4.2	—	<0.30	0.1	<4	30	<150	<300
15	6.2	5	<0.25	0.1	<3.2	30	<350	
10	4.2	—	<0.30	0.1	<4	30	<150	<300
24	10	8	<0.25	0.1	<1.5	10	<450	<650
115	55	35	<0.25	0.1	<1.25	300	<30	<60
15	8	5	<0.25	0.1	<3.3	30	<250	<350
15	8	5	<0.25	0.1	<2.6	30	<200	<350
15	8	5	<0.25	0.1	<3.3	30	<250	<350
15	8	5	<0.25	0.1	<2.6	30	<180	<350
10	4.2		<0.25	0.1	<3	30	<92	<200
20	16	—	<0.45	2	<1.5	50	<60	<100
	(33mW)	—	<0.20	0.1	<0.6	30	<50	<200
	(55mW)		<0.20	0.1	<0.6	30	<70	<200
220	100	—	<0.19	0.3	<0.42	100	<60	<300
30	20	—	<0.32	1	<1.0	30	<150	190
	(55mW)	—	<0.20	0.1	<1.1	250	<25	<120
	(55mW)		<0.20	0.1	<1.1	250	<150	<300
	(33mW)	—	<0.20	0.1	<0.41	10	<50	<100
80	55	30	<0.26	0.1	<1.65	250	6	<150
160	105	55	<0.21	0.1	<0.9	500	<50	<100
	(33mW)	—	<0.20	0.1	<0.65	30	<100	<160
10	4.2	—	<0.25	0.1	<3.0	30	<92	<200
16	10	5	<0.25	0.1	<1.0	3	<85	<155

3) For sinusoidal input voltages and resistive load ($I_{FAV} = I_{FM}/\pi$), $f > 50$ Hz.

SILICON SIGNAL DIODES

	Type	Case No.	1)	Maximum ratings V_{RM} V_R (V)	I_{FM} (mA)	I_F continuous (mA)	(mA)
		T_j (°C)→ T_{amb} (°C)→			25–max	25	125
booster	**BY118**	104	D	300	14A	6A	
general purpose	**BA100**	101	J	60	100	90	18 (90°C)
	BAY32	101	PL	150	250	170	100
	OA200	101	J	50	250—125	160	48
	OA202	101	J	150	250—125	160	48
stabilizer	**BA114**	101	J			20	20 (90°C)
switch	**BAY33**	101	PL	150	200	130	70
	BAY38	101	PLE	50	225	115	115
	BAY39	101	PLE	75	750	450	200
varicap	**BA102**	101	J	20			



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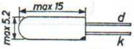
1) D = diffused, J = junction, PL = planar, E = epitaxial.

Max. ratings		Forward voltage				Reverse current	
I_{FAV} Sinus. operation		V_F at	I_F	V_F at	I_F	I_R at $V_{R\max}$	
(mA)	(mA)	(V)	(mA)	(V)	(mA)	(μA)	(μA)
			25		*125*	*25*	*125*
<75	*125*						
		<1.2	14A			<100	<400
29.5	14.5 (90°C)	<0.75	0.1	<1.5	30 (75°C)		
80	75	<0.7	1	<1.75	160	<0.1	<10
	40	<0.62	0.1	1	100	<0.1	<10
	40	<0.62	0.1	1	100	<0.1	<10
		>0.5	0.2	0.7	10		
		<0.8	3		(75°C)		
65	52	<0.7	1	<2.5	100	<0.1	<30
75	75	<0.73	1	<1.1	100	<0.05	<140
250	162	<0.75	10	<0.75	200	<0.1	<30
		(C_D = 20—45 pF at V_R = 4 V)				<5 at 80°C	



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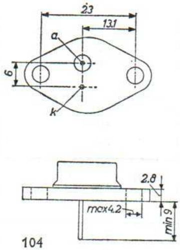

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RECTIFIER DIODES

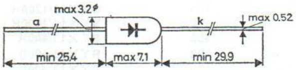
Type (cathode to case)	Case next pages. No.	Maximum ratings					
		Forward current			Reverse voltage		
		I_F (A)	I_{FRM} (A)	I_{FSM} (A)	V_{RWM} (V)	V_{RRM} (V)	T_j (°C)
BYX10	105	**0.2**	1.5	15	800	1600	125
BY100	106	**0.75**	7.5	20		800	130[1])
BY114	106	**0.5**	5	25	450	650	150
BY127	plastic	**0.75**	7.5	20		800	125[1])
BYZ10	107	**6**	20	75	800	1200	150
BYZ11	107	**6**	20	75	600	900	150
BYZ12	107	**6**	20	75	400	600	150
BYZ13	107	**6**	20	75	200	300	150
BYY24	108	**10**	50	150	400	800	150
BYY67	108	**10**	50	150	300	600	150
BYY22	108	**10**	50	150	200	400	150
BYY20	110	**18**	60	140	75	200	175
BYX13/1600	108	**20**	100	400	800	1600	150
BYX13/1200	108	**20**	100	400	600	1200	150
BYX13/1000	108	**20**	100	400	500	1000	150
BYX13/800	108	**20**	100	400	400	800	150
BYX13/600	108	**20**	100	400	300	600	150
BYX13/400	108	**20**	100	400	200	400	150
BYX25/1000	107	**20**	440	360	1000	(P_{RSM} 18 kW)	175
BYX25/800	107	**20**	440	360	800		175
BYX25/600	107	**20**	440	360	600		175
BYX20/200	110	**25**	80	300	75	200	175
BYX15	109	**40**	200	800	800	1600	150
BYY77	109	**40**	200	800	600	1200	150
BYY75	109	**40**	200	800	500	1000	150
BYY15	109	**40**	200	800	400	800	150
BYY73	109	**40**	200	800	300	600	150
BYZ14	109	**40**	200	800	200	400	150

Note: *RM* = repetitive peak, *SM* = non-repetitive peak, *WM* = crest working. [1]) T_{amb}

$R_{th\ j-c}$ $R_{th\ j-mb}$ *$R_{th\ j-a}$ (°C/W)	Reverse current I_R at (mA)	V_R (V)	at T_j (°C)	Forward voltage at 25°C V_F (V)	at I_F (A)	Types with reverse polarity
*200	<1 μA	1600	25	<1.1	0.2	
	<0.01	1250	25	<1.5	5	
	<0.01	650	25	<1.5	5	
	<0.01	1250	25	<1.5	5	
5.0	<0.2	800	125	<1.7	5	BYZ16
5.0	<0.2	600	125	<1.7	5	BYZ17
5.0	<0.2	400	125	<1.7	5	BYZ18
6.0	<0.6	200	125	1.4	5	BYZ19
1.1	<2	400	125	<1.5	50	BYY25
1.1	<2	300	125	<1.5	50	BYY68
1.1	<2	200	125	<1.5	50	BYY23
2.0	<4	75	140	<1.35	60	BYY21
1.1	<1.2	800	125	<2	100	BYX13/1600R
1.1	<1.4	600	125	<2	100	BYX13/1200R
1.1	<1.7	500	125	<2	100	BYX13/1000R
1.1	<2.0	400	125	<2	100	BYX13/800R
1.1	<2.0	300	125	<2	100	BYX13/600R
1.1	<2.0	200	125	<2	100	BYX13/400R
1.3						BYX25/1000R
1.3						BYX25/800R
1.3						BYX25/600R
1.0	<1.1	75	125	<1.4	80	BYX20/200R
1.0	<1.2	800	125	<1.8	200	BYX16
1.0	<1.4	600	125	<1.8	200	BYY78
1.0	<1.7	500	125	<1.8	200	BYY76
1.0	<2	400	125	<1.8	200	BYY16
1.0	<2	300	125	<1.8	200	BYY74
1.0	<2	200	125	<1.8	200	BYZ15

Note: Reverse polarity = anode connected to case.

Type (cathode to case)	Case No.	Maximum ratings: Forward current I_F (A)	I_{FRM} (A)	I_{FSM} (A)	Reverse voltage V_{RWM} (V)	V_{RRM} (V)	T_j (°C)
BYX23/1000	Stud	**100**	500	1600	1000		190
BYX23/800	M12×	**100**	500	1600	800	(P_{RSM}	190
BYX23/600	1.75	**100**	500	1600	600	30 kW)	190
BYX23/400		**100**	500	1600	400		190
BYX14/1200	111	**150**	750	3000	600	1200	190
BYX14/1000	111	**150**	750	3000	500	1000	190
BYX14/800	111	**150**	750	3000	400	800	190
BYX14/600	111	**150**	750	3000	300	600	190
BYX14/400	111	**150**	750	3000	200	400	190
BYX27/1000	111	**250**	1250	4000	1000		190
BYX27/800	111	**250**	1250	4000	800	(P_{RSM}	190
BYX27/600	111	**250**	1250	4000	600	80 kW)	190
BYX27/400	111	**250**	1250	4000	400		190
OA31 (germanium)	112	**3.8**	12	90	95	120	75



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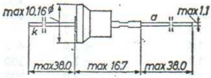

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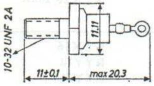

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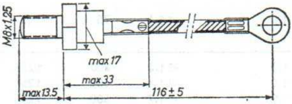

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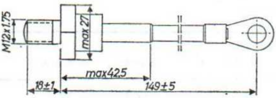
	Reverse current			Forward voltage at 25°C		Types with reverse polarity
$R_{th\ j-c}$ $R_{th\ j-mb}$ (°C/W)	I_R at (mA)	V_R at (V)	T_j (°C)	V_F at (V)	I_F (A)	
0.4	<10	1000	175	<1.6	500	
0.4	<13	800	175	<1.6	500	**BYX23/800R**
0.4	<17	600	175	<1.6	500	**BYX23/600R**
0.4	<20	400	175	<1.6	500	**BYX23/400R**
0.28	<15	600	175	<1.8	750	**BYX14/1200R**
0.28	<15	500	175	<1.8	750	**BYX14/1000R**
0.28	<15	400	175	<1.8	750	**BYX14/800R**
0.28	<15	300	175	<1.8	750	**BYX14/600R**
0.28	<15	200	175	<1.8	750	**BYX14/400R**
0.2	<25	1000	175	<1.7	1250	
0.2	<32	800	175	<1.7	1250	
0.2	<42	600	175	<1.7	1250	
0.2	<50	400	175	<1.7	1250	
5	<4	85	75	<0.7	12	



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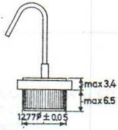

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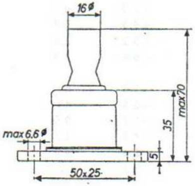

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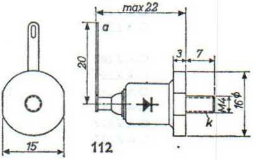

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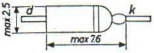
P_{max}	Type	Tol. of V_Z	V_Z (V)	V_Z (V)	S_Z (mV/°C)	r_z (Ω)
			at I_Z = 1 mA	5 mA	5 mA	5 mA
280 mW	BZY56		4.7	5.2	—1.2	62
	BZY57		5.1	5.6	—0.6	50
	BZY58		5.6	6.0	+0.8	28
	BZY59	5%	6.2	6.3	+1.7	12
	BZY60		6.8	6.9	+3.0	3.5
	BZY61		7.5	7.6	+4.3	2.8
	BZY62		8.2	8.25	+5.2	3.2
	BZY63		9.1	9.2	+6.4	4.4
	BZY64		4.3	4.9	—1.4	77
	BZY65		5.1	5.6	—0.6	50
	BZY66	15%	6.2	6.3	+1.7	12
	BZY67		7.5	7.6	+4.3	2.8
	BZY68		9.1	9.2	+6.4	3.5
	BZY69		12.0	12.2	+9.3	11.0
	BZZ10		6.0	6.15	+1.0	27
	BZZ11	10%	6.5	6.55	+2.2	6.0
	BZZ12		7.2	7.25	+3.7	3.0
	BZZ13		8.0	8.05	+4.9	3.0
			at I_Z = 5 mA	20 mA	5 mA	5 mA
320 mW	OAZ200		5.2	5.6	—1.2	56
	OAZ201		5.6	5.9	—0.6	45
	OAZ202		6.0	6.2	+0.8	24
	OAZ203	5%	6.3	6.4	+1.7	9.5
	OAZ204		6.9	7.0	+3.0	4.7
	OAZ205		7.6	7.7	+4.3	3.7
	OAZ206		8.2	8.4	+5.2	3.8
	OAZ207		9.2	9.4	+6.4	4.9
	OAZ208		4.9	5.3	—1.4	62
	OAZ209		5.6	5.9	—0.6	45
	OAZ210	15%	6.3	6.4	+1.7	9.5
	OAZ211		7.6	7.7	+4.3	3.7
	OAZ212		9.2	9.4	+6.4	4.9
	OAZ213		12.2	12.5	+9.3	12

I_R at (nA)	V_R (V)	Maximum ratings	Various
4	1	I_Z = max. 25 mA I_F = max. 50 mA T_j = max. 150 °C All data at T_{amb} = 25 °C, unless otherwise stated.	$R_{th\ j-a}$ = 0.45 °C/mW
T_{amb} = 60°C			
120	2	I_{ZM} = max. 250 mA I_F = max. 100 mA T_j = max. 150 °C All data at T_{case} = 25 °C.	$R_{th\ j-a}$ = 0.4 °C/W With cooling fin: $R_{th\ j-a}$ = 0.3 °C/W
40	2		
20	2		
40	2		
20	3		
5	3		
20	5		
15	5		
100	1.5		
40	1.5		
20	2		
20	2		
15	5		
10	5		



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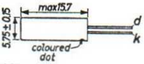

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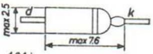
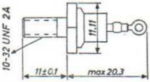
ZENER DIODES

P_{max}	Type	Tol. of V_Z	V_Z (V)	V_Z (V)	S_Z (mV/°C)	r_z (Ω)
			at I_Z = 5 mA	20 mA	5 mA	5 mA
400 mW	**BZY88/C4V7**	5%	4.7	5.10	—1.55	82
	BZY88/C5V1		5.1	5.35	—1.2	46
	BZY88/C5V6		5.6	5.75	—0.2	22
	BZY88/C6V2		6.2	6.40	2.0	7
	BZY88/C6V8		6.8	6.90	3.2	3
	BZY88/C7V5		7.5	7.65	4.2	3
	BZY88/C8V2		8.2	8.40	5.0	3.5
	BZY88/C9V1		9.1	9.50	6.0	4.75
			at I_Z = 20 mA	100 mA	20 mA	20 mA
8 W	**BZZ14**	5%	5.6	5.72	<2.5	<13
	BZZ15		6.2	6.30	<3.5	<6
	BZZ16		6.8	6.90	<4.0	<5
	BZZ17		7.5	7.60	<4.5	<7.5
	BZZ18		8.2	8.35	<6.0	<10
	BZZ19		9.1	9.30	<6.5	<10
	BZZ20		10.0	10.3	<8.0	<11
	BZZ21		11.0	11.3	7.5	4.4
	BZZ22		12.0	12.3	8.8	5.25
	BZZ23		13.0	13.4	10.0	6.3
	BZZ24		15.0	15.5	12.6	8.9
	BZZ25		16.0	16.7	13.8	10.5
	BZZ26		18.0	18.8	16.4	14.5
	BZZ27		20.0	21.5	19.0	19.5
	BZZ28		22.0	23.6	21.6	26.0
	BZZ29		24.0	26.1	24.2	33.5
	BZY74	15%	6.2	6.3	<4	<13
	BZY75		7.5	7.6	<6	<10
	BZY76		9.1	9.3	<8	<11
75 W	**BZY91/C..** series of Zener diodes, ±5% tolerance, consisting of 22 types with V_z = 10 V, 11 V, 12 V, 13 V, 15 V, 16 V, 18 V, (at $-I_Z$ = 2 A), 20 V, 22 V, 24 V, 27 V, 30 V, 33 V, 36 V, (at $-I_Z$ = 1 A), 39 V, 43 V, 47 V, 51 V, 56 V, 62 V, 68 V, 75 V (at $-I_Z$ = 0.5 A). These types are also available with reverse polarity, indicated by the suffix R.						

I_R at (μA)	V_R (V)	*Maximum ratings*	*Various*
<0.90	2	I_{ZM} = max. 250 mA	$R_{th\ j-a}$ = 0.31 °C/mW
<0.90	2	I_{FM} = max. 250 mA	All data at T_{amb} = 25 °C
<0.45	2	T_j = max. 150 °C	
<0.45	3		
<0.45	3	 101	
<0.45	3		
<0.35	5		
<0.35	5		
<0.50	2	I_Z = max. 500 mA	$R_{th\ j-a}$ = 70 °C/W
<0.50	2	I_F = max. 500 mA	$R_{th\ j-mb}$ = 10 °C/W
<0.50	3	T_j = max. 150 °C	All data at T_{mb} = 25 °C
<0.50	3		
<0.40	5		
<0.40	5		
<0.40	5		
<0.35	5		
<0.35	5	 107	
<0.35	5		
<0.35	5		
<0.35	5		
<0.35	5		
<0.35	5		
<0.35	5		
<0.35	5		cathode connected to case.
<0.50	3		
<0.50	3		
<0.40	5		
		I_{ZM} = max. 100 A	$R_{th\ j-mb}$ = 1.47°C/W
		I_{FM} = max. 30 A	case = DO-5
		T_j = max. 175°C	stud = 1/4 UNF

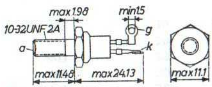
THYRISTORS

SILICON CONTROLLED RECTIFIERS (THYRISTORS)

Type	Case No.	Maximum ratings I_{TAV} (A)	I_{TSM}[1] (A)	V_{RWM} V_{DWM} (V)	V_{RSM} (V)	T_j (°C)	$R_{th\ j\text{-}mb}$ (°C/W)	Char. at T_j max. I_H (mA)	t_{on} (μs)	t_{off} (μs)
BTY79/100	401	**4.7**	40	100	225	125	3.1	15	5	15
BTY79/200	401	**4.7**	40	200	350	125	3.1	15	5	15
BTY79/300	401	**4.7**	40	300	500	125	3.1	15	5	15
BTY79/400	401	**4.7**	40	400	500	125	3.1	15	5	15
BTY80	401	**4.7**	40	250	375	104	3.1	15	3	15
BTY81	401	**4.7**	40	400	600	104	3.1	15	3	15
BTY87/100R [3]	402	**12**	106	100	150	125	2.0	10	3	15
BTY87/200R [3]	402	**12**	106	200	300	125	2.0	10	3	15
BTY87/300R [3]	402	**12**	106	300	400	125	2.0	10	3	15
BTY87/400R [3]	402	**12**	106	400	500	125	2.0	10	3	15
BTY87/500R	402	**12**	106	500	600	125	2.0	10	3	15
BTY87/600R	402	**12**	106	600	720	125	2.0	10	3	15
BTY87/700R	402	**12**	106	700	850	125	2.0	10	3	15
BTY87/800R	402	**12**	106	800	960	125	2.0	10	3	15
BTX35/500R	402	**12**	106	500		125	2.0	10	3	15
BTX35/600R	402	**12**	106	600	P_{RSM}[2]	125	2.0	10	3	15
BTX35/700R	402	**12**	106	700	18 kW	125	2.0	10	3	15
BTX35/800R	402	**12**	106	800		125	2.0	10	3	15
BTY91/100R [4]	402	**16**	136	100	150	125	2.0	10	3	20
BTY91/200R [4]	402	**16**	136	200	300	125	2.0	10	3	20
BTY91/300R [4]	402	**16**	136	300	400	125	2.0	10	3	20
BTY91/400R [4]	402	**16**	136	400	500	125	2.0	10	3	20
BTY91/500R	402	**16**	136	500	600	125	2.0	10	3	20
BTY91/600R	402	**16**	136	600	720	125	2.0	10	3	20

[3]) Former type number BTY84 to 87 [4]) Former type number BTY88 to 91

BTY91/700R	402	**16**	136	700	850	125	2.0	10	3	20
BTY91/800R	402	**16**	136	800	960	125	2.0	10	3	20
BTX36/500R	402	**16**	136	500		125	2.0	10	3	20
BTX36/600R	402	**16**	136	600	P_{RSM} 2)	125	2.0	10	3	20
BTX36/700R	402	**16**	136	700	18 kW	125	2.0	10	3	20
BTX36/800R	402	**16**	136	800		125	2.0	10	3	20



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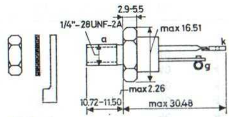


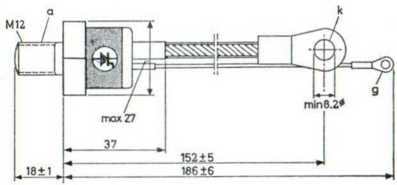
402

1) One cycle at 50 Hz, $T_j = 125°C$. 2) Avalanche power 10 μs, $T_j = 25°C$.

SILICON CONTROLLED RECTIFIER (THYRISTORS)

Type	Case No.	Maximum ratings						Char. at T_j max.		
		I_{TAV} (A)	I_{TSM} 1) (A)	V_{RWM} V_{DWM} (V)	V_{RSM} (V)	T_j (°C)	$R_{th\ j-mb}$ (°C/W)	I_H (mA)	t_{on} (μs)	t_{off} (μs)
BTX12/100R	403	**20**	250	100	400	125	1.45	40	4	10
BTX12/200R	403	**20**	250	200	400	125	1.45	40	4	10
BTX12/300R	403	**20**	250	300	500	125	1.45	40	4	10
BTX12/400R	403	**20**	250	400	500	125	1.45	40	4	10
BTX12/500R	403	**20**	250	500	700	125	1.45	40	4	10
BTX12/600R	403	**20**	250	600	700	125	1.45	40	4	10
BTX13/100R	403	**30**	300	100	400	125	0.9	40	4	10
BTX13/200R	403	**30**	300	200	400	125	0.9	40	4	10
BTX13/300R	403	**30**	300	300	500	125	0.9	40	4	10
BTX13/400R	403	**30**	300	400	500	125	0.9	40	4	10
BTX13/500R	403	**30**	300	500	700	125	0.9	40	4	10
BTX13/600R	403	**30**	300	600	700	125	0.9	40	4	10
BTY95/100R	404	**50**	680	100	150	125	0.6	10	3	20
BTY95/200R	404	**50**	680	200	300	125	0.6	10	3	20
BTY95/300R	404	**50**	680	300	400	125	0.6	10	3	20
BTY95/400R	404	**50**	680	400	500	125	0.6	10	3	20
BTY95/500R	404	**50**	680	500	600	125	0.6	10	3	20
BTY95/600R	404	**50**	680	600	720	125	0.6	10	3	20
BTY95/700R	404	**50**	680	700	850	125	0.6	10	3	20
BTY95/800R	404	**50**	680	800	960	125	0.6	10	3	20
BTX37/500R	404	**50**	680	500		125	0.6	10	3	20
BTX37/600R	404	**50**	680	600	P_{RSM} 2)	125	0.6	10	3	20
BTX37/700R	404	**50**	680	700	40 kW	125	0.6	10	3	20
BTX37/800R	404	**50**	680	800		125	0.6	10	3	20

BTY99/100R	404	**70**	900	100	150	125	0.4	10	3	20
BTY99/200R	404	**70**	900	200	300	125	0.4	10	3	20
BTY99/300R	404	**70**	900	300	400	125	0.4	10	3	20
BTY99/400R	404	**70**	900	400	500	125	0.4	10	3	20
BTY99/500R	404	**70**	900	500	600	125	0.4	10	3	20
BTY99/600R	404	**70**	900	600	720	125	0.4	10	3	20
BTY99/700R	404	**70**	900	700	850	125	0.4	10	3	20
BTY99/800R	404	**70**	900	800	960	125	0.4	10	3	20
BTX38/500R	404	**70**	900	500		125	0.4	10	3	20
BTX38/600R	404	**70**	900	600	P_{RSM}[2])	125	0.4	10	3	20
BTX38/700R	404	**70**	900	700	40 kW	125	0.4	10	3	20
BTX38/800R	404	**70**	900	800		125	0.4	10	3	20



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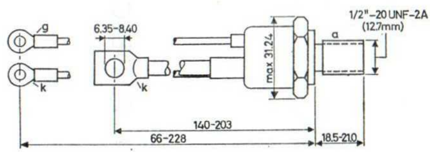


404

1) One cycle at 50 Hz, $T_j = 125°C$.

2) Avalanche power 10 μs, $T_j = 25°C$.

TYPE DESCRIPTION

TRANSISTORS

GERMANIUM TRANSISTORS FOR RADIO, TV AND AUDIO APPLICATIONS

Class	Type	Case No.	Pnp or Npn	*Maximum ratings* V_{CEO} $*V_{CE}$ (V)	V_{CBO} (V)	V_{EBO} (V)	I_C $*I_{CM}$ (mA)
VHF							
Small signal	**AF102**	504	P		25		10
	AF178	509	P		25		10
	AF180	509	P	*25	25		20
	AF186	514	P	*25	25		15
HF							
Small signal	**AF114**	504	P	*32	32		10
	AF115	504	P	*32	32		10
	AF116	504	P	*32	32		10
	AF117	504	P	*32	32		10
	AF121	513	P	*25	25		10
	AF124	507	P	*32	32		10
	AF125	507	P	*32	32		10
	AF126	507	P	*32	32		10
	AF127	507	P	*32	32		10
	AF139	517	P	15	20	0.3	10
	AF179	509	P	*25	25		10
	AF181	509	P	*30	30		*20
	AF185	509	P	*32	32		30
	OC44	501	P	5	15	12	5
	OC45	501	P	5	15	12	5
Video	**AF118**	504	P	*70	70		30
Line deflection	**AU103**	511	P	75	155	4	10A
	AU104	511	P	90	185	4	12A
LF/AF							
Small signal	**OC58**	502	P	*3	7	7	5
	OC59	502	P	*3	7	7	5
	OC60	502	P	*3	7	7	5
	OC71	501	P	10	30		10
	OC75	501	P	10	30		10
Low noise	**AC107**	501	P	*15	15		*10
	AC172	505	N	12	32	10	10

Note: For PNP transistors read $-V_{CEO}$, $-V_{CE}$, $-V_{EBO}$, $-I_C$, $-I_{CM}$, $-I_{CBO}$ at $-V_{CB}$.

GERMANIUM TRANSISTORS FOR RADIO, TV AND AUDIO APPLICATIONS

Max. ratings		$R_{th\ j-a}$ free in air *$R_{th\ j-c}$	*Characteristics at 25°C*					
P_{tot}	T_j		h_{FE} at I_C *h_{fe} at I_C		I_{CBO} at V_{CB}		Cut-off frequency	
(mW)	(°C)	(°C/W)	—	(mA)	(μA)	(V)		(MHz)
								VHF
50	75	600	*>20	1	<10	12	f_T	180
75	75	600	*>20	1	<10	12	f_T	180
140	75	320	>23	3.5	<10	10		
70	75	650	>40	2	<3.5	10	f_T	820
								HF
75	75	600	*150	1	<8	6	f_T	75
75	75	600	*150	1	<8	6	f_T	75
75	75	600	*150	1	<8	6	f_T	75
75	75	600	*150	1	<8	6	f_T	75
135	75	450	>30	3	<8	10	f_T	270
60	75	750	*150	1	<8	6	f_T	75
60	75	750	*150	1	<8	6	f_T	75
60	75	*400	*150	1	<8	6	f_T	75
60	75	750	*150	1	<8	6	f_T	75
60	90	750	50	1.5	<8	20	f_T	550
150	75	320	>30	3	<8	10	f_T	270
140	75	320	>20	3	<10	10	f_T	200
120	90	450	>40	1	<3	10	f_T	80
83	75	600	*100	1	<2	2	f_{hfb}	15
83	75	600	*50	1	<2	2	f_{hfb}	6
375	75	250	>26	10	<6	6	f_T	175
10 W	90	*1.5	>15	10 A	<10mA	155	f_T	15
15 W	90	*1.5	>15	10 A	<10mA	185	f_T	15
								LF/AF
20	75	1500	*55	0.25	1.5	2	f_{hfe}	>0.01
20	75	1500	*80	0.25	1.5	2	f_{hfe}	>0.01
20	75	1500	>60	3	1.5	2	f_{hfb}	1.6
125	75	400	*47	3	4.5	4.5	f_{hfe}	0.01
125	75	400	*90	3	4.5	4.5	f_{hfb}	0.008
80	75		*35—160	0.3			f_{hfb}	>2
200	90	370	*45—110	0.5	<10	10	f_T	2.5

GERMANIUM TRANSISTORS FOR RADIO, TV AND AUDIO APPLICATIONS

				Maximum ratings			
Class	*Type*	*Case No.*	*Pnp or Npn*	V_{CEO} $*V_{CE}$ (V)	V_{CBO} (V)	V_{EBO} (V)	I_C $*I_{CM}$ (mA)
Low power	**AC125**	505	P	12	32	10	100
	AC126	505	P	12	32	10	100
	AC127	505	N	12	32	10	500
	AC130	505	N	*15	20	20	100
	AC132	505	P	12	32	10	200
	OC72m)	503	P	16	32	10	50
	OC74m)	503	P	10	20	6	300
	OC79	503	P	*26	26		300
Medium power	**AC128**m)	505	P	16	32	10	1 A
	AC176m)	505	N	20	32	.5	1 A
	AC187m)	505	N	15	25	10	*2A
	AC188m)	505	P	15	25	10	*2A
Power	**AD139**m)	510	P	16	32	10	1 A
	AD149m)	511	P		50	20	3.5A
	AD161m)	510	N	20	32	10	*2
	AD162m)	510	P	20	32	10	*2

Matched pairs	**2-AC128**	(PNP)	$h_{FE1}/h_{FE2} = 1.1$
	2-AC132	(PNP)	$= 1.1$
	2-AD139	(PNP)	< 1.25
	2-AD149	(PNP)	$= 1.1$
	2-AD162	(PNP)	
	2-OC72	(PNP)	$= 1.15$
	2-OC74	(PNP)	
	2-AC188	(PNP)	

Note: For PNP transistors read $-V_{CEO}$, $-V_{CE}$, $-V_{EBO}$ $-I_C$, $-I_{CM}$, $-I_{CBO}$ at $-V_{CB}$.
m) See also matched pairs and complementary matched pairs.

GERMANIUM TRANSISTORS FOR RADIO, TV AND AUDIO APPLICATIONS

Max. ratings		$R_{th\ j-a}$ *free in air*	*Characteristics at 25°C*					
P_{tot}	T_j	$*R_{th\ j-c}$	h_{FE} *at* I_C / $*h_{fe}$ *at* I_C		I_{CBO} *at* V_{CB}		*Cut-off frequency*	
(mW)	(°C)	(°C/W)	—	(mA)	(μA)	(V)		(MHz)
500	90	300	*80—175	2	<10	10	f_T	1.7
500	90	300	*130—300	2	<10	10	f_T	2.3
340	90	370	115	50	<13	10	f_T	2.5
100	90	450	>25	10			f_T	>2
500	90	300	115	50	<10	10	f_T	2
165	75	400			<10	10	f_{hfe}	>0.008
550	75	220	75	50	<20	9	f_{hfe}	>0.008
550	75	220	60	50			f_{hfe}	>0.008
1 W	90	290	90	50	<10	10	f_T	1.5
700	90	300	>50	50	<30	10	f_{hfe}	>0.01
800	90	*40	250	300	<15	10	f_{hfe}	>0.01
800	90	*40	250	300	<15	10	f_{hfe}	>0.007
13 W	90	*4	30—100	1 A	<100	10	f_{hfe}	>0.01
22.5 W	100	*2	30—100	1 A	<350	14	f_{hfe}	>0.007
3	90	*8.5	50—300	500	<200	32	f_T	3
6	90	*7.5	50—300	500	<200	32	f_T	1.5

Complementary matched pairs (NPN/PNP)	**AC127/AC128**	$h_{FE1}/h_{FE2} = 1.1$
	AC127/AC132	$= 1.1$
	AC187/AC188	
	AC176/AC128	< 1.2
	AD161/AD162	$= 1.1$
Package of 4 transistors	**40809**	Consists of AC127 (pre-amplifier, marked 1), AC128 (driver, marked 2) and AC127/AC128 (for transformerless output, marked 3).

Class	Type	Case No.	Pnp or Npn	Maximum ratings V_{CEO} $*V_{CE}$ (V)	V_{CBO} (V)	V_{EBO} (V)	I_C $*I_{CM}$ (mA)
VHF/very high speed							
Small signal	**AFZ12**	507	P	*10	20	0.5	10
Switch	**ASZ21**	506	P	*15	20		30
	ASZ23	504	P	20		2	*100
Medium power	**AFY19**	508	P	*32	32		150
HF/high speed							
Small signal	**ASZ20**	504	P	*40	40		25
Power	**AUY10**	511	P		70		700
MF/medium speed							
Switch	**ASY26**	508	P	15	30	20	200
	ASY27	508	P	10	25	20	200
	ASY28	508	N	*25	30	20	100
	ASY29	508	N	*20	25	20	100
	ASY31	501	P	*20	25	20	100
	ASY32	501	P	*20	25	20	100
	ASY73	508	N	15	30	30	400
	ASY74	508	N	15	30	30	400
	ASY75	508	N	15	30	30	400
	OC139	501	N	15	20	20	250
	OC140	501	N	15	20	20	400
	OC141	501	N	15	20	20	400
Medium power	**OC122**	504	P	20	32	12	500
	OC123	504	P	20	50	15	500
Power	**OC22**	511	P	12	36	12	1 A
	OC23	511	P	16	36	12	1 A
	OC24	511	P	16	36	12	1 A

Note: For PNP transistors read $-V_{CEO}$, $-V_{CE}$, $-V_{EBO}$, $-I_C$, $-I_{CM}$, $-I_{CBO}$ at $-V_{CB}$.

GERMANIUM TRANSISTORS FOR PROFESSIONAL AND INDUSTRIAL APPLICATIONS

Max. ratings		$R_{th\ j-a}$ free in air $*R_{th\ j-c}$	Characteristics at 25°C				Cut-off frequency	
P_{tot}	T_j		h_{FE} at I_C / $*h_{fe}$ at I_C		I_{CBO} at V_{CB}			
(mW)	(°C)	(°C/W)	—	(mA)	(μA)	(V)		(MHz)
								VHF
83	75	600	*70	1	1	6	f_T	180
120	85	500	>50	30	<20	15	f_T	>300
83	75	600			2	6		
800	90	250	>40	80	<10	10	f_T	350
								HF
110	75	600	*>45	1	<50	40	f_T	>40
6 W	75	*400	>40	600	<600	60	f_T	120
								MF
150	85	400	30—80	20	<3	5	f_T	>4
150	85	400	50—150	20	<3	5	f_T	>6
125	75	400	30—80	20	<3	5	f_T	>4
125	75	400	50—150	20	<3	5	f_T	>10
125	75	400	30—80	20	<3	5	f_T	>4
125	75	400	50—150	20	<3	5	f_T	>6
140	75	350	>25	50	<3	5	f_T	>4
140	75	350	>40	50	<3	5	f_T	>6
140	75	350	>60	50	<3	5	f_T	>10
140	75	350	20—83	15	<3	5	f_T	>3.5
140	75	350	50—150	15	<3	5	f_T	>4.5
140	75	350	80—200	15	<3	5	f_T	>9
300	90	220	>50	100	40	24	f_T	1.3
300	90	220	>50	100	20	10	f_T	1.5
15 W	90	*3	>50	1 A	30	10	f_{hfb}	2.5
15 W	90	*3	>50	1 A	30	10	f_{hfb}	2.5
15 W	90	*3	>50	1 A	30	10	f_{hfb}	2.5

GERMANIUM TRANSISTORS FOR PROFESSIONAL AND INDUSTRIAL APPLICATIONS

				Maximum ratings			
Class	*Type*	*Case No.*	*Pnp or Npn*	V_{CEO} *V_{CE} (V)	V_{CBO} (V)	V_{EBO} (V)	I_C *I_{CM} (mA)
LF/low speed							
Low power	**ASY76**	508	P	20	40	10	500
	ASY77	508	P	32	60	10	500
	ASY80	508	P	20	40	20	500
	OC76	503	P	16	32		125
	OC77	503	P	15	60		125
	OC80	503	P	*32	32		300
Power	**ASZ15**	511	P	60	100	40	8A
	ASZ16	511	P	32	60	20	8A
	ASZ17	511	P	32	60	20	8A
	ASZ18	511	P	32	100	40	8A
	OC30	510	P	*16	32	10	1.4A
High power	**ADY26**	512	P	*60	80	40	25A
	ADZ11	512	P	*40	50	30	15A
	ADZ12	512	P	*60	80	60	15A
	2N1100	512	P	*80	100		15A

Note: For PNP transistors read $-V_{CEO}$, $-V_{CE}$, $-V_{EBO}$, $-I_C$, $-I_{CM}$, $-I_{CBO}$ at V_{CB}.

Max. ratings		$R_{th\,j-a}$ free in air $^*R_{th\,j-c}$	Characteristics at 25°C					
P_{tot}	T_j		h_{FE} at $^*h_{fe}$ at	I_C I_C	I_{CBO} at	V_{CB}	Cut-off frequency	
(mW)	(°C)	(°C/W)	—	(mA)	(μA)	(V)		(MHz)
								LF
500	85	250	25—130	300	<40	40	f_T	>0.5
500	85	250	25—130	300	<40	60	f_T	>0.5
500	85	250	>50	300	<40	40	f_T	>0.7
165	75	400	>30	80	<10	10	f_{hfb}	>0.35
165	75	400	>30	80	<10	10	f_{hfb}	>0.35
550	75	220	180	50	<20	12	f_{hfb}	2
30 W	90	*1.5	20—55	1 A	<100	0.5	f_T	0.20
30 W	90	*1.5	45—130	1 A	<100	0.5	f_T	0.25
30 W	90	*1.5	25—75	1 A	<100	0.5	f_T	0.22
30 W	90	*1.5	30—110	1 A	<100	0.5	f_T	0.22
4 W	75	*7.5	28	800			f_{hfe}	0.009
100 W	90	*0.6	>40	5 A	<4 mA	80	f_{hfe}	>0.1
45 W	90	*0.8	>25	5 A	<8 mA	50	f_{hfb}	>0.08
45 W	90	*0.8	>25	5 A	<8 mA	80	f_{hfb}	>0.1
140 W	95	*0.5	25—50	5 A	<4 mA	100	f_{hfe}	0.01

SILICON TRANSISTORS

Class	Type	Case No.	Pnp or Npn	Maximum ratings V_{CEO} $*V_{CE}$ (V)	V_{CBO} (V)	V_{EBO} (V)	I_C $*I_{CM}$ (mA)
VHF/very high speed							
Small signal	**BF115**	507	N	30	50	5	30
	BF167	507	N	30	40	4	25
	BF173	507	N	25	40	4	25
Switch	**BSY38**	506	N	*15	20	5	100
	BSY39	506	N	*15	20	5	100
Medium power	**BFY44**	508	N	60	80	4	1000
	BFY70	508	N	40	60	4	1000
Power	**BLY14**	515	N		80	4	1000
HF/high speed							
Small signal	**BFY10**	508	N	*45	45	5	50
	BFY11	508	N	*45	45	5	50
Switch	**BSX21**	506	N	80	120	5	50
	BSY10	508	N	*60	60	5	50
	BSY11	508	N	*45	45	5	50
Chopper	**2N2569**	506	N	5	20	5	100
	2N2570	506	N	5	20	5	100
Video output	**BF109**	508	N	*135	135	5	50
Power	**BLY17**	512	N	*100	100	4	10 A
MF/medium speed							
Medium power	**BFY50**	508	N	35	80	6	1 A
	BFY51	508	N	30	60	6	1 A
	BFY52	508	N	20	40	6	1 A
	BFY55	508	N	35	80	7	1 A
	BFY67	508	N	*50	75	7	*1 A
	BFY68	508	N	*50	75	7	1 A
Power	**BDY10**	511	N	*100	100	5	*4 A
	BDY11	511	N	*50	50	5	*4 A

Note: For PNP transistors read $-V_{CEO}$, $-V_{CE}$, $-V_{EBO}$, $-I_C$, $-I_{CM}$, $-I_{CBO}$ at $-V_{CB}$.

Max. ratings		$R_{th\ j-a}$ free in air *$R_{th\ j-c}$	Characteristics at 25°C				
P_{tot}	T_j		h_{FE} at *h_{fe} at	I_C	I_{CBO} at	V_{CB}	f_T
(mW)	(°C)	(°C/W)	—	(mA)	(μA)	(V)	(MHz)
							VHF
145	175	900	45—165	1	negligable		230
130	175	1000	57	4	negligable		350
260	175	650	88	7	negligable		550
300	175	500	30—60	10	<0.1	20	350
300	175	500	40—120	10	<0.1	20	350
5 W1)	200	*35	20	150	0.003	40	210
5 W1)	200	*35	20	150	0.003	28	210
8.75W1)	200	*20	11	150	<0.5	40	190
							HF
300	175	500	25—50	10	<2	20	120
300	175	500	40—125	10	<2	20	120
300	175	500	>20	4	0.5	50	120
300	175	500	45—80	10	<2	20	180
300	175	500	60—125	10	<2	20	180
300	175	500	>50	0.1	<0.01	15	>100
300	175	500	>50	0.1	<0.01	15	>100
1.2 W	175	*60	>20	10			>80
100 W1)	175	*1.5	25	1 A	100	40	>50
							MF
5 W1)	200	*35	>30	150	<0.05	60	>60
5 W1)	200	220	>40	150	<0.05	40	>50
5 W1)	200	*35	>60	150	<0.05	30	>50
5 W1)	200	220	>40	150	<0.01	60	>60
3 W1)	200	220	>40	150	<0.01	60	>60
3 W1)	200	220	>100	150	<0.01	60	>70
130 W1)	175	*1	10—50	2 A	<100	20	1.5
130 W1)	175	*1	10—50	2 A	<25	20	1.5

1) At $T_{case} = 25°C$

Class	Type	Case No.	Pnp or Npn	Maximum ratings: V_{CEO} *V_{CE} (V)	V_{CBO} (V)	V_{EBO} (V)	I_C *I_{CM} (mA)
LF/low speed							
Small signal	**BC107**	506	N	45		5	*100
	BC108	506	N	20		5	*100
	BC109	506	N	20		5	*100
	BC112	516	N	*20	20	3	50
	BCY30	508	P	*64	64	45	50
	BCY31	508	P	*64	64	45	50
	BCY32	508	P	*64	64	32	50
	BCY33	508	P	*32	32	16	50
	BCY34	508	P	*32	32	16	50
	BCZ10	503	P	*25	25	20	50
	BCZ11	503	P	*25	25	20	50
	BCZ12	503	P	*60	60	30	50
	2N929	506	N	45	45	5	30
	2N930	506	N	45	45	5	30
Medium power	**BCY10**	503	P	*24	32	12	250
	BCY11	503	P		60	12	250
	BCY12	503	P	*24	32	12	250
	BCY38	508	P	*24	32	12	250
	BCY39	508	P	*60	64	12	250
	BCY40	508	P	*24	32	12	250
	BCY54	508	P	*50	50	12	250

Note: For PNP transistors read $-V_{CEO}$, $-V_{CE}$, $-V_{EBO}$, $-I_C$, $-I_{CM}$, $-I_{CBO}$ at $-V_{CB}$.

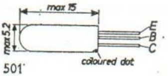
Max. ratings		$R_{th\ j-a}$ free in air $^*R_{thj-c}$	*Characteristics at 25°C*				
P_{tot} (mW)	T_j (°C)	(°C/W)	h_{FE} at I_C / $^*h_{fe}$ at I_C —	(mA)	I_{CBO} at V_{CB} (μA)	(V)	f_T (MHz)
							LF
300	175	500	*125—500	2	negligable		85
300	175	500	*125—500	2	negligable		85
300	175	500	*240—900	2	negligable		95
30	125	2700	*85—390	0.2	<0.01	2	>50
250	150	500	*25	1	<0.1	6	>0.25
250	150	500	*35	1	<0.1	6	>0.25
250	150	500	*55	1	<0.1	6	>0.40
250	150	500	*25	1	<0.1	6	>0.40
250	150	500	*35	1	<0.1	6	>0.60
250	150	500	*15—60	1	<0.1	10	>0.3[1])
250	150	500	*25—60	1	<0.1	10	>0.1[1])
250	150	500	*>10	1	<0.1	10	1.0[1])
300	175	500	*200	1	<0.01	45	>50
300	175	500	*350	1	<0.01	45	>50
310	150	400	>12	30	<0.1	6	1.5
310	150	400	>12	30	<0.1	6	1.5
410	150	*250	40	30	<0.1	6	2
410	150	300	10—30	150	<0.1	6	>0.45
410	150	300	10—50	150	<0.1	6	>0.45
410	150	300	16—120	150	<0.1	6	>0.85
500	150	*120	12—10	150	<0.1	6	>0.45

1) f_{hfb}

TRANSISTOR OUTLINES AND CONNECTIONS

Transistors:
B = base lead
C = collector lead
E = emitter lead

1) = shield lead connected to case



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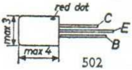

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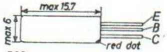

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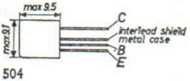

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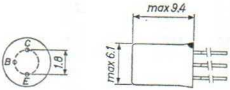

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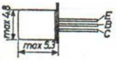

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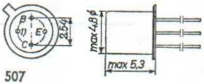

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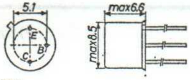

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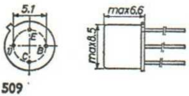

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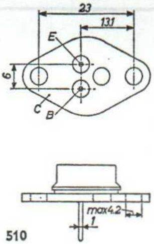

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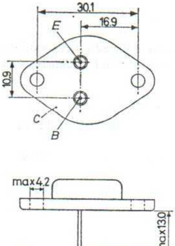

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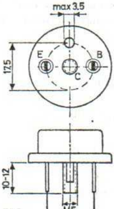

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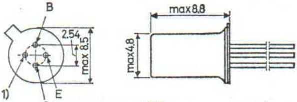

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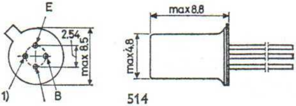

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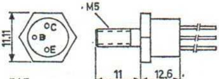

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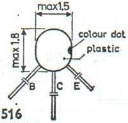

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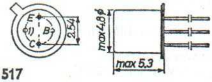
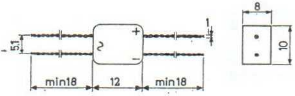


517

BY122 AND BY123 — BRIDGE RECTIFIER ASSEMBLY

Bridge rectifier assembly in a plastic envelope equipped with four silicon double diffused junction diodes. It is primarily intended for transistorized equipment drawing its power from mains with frequencies up to 400 Hz.

INPUT			BY122	BY123
R.M.S. voltage	$V_{I(rms)}$	max.	42	280 V
Repetitive peak voltage	V_{IRM}	max.	120	800 V
OUTPUT				
Continuous voltage				
with C load	V_O		60	400 V
with R and L load	V_O		38	255 V
Average current with R and L load up to $T_{amb} = 35°C$	I_O	max.	0.8	0.6 A
Repetitive peak current	I_{ORM}	max.	3	2 A
Thermal resistance from junction to ambient	$R_{th\ j-a}$	=	55	55°C/W



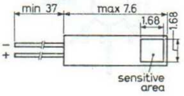
BPY10 — SILICON PHOTOVOLTAIC CELL

For use in tape and card readers.

Sensitive area			2.8 mm^2
Spectral response peak			0.8 μm
Short-circuit current			
at $V = 0$ V, E = 2000 lux	$-I_S$		32 μA
at $V = 0$ V, E = 10000 lux	$-I_S$		160 μA
Dark reverse current			
at $V_R = 1$ V, $T_{amb} = 25°C$	I_R	<	10 μA
at $V_R = 1$ V, $T_{amb} = 75°C$	I_R	<	30 μA
Capacitance at 0 V	C_d		< 1000 pF

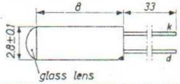
Maximum ratings:

$I_F = 10$ mA, $V_R = 1$ V



OAP12 PHOTODIODE

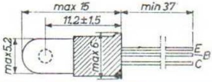
Sensitivity (with tungsten lamp)	N	>5 μA/100 lux
Sensitive area		1 mm^2
Spectral response peak		1.55 μm
Dark current at $V_R = 10$ V, $T_{amb} = 25°C$	I_R	<15 μA
Frequency at which $N = {}^1/_2$ (N at 1 kHz) at $V_R = 10$ V		50 kHz
Internal impedance at $V_R = 0.5$—30 V	r_d	3 MΩ



Maximum ratings:
$I_R = 3$ mA, $V_R = 30$ V, $P_{tot} = 30$ mW

OCP70 PHOTOTRANSISTOR

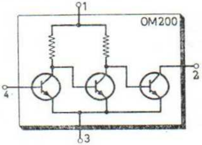
Sensitivity (with sensitive area of 7 mm^2)	N	>130 mA/lm
Spectral response peak		1.43 μm
Current at $-V_{CE} = 2$ V and uniform illumination of 75 ft candle (807 lux)	$-I_C$	>750 μA
Cut-off frequency (modulated light)		3 kHz



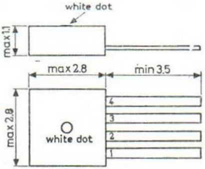
Maximum ratings:
$-V_{CEO} = 7.5$ V, $-V_{CBO} = 15$ V, $-I_C = 20$ mA
$P_{tot} =$ max. $(65 - T_{amb})/0.4$ mW

OM200 INTEGRATED CIRCUIT AMPLIFIER FOR IN THE EAR HEARING AID

Monolithic semiconductor integrated-circuit amplifier in a plastic envelope, primarily intended for in the ear hearing aids.



Supply voltage	V_{1-3}	max.	5 V
Output current	I_2	max.	5 mA
In a practical circuit:			
Total supply current	I_{tot}	typ.	1 mA
Transducer gain		>	75 dB
		typ.	80 dB
Power output at $d_{tot} = 10\%$	P_o	>	0.2 mW
Frequency cut-off (—3 dB)	f_c	>	20 kHz
Total device dissipation	P_{tot}	max.	25 mW



TRANSISTORS (recent additions)

			Maximum ratings				Characteristics (25°C)				
										Leak. Current	
Type	*Case no.*	*Pnp or Npn*	V_{coll} (V)	I_{coll} (mA)	*Max. cont.* T_j (°C)	P_{tot} 25°C *free air.* (W)	h_{FE} *at*	V_{CE} (V)	I_C (mA)	I_{CBO} (μA)	V_{CB} (V)
BSX19	506	N	40	200	200	0.36	20-60	1	10	<0.1	20
BSX20	506	N	40	200	200	0.36	40-120	1	10	<0.1	20
BSX44	506	N	15	100	200	0.3	30-150	0.4	20	<0.05	5
BSY40	506	P	20	100	150	0.25	20-60	0.35	10	<0.01	15
BSY41	506	P	20	100	150	0.25	40-120	0.35	10	<0.01	15
BFY90	517	N	30	20	200	0.2	25-125	1	2	<10n	15
BCY55		N	45	60	175	0.3	100-300	5	10μ	<10n	45

BSX19
BSX20 Planar epitaxial transistors for use in switching circuits.

BSX44 Planar epitaxial transistor for use as a very high speed switch.

BSY40
BSY41 Planar epitaxial transistors for use as high speed switches, complementary to BSY38/39.

BFY90 Silicon planar epitaxial transistor for use as u.h.f. amplifier, aerial amplifier.

BCY55 Two matched planar transistors housed in an aluminum cube. Application: low-noise, low-level differential amplifier.

characteristics (25°C)							
Freq.	*Bottoming*				*Condition*		
f_T	V_{CES}	I_C	I_B	*Special parameters*	(V)	(mA)	(kc/s)
(MHz)	(V)	(mA)	(mA)				
>500	<0.25	10	1	t_{on} = <7nsec t_{off} = <18 nsec		100	
						40	
>500	<0.25	10	1	t_{on} = <7nsec t_{off} = <21 nsec		20	
>600	<0.26	3	0.15	t_s = <6nsec		5	
>150	<0.2	20	2	t_s = <150 nsec		10	
>150	<0.2	20	2				
>1000				NF = <5dB	5	2	500
				C_{obo} <1.8pF rbC_c = 4-15ps	10/5	0/2	1/10
>50	<1	10	0.5	NF <3dB $\frac{\Delta V_{EB}}{\Delta_T} = 1\mu V/°C$	$\frac{\Delta I_B}{\Delta T} =$	0.5nA/°C	

BF184 HF N–P–N transistor for i.f. amplifier in AM, FM and TV sound applications.

BF185 HF N–P–N transistor for preamplifier or mixer oscillator in AM or FM portable receivers and car radios.

Maximum ratings:

V_{CEO} = 20 V
V_{CBO} = 30 V
V_{EBO} = 5 V
I_C = 30 mA
T_j = 175°C
P_{tot} = 145 mA

Case = No. 507 (page 394)
$R_{th\,j-a}$ (free in air) = 900°C/W

Characteristics at T_j = 25°C, $-I_E$ = 1 mA, V_{CB} = 10 V:

BF184 I_B = 1.3–14 μA
f_T = 280 MHz

BF185 I_B = 7–30 μA
f_T = 230 MHz

Noise figures at
R_s = 300 Ω, f = 0.2 MHz
F = 1.45 dB

DIOCES (recent additions)

BAY96 Varactor diode for use as a v.h.f. and u.h.f. frequency multiplier (ceramic-metal DO-4 envelope)

V_R = max. 120 V	r_D = max. 1.2 Ω
P_{tot} = max. 20 W	f_{co} = typ. 25 GHz
T_j = max. 175 °C	R_{thj-mb} = 7.5 °C/W
C_d = 28 to 39 pF	

BYX11
BYX12 Silicon high-voltage general purpose rectifier (DO-14 envelope)

V_{RW} = max. 2000 V	T_j = max. 125 °C
V_{RS} = max. 2500 V	V_F = max. 1.0 V at I_F = 0.1 A; T_j = 25°C
I_F = max. 10 mA	(BYX11) I_R = max. 0.2 μA at V_R = 2000 V; T_j = 25°C
I_{FM} = max. 0.1 A	(BYX12) I_R = max. 50 nA at V_R = 2000 V; T_j = 25°C
I_{FS} = max. 1 A (t = max. 10 ms)	

BZY94/C.. series of Zener diodes, ±5% tolerance, consisting of 13 types with V_z = 10 V, 11 V, 12 V, 13 V, 15 V, 16 V, 18 V, 20 V, 22 V, 24 V, 27 V, 30 V, 33 V, at $-I_z$ = 5 mA.

BZY95/C.. series of Zener diodes, ±5% tolerance, consisting of 22 types with V_z = 9.1 V, 10 V, 11 V, 12 V, 13 V, 15 V, 16 V, 18 V, (at $-I_z$ = 50 mA), 20 V, 22 V, 24 V, 27 V, 30 V, 33 V, 36 V, (at $-I_z$ = 20 mA), 39 V, 43 V, 47 V, 51 V, 62 V, 68 V (at $-I_z$ = 10 mA).

BZY96/C.. series of Zener diodes, ±5% tolerance, consisting of 5 types with V_z = 5.6 V, 6.2 V, 6.8 V, (at $-I_z$ = 100 mA), 7.5 V, 8.2 V (at $-I_z$ = 50 mA).

	BZY94/C..	BZY95/C...	BZY96/C...
P_{max} (W)	0.4	1.5	1.5
$T_{j\,max}$ (°C)	150	175	175
$T_{storage}$ (°C)	150	−65/+175	−65/+175
$R_{thj-amb}$ (°C/W) max.	310	100	100
Case (cathode to stud)	DO-7	DO-1	DO-1

REPLACEMENT GUIDE FOR SEMICONDUCTORS

INLEIDING

Deze lijst is samengesteld voor de vervanging van halfgeleiders die speciaal bestemd zijn voor elektronische apparaten voor niet-professioneel gebruik (met uitzondering van speciale halfgeleiders voor TV-ontvangers).
In numeriek-alfabetische volgorde is een groot aantal voor deze toepassingen bestemde halfgeleiders in de lijst opgenomen. Onze voor andere toepassingen bestemde halfgeleiders zijn ter vergelijking eveneens vermeld. Bovendien is een aantal, met een sterretje aangeduide, verouderde typen tezamen met de meest geschikte vervangingstypen in de lijst opgenomen.
Indien aan een van onze typen een CV-nummer is toegekend, is dit afzonderlijk aangegeven.
De vervangingsserie voor niet-professionele toepassingen bevat slechts 4 dioden en 7 transistors met bijzondere eigenschappen en is gekozen uit onze bestaande halfgeleiderserie.
Bij vervanging van FL-transistors moet type AC126 als voorversterker en AC128 als uitgangsversterker gebruikt worden, indien beide typen vermeld zijn.
Daar het voorgestelde vervangingstype kan afwijken van het originele, wordt voor eventuele wijzigingen bij de vervanging verwezen naar de typegegevens van onze vervangingsserie.
Als een voorgestelde vervanging van een in de lijst opgenomen type niet in de vervangingsserie voor niet-professionele toepassingen voorkomt, is dat vermeld.

Type to be replaced	*Application equivalent*
1G27	OA95;1N618
1G86	OA95;1N618
1G91	[1])OA90;1N87A
1G92	[1])OA90;1N87A
1G95	AA119
1HY100	BY100
1N34	OA95;1N618
1N34A	OA95;1N618
1N38	OA95;1N618
1N38A	OA95;1N618
1N38B	OA95;1N618
1N43	OA95;1N618
1N44	OA95;1N618
1N45	OA95;1N618
1N46	OA95;1N618
1N47	OA95;1N618
1N49	OA95;1N618
1N52	OA95;1N618
1N52A	OA95;1N618
1N54	OA95;1N618
1N54A	OA95;1N618
1N57	OA95;1N618
1N57A	OA95;1N618
1N58	OA95;1N618
1N58A	OA95;1N618
1N60A	[1])OA90;1N87A
1N63	OA95;1N618
1N63A	OA95;1N618
1N64	AA119
1N64A	AA119
1N65	OA95;1N618
1N66	OA95;1N618
1N67	OA95;1N618
1N67A	OA95;1N618
1N68	OA95;1N618
1N68A	OA95;1N618
1N69	OA95;1N618
1N69A	OA95;1N618
1N70	OA95;1N618

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
1N70A	OA95;1N618
1N71	OA95;1N618
1N75	OA95;1N618
1N81	OA95;1N618
1N81A	OA95;1N618
1N84	OA95;1N618
1N86	OA95;1N618
1N87	[1])OA90;1N87A
1N87A	[1])OA90;1N87A
1N88	OA95;1N618
1N89	OA95;1N618
1N90	OA95;1N618
1N95	OA95;1N618
1N96	OA95;1N618
1N97	OA95;1N618
1N97A	OA95;1N618
1N98	OA95;1N618
1N99	OA95;1N618
1N100	OA95;1N618
1N105	AA119
1N111	OA95;1N618
1N112	OA95;1N618
1N113	OA95;1N618
1N114	OA95;1N618
1N115	OA95;1N618
1N116	OA95;1N618
1N116A	OA95;1N618
1N117	OA95;1N618
1N118	OA95;1N618
1N118A	OA95;1N618
1N126	OA95;1N618
1N126A	OA95;1N618
1N127	OA95;1N618
1N128	OA95;1N618
1N128A	OA95;1N618
1N135	OA95;1N618
1N137A	[1])OA202

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
1N137B	[1]OA202
1N138A	[1]OA202
1N138B	[1]OA202
1N200	[1]OA202
1N201	[1]OA202
1N202	[1]OA202
1N203	[1]OA202
1N204	[1]OA202
1N205	[1]OA202
1N206	[1]OA202
1N207	[1]OA202
1N208	[1]OA202
1N209	[1]OA202
1N210	[1]OA202
1N211	[1]BA100
1N215	[1]OA202
1N216	[1]OA202
1N251	[1]OA202
1N252	[1]OA202
1N254	BY114
1N255	BY114
1N256	BY100
1N265	OA95;1N618
1N266	OA95;1N618
1N267	AA119
1N277	[1]AAZ15
1N290	OA95;1N618
1N294	OA95;1N618
1N294A	OA95;1N618
1N295A	[1]OA90;1N87A
1N297	OA95;1N618
1N298	OA95;1N618
1N332	BY114
1N338	BY100
1N341	BY114
1N342	BY114
1N343	BY114

Type to be replaced	*Application equivalent*
1N344	BY114
1N345	BY114
1N346	BY114
1N348	BY114
1N349	BY114
1N355	OA95;1N618
1N380	[1]OA202
1N432	[1]OA202
1N433	[1]OA202
1N434	[1]OA202
1N441	BY114
1N442	BY114
1N443	BY114
1N444	BY100
1N445	BY100
1N448	OA95;1N618
1N456A	[1]OA202
1N457	[1]OA202
1N458	[1]OA202
1N464A	[1]OA202
1N476	[1]OA81;[1]1N476; OA95;1N618
1N477	[1]OA81C;1N477; OA95;1N618
1N478	[1]OA85;[1]1N478; OA95;1N618
1N479	[1]OA85C;[1]1N479; OA95;1N618
1N480	[1]OA86;[1]1N480
1N482	[1]OA202
1N483	[1]OA202
1N484	[1]OA202
1N486A/B	BY114
1N487	BY114
1N488A/B	BY114
1N538	BY100
1N540	BY100
1N541	AA119

[1] *No type of the replacement series*

Type to be replaced	*Application equivalent*
1N542	2-AA119
1N547	BY100
1N562	BY100
1N599A	BY114
1N600A	BY114
1N602/A	BY114
1N603/A	BY114
1N604/A	BY114
1N605/A	BY100
1N606/A	BY100
1N616	[1]OA73; 1N87A;OA90
1N617	[1]OA91;1N617 OA95;1N618
1N618	OA95;1N618
1N646	BY114
1N659	[1]OA202
1N660	[1]OA202
1N673	BY114
1N698	[1]OA47;1N698
1N1095	BY100
1N1096	BY100
1N1103	BY100
1N1169	BY100
1N1259	BY100
1N1486	BY100
1N1695	BY100
1N1763	BY100
1N2069/A	BY100
1N2070/A	BY100
1N2071/A	BY100
1N2505	BY100
1N2613	BY100
1N2615	BY100
1N2616	BY100
1N2773	BY100
1N3121	1N3121;AAZ17
1N3122	[1]1N3122;AAZ18
1N3182	[1]N3182;BA102

Type to be replaced	*Application equivalent*
1N3193	BY100
1N3194	BY100
1N3195	BY100
1N3196	BY100
1N3221	BY100
1N3242	BY100
1N3483	[1]1N3483;AAZ13
1N3484	[1]1N3484;AAZ15
1N4095	[1]1N4095;BZ100
1N4250	BY100
1NU40	AC126;2N2429
1NU70	AC126;2N2429
1S038	BY100
1S47	BY100
1S054	BY100
1S058	BY100
1S80	OA95;1N618
1S74	OA95;1N618
1S75	OA95;1N618
1S83	BY114
1S84	BY114
1S90	BY114
1S91	BY114
1S92	BY114
1S93	BY114
1S94	BY100
1S95	BY100
1S96	BY100
1S97	BY100
1S107	BY100
1S117	BY100
1S119	BY100
1S557	BY100
1S1692	BY100
1S1693	BY100
1S1694	BY100
1S1695	BY100

1) *No type of the replacement series*

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
1T22	OA95;1N618
1T23	OA95;1N618
1T508	BY100
2×1G80	2-AA119
2-AA111	2-AA119
2-AA112	2-AA119
2× AA113	2-AA119
2× AA116	2-AA119
2× AA118	2-AA119
2× AA119	2-AA119
2-AC128	2-AC128
2-AC132	[1])2-AC132; 2-AC128;2N2431MP
2-AC188	2-AC188
2-AD139	[1])2-AD139;2-AD149;
2-AD149	2-AD149
2-AD161	[1])2-AD161
2-AD162	[1])2-AD162
2-ADZ11	[1])2-ADZ11
2G101	AC126;AC128
2G102	AC126;AC128
2G108	AC126;2N2429
2G109	AC126;2N2429
2G138	AF185
2E8	BY100
2G108	AC126;2N2429
2G109	AC126;2N2429
2G138	AF185
2G139	AF185
2G140	AF185
2G141	AF185
2G201	AC128;2N2431
2G202	AC128;2N2431
2G240	[1])AU103
2G270	AC128;2N2431
2G271	AC128;2N2431
2G301	AF185
2G302	AF185
2G319	AC126;AC128
2G320	AC126;AC128
2G398	[1])BSX21
2G401	AF185
2G402	AF185
2N34	AC126;2N2429; AC128;2N2431
2N34A	AC126;2N2429; AC128;2N2431
2N35	AC127;2N2430
2N36	AC126;2N2429; AC128;2N2431
2N37	AC126;2N2429; AC128;2N2431
2N38	AC126;2N2429; AC128;2N2431
2N38A	AC126;2N2429; AC128;2N2431
2N431A	AC128;2N2431
2N44	AC128;2N2431
2N46,2N47	[1])OC58;
2N48,2N49	AC126;2N2431
2N54	AC126;2N2429; AC128;2N2431
2N59/A	AC128;2N2431
2N59B/C	AC128;2N2431
2N60	AC128;2N2431
2N61	AC128;2N2431
2N62	AC128;2N2431
2N63	AC126;2N2429
2N64	AC126;2N2429
2N65	AC126;2N2429
2N76	AC126;2N2429
2N77	[1])OC58; AC126;2N2431
2N79	AC126;2N2429
2N80	AC126;2N2429

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
2N81	AC126;2N2429
2N82	AC126;2N2429
2N85,2N86	AC126;2N2429;
2N87	AC128;2N2431
2N104	AC126;2N2429
2N105	[1])OC58
	AC126;2N2429
2N106	AC126;2N2429;
	AC128;2N2431
2N107	AC126;2N2429;
	AC128;2N2431
2N108	AC126;2N2429;
	AC128;2N2431
2N109	AC128;2N2431
2N111,2N111A	AF185
2N112,2N112A	AF185
2N113	AF185
2N114	AF185
2N115	AD149
2N132	AC126;2N2429
2N132A	AC128;2N2431
2N135	AF185
2N137	AF185
2N138	AC126;2N2429
2N138A	AC128;2N2431
2N138B	AC128;2N2431
2N139	AF185
2N140	AF185
2N156	AD149;2N2836
2N176	AD149;2N2836
2N180	AC128;2N2431
2N181	AC128;2N2431
2N185	AC128;2N2431
2N186,2N186A	AC128;2N2431
2N187,2N187A	AC128;2N2431
2N188,2N188A	AC128;2N2431

Type to be replaced	*Application equivalent*
2N189,2N190	AC126;2N2429;
2N191,2N192	AC128;2N2431
2N195,2N196	AC128;2N2432;
2N197,2N198	AC128;2N2431
2N199	AC128;2N2431
2N200	AC126;2N2429
2N206	AC126;2N2429;
	AC128;2N2431
2N213,2N213A	AC127;2N2430
2N214	AC127;2N2430
2N215	AC126;2N2429
2N217	AC128;2N2431
2N218	AF185
2N219	AF185
2N220	AC126;2N2429
2N222	AC126;2N2429
2N223	AC128;2N2431
2N225	AC128;2N2431
2N226	AC128;2N2431
2N227	AC128;2N2431
2N228	AC127;2N2430
2N229	AC127;2N2430
2N230	AD149;2N2836
2N234,2N234A	AD149;2N2836
2N235,2N235A	AD149;2N2836
2N235B,2N236	AD149;2N2836
2N236A,2N236B	AD149;2N2836
2N238	AC126;2N2429;
	AC128;2N2431
2N241,2N241A	AC128;2N2431
2N247	AF185
2N248	AF185
2N249	AC128;2N2431
2N250/A	AD149;2N2836
2N252	AF185
2N255/A	AD149;2N2836
2N256/A	AD149;2N2836

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
2N257,2N257A	AD149;2N2836
2N257G;2N257W	AD149;2N2836
2N265	AC128;2N2431
2N266	AC128;2N2431
2N267	AF185
2N270	AC128;2N2431
2N271/A	AF185
2N272	AC126;2N2429; AC128;2N2431
2N273	AC128;2N2429
2N279	AC128;2N2431
2N280	AC126;2N2429; [1])OC71;2N280
2N281	AC128;2N2429
2N282	2-AC128
2N284	[1])ASY76;[1])OC76
2N284A	[1])ASY77;[1])OC77
2N285/A	AD149;2N2836
2N285B	AD149;2N2836
2N290	AD149;2N2836
2N291	AC128;2N2431
2N300	AF178;2N2495
2N301	AD149;2N2836
2N302	AC128;2N2431
2N303	AC128;2N2431
2N306/A	AC127;2N2430
2N307/A	AD149;2N2836
2N308	AF185
2N309	AF185
2N310	AF185
2N319	AC128;2N2431
2N320,2N321	AC126;2N2429;
2N322,2N323	AC128;2N2431
2N324	AC128;2N2431
2N325	AD149;2N2836

Type to be replaced	*Application equivalent*
2N350/A	AD149;2N2836
2N351/A	AD149;2N2836
2N352	AD149;2N2836
2N353	AD149;2N2836
2N362	AC126;2N2429
2N363	AC126;2N2429
2N364	AC127;2N2430
2N365	AC127;2N2430
2N366	AC127;2N2430
2N367	AC126;2N2429
2N368	AC126;2N2429
2N369	AC126;2N2429
2N370	AF185
2N371	AF185
2N372	AF185
2N373	AF185
2N374	AF185
2N376	AD149;2N2836
2N399	AD149;2N2836
2N400	AD149;2N2836
2N401	AD149;2N2836
2N405	AC126;2N2429
2N406	AC126;2N2429;
2N407	AC128;2N2431
2N408	AC128;2N2431
2N409	AF185
2N410	AF185
2N411	AF185
2N412	AF185
2N422	AC126;2N2429
2N460	AC128;2N2431
2N461	AC128;2N2431
2N464	AC128;2N2431
2N465	AC128;2N2431
2N466	AC128;2N2431
2N467	AC128;2N2431

Type to be replaced	*Application equivalent*
2N481	AF185
2N482	AF185
2N483	AF185
2N484	AF185
2N485	AF185
2N486	AF185
2N504	AF185
2N507	AC127;2N2430
2N508,2N508A	AC126;2N2429
2N535,2N535A	AC126;2N2429
2N544	AF185
2N563	AC128;2N2431
2N564	AC128;2N2431
2N565	AC128;2N2431
2N566	AC128;2N2431
2N567	AC128;2N2431
2N568	AC128;2N2431
2N569	AC128;2N2431
2N570	AC128;2N2431
2N571	AC128;2N2431
2N572	AC128;2N2431
2N591	AC126;2N2429
2N591/5	AC126;2N2429
2N609	AC128;2N2431
2N610	AC128;2N2431
2N611	AC128:2N2431
2N612	AC128;2N2431
2N613	AC128;2N2431
2N614	AF185
2N615	AF185
2N616	AF185
2N617	AF185
2N631	AC128;2N2431

Type to be replaced	*Application equivalent*
2N632	AC128;2N2431
2N633	AC128;2N2431
2N640	AF185
2N641	AF185
2N642	AF185
2N647	AC127;2N2430
2N649	AC127;2N2430
2N696	1)2N696
2N697	1)2N697
2N929	1)2N929
2N930	1)2N930
2N990	AF178
2N991	AF185
2N992	AF185
2N993	AF185
2N1010	AC127;2N2430
	1)AC172
2N1038	AD149;2N2836
2N1059	AC127;2N2430
2N1073	1)AU103
2N1097	AC128;2N2431
2N1098	AC128;2N2431
2N1100	1)2N1100
2N1101	AC127;2N2430
2N1102	AC127;2N2430
2N1107	AF185
2N1108	AF185
2N1109	AF185
2N1110	AF185
2N1111	AF185
2N1128	AC128;2N2431
2N1141	AF178;2N2495
2N1142	AF178;2N2495

1) *No type of the replacement series*

Type to be replaced	Application equivalent
2N1143	AF178;2N2495
2N1144	AC128;2N2431t
2N1145	AC128;2N2431
2N1177	AF178;2N2495
2N1178	AF178;2N2495
2N1179	AF178;2N2495
2N1180	AF185
2N1195	AF178;2N2495
2N1251	AC127;2N2430
2N1264	AF178;2N2495
2N1266	AF185
2N1273	AC128;2N2431
2N1274	AC128;2N2431
2N1287	AC128;2N2431
2N1406	AF178;2N2495
2N1407	AF178;2N2495
2N1420	[1])2N1420
2N1425	AF185
2N1426	AF185
2N1431	AC127;2N2430
2N1515	AF185
2N1516	AF185
2N1517	AF178;2N2495
2N1524	AF185
2N1525	AF185
2N1526	AF185
2N1527	AF185
2N1564	[1])BSX21
2N1565	[1])BSX21
2N1566	[1])BSX21
2N1572	[1])BSX21
2N1573	[1])BSX21
2N1574	[1])BSX21
2N1613	[1])2N1613
2N1631	AF185
2N1632	AF185
2N1633	AF185
2N1634	AF185

Type to be replaced	Application equivalent
2N1635	AF185
2N1636	AF185
2N1637	AF185
2N1638	AF185
2N1639	AF185
2N1653	[1])AU103
2N1666	[1])2N1666;ASZ15
2N1667	[1])2N1667;ASZ16
2N1668	[1])2N1668;ASZ17
2N1669	[1])2N1669;ASZ18
2N2061	AD149;2N2836
2N2061a	AD149;2N2836
2N2062	AD149;2N2836
2N2063	AD149;2M2836
2N2064	AD149;2N2836
2N2089	[1])2N2089;[1])AF114; AF178;2N2495
2N2090	[1])2N2090;[1])AF115; AF178;2N2495
2N2091	[1])2N2091;[1])AF116; AF185
2N2092	[1])2N2092;AF117; AF185
2N2093	[1])2N2093;[1])AF117C; AF185
2N2207	[1])2N2207;[1])AF118
2N2297	[1])2N2297;BFY55
2N2415	[1])AF186
2N2428	2N2429;AC126
2N2429	2N2429;AC126
2N2430	2N2430;AC127
2N2430MP	2N2430MP;2-AC127
2N2431	2N2431;AC128
2N2431MP	2N2431MP;2-AC128
2N2494	[1])2N2494;[1])AF102; AF178;2N2495

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
2N2495	2N2495;AF178
2N2496	1)2N2496;1)AFZ12
2N2512	1)2N2512;1)AF118
2N2569	1)2N2569
2N2570	1)2N2570
2N2613	2N2429;AC126
2N2614	2N2429;AC126
2N2617	1)2N2617;1)BCZ11
2N2654	1)2N2654;1)AF179
2N2671	2N2495;AF178
2N2672	AF185
2N2672A	AF185
2N2706	1)2N2706;1)AC132 2N2431;AC128
2N2707	1)2N2707;AC127/AC128
2N2707MP	1)2N2707MP; 1)AC127/AC128
2N2717	1)2N2717;1)ASZ21
2N2786	1)2N2786;1)AFY19
2N2835	1)2N2835;1)AD139; 2N2836;AD149
2N2836	2N2836;AD149
2N2953	2N2431;AC128
2N3074	1)2N3074;1)AF180
2N3075	1)2N3075;1)AF181
2N3588	1)2N3588;1)AF121; AF178;2N2495
2N4077	1)2N4077;1)AD161
2N4078	1)2N4078;1)AD162
2N4079	1)2N4079;1)AD161/162

1) *No type of the replacement series*

Type to be replaced	*Application equivalent*
2NJ5A	AF185
2NJ8A	AF185
2NJ9A	AC128;2N2431
2NJ9D	AC128;2N2431
2NJ50	AF185
2NJ51	AF185
2NU40	AC126;2N2429
2NU70	AC126;2N2429
*2-OA72	2-AA119
2-OA79	2-AA119
*2-OC16	2-AD149
*2-OC26	1)2-AD149
*2-OC30	2-AD139;2-AD149
*2-OC72	1)2-AC132;2-AC128
2-OC74	2-AC128
2S001	AF178;2N2495
2S12	AF185
2S13	AF185
2S14	AC128;2N2431
2S15;2S15A	AC128;2N2431
2S22	AC128;2N2431
2S24	AC128;2N2431
2S25	AF185
2S30	AF185
2S31	AF185
2S32	AC128;2N2431
2S33	AC128;2N2431
2S34	AC128;2N2431
S235	AF185
2S36	AF185
2S37	AC128;2N2431
2S38	AC128;2N2431
2S39	AC128;2N2431
2S40	AC128;2N2431
2S41,2S41A	AD149;2N2836
2S43	AC128;2N2431
2S44	AC126;AC128

* *Obsolete type with successor type*

Type to be replaced	Application equivalent
2S45	AF185
2S49	AF185
2S52	AF185
2S53	AF185
2S54	AC126;AC128
2S56	AC128;2N2431
2S60,2S60A	AF185
2S91	AF185
2S92,2S92A	AF185
2S93,2S93A	AF185
2S109	AF185
2S110	AF185
2S112	AF185
2S141	AF185
2S142	AF185
2S143	AF185
2S144	AF185
2S145	AF185
2S146	AF185
2S148	AF185
2S155	AF185
2S159	AF185
2S160	AF185
2S163	AC128;2N2431
2S178	AF185
2S179	AC128;2N2431
2SA12	AF185
2SA13	AF185
2SA14	AF185
2SA15	AF185
2SA16	AF185
2SA17	AF185
2SA18	AF185
2SA19	AF185
2SA20	AF185
2SA21	AF185
2SA22	AF185

Type to be replaced	Application equivalent
2SA23	AF185
2SA24	AF178;2N2495
2SA25	AF178;2N2495
2SA27	AF185
2SA28	AF185
2SA29	AF185
2SA30	AF185
2SA31	AF185
2SA35	AF185
2SA36	AF185
2SA37	AF185
2SA38	AF185
2SA39	AF185
2SA40	AF185
2SA43	AF185
2SA44	AF185
2SA45	AF185
2SA48	AF185
2SA49	AF185
2SA50	AF185
2SA51	AF185
2SA52	AF185
2SA53	AF185
2SA57	AF185
2SA58	AF185
2SA59	AF185
2SA60	AF185
2SA61	AF185
2SA69	AF178;2N2495
2SA70	AF178;2N2495
2SA71	AF178;2N2495
2SA72	AF185
2SA73	AF185
2SA74	AF185
2SA75	AF185

Type to be replaced	*Application equivalent*
2SA76	AF185
2SA77	AF185
2SA80	AF185
2SA81	AF185
2SA82	AF185
2SA83	AF185
2SA84	AF185
2SA92	AF185
2SA93	AF185
2SA94	AF185
2SA101	AF185
2SA102	AF185
2SA103	AF185
2SA104	AF185
2SA105	AF178;2N2495
2SA106	AF185
2SA107	AF185
2SA108	AF185
2SA109	AF185
2SA110	AF185
2SA111	AF185
2SA112	AF185
2SA113	AF185
2SA114	AF185
2SA115	AF185
2SA116	AF178;2N2495
2SA117	AF178;2N2495
2SA118	AF178;2N2495
2SA121	AF185;AF178
2SA122	AF185;AF178
2SA123	AF185;AF178
2SA124	AF178;2N2495
2SA125	AF178;2N2495
2SA128	AF185
2SA129	AF185
2SA130	AF185
2SA131	AF185

Type to be replaced	*Application equivalent*
2SA132	AF185
2SA133	AF185
2SA134	AF178;2N2495
2SA135	AF178;2N2495
2SA136	AF185
2SA137	AF185
2SA138	AF185
2SA139	AF185
2SA141	AF185
2SA142	AF185
2SA143	AF185
2SA144	AF185
2SA145	AF185
2SA146	AF185
2SA147	AF185
2SA148	AF185
2SA149	AF185
2SA151	AF185
2SA152	AF185
2SA153	AF178;2N2495; AF185
2SA154	AF185
2SA155	AF185
2SA156	AF185
2SA157	AF178;2N2495; AF185
2SA159	AF178;2N2495; AF185
2SA160	AF185
2SA161	AF178;2N2495
2SA167	AF185
2SA168	AF185
2SA168A	AF185
2SA175	AF178;2N2495; AF185
2SA176	AF185
2SA178	AF185

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Type to be replaced	Application equivalent
2SA180	AF185
2SA181	AF185
2SA182	AF185
2SA183	AF185
2SA184	AF185
2SA188	AF185
2SA189	AF185
2SA190	AF185
2SA191	AF185
2SA192	AF185
2SA193	AF185
2SA194	AF185
2SA195	AF185
2SA196	AF185
2SA197	AF185
2SA198	AF185
2SA199	AF185
2SA200	AF185
2SA201	AF185
2SA202	AF185
2SA203	AF185
2SA206	AF185
2SA213	AF178;2N2495
2SA214	AF178;2N2495
2SA215	AF185
2SA216	AF178;2N2495
2SA218	AF185
2SA219	AF185
2SA220	AF185
2SA221	AF185
2SA222	AF185
2SA223	AF185
2SA224	AF185
2SA226	AF185
2SA227	AF178;2N2495

Type to be replaced	Application equivalent
2SA229	AF178;2N2495
2SA230	AF178;2N2495
2SA233	AF185
2SA234	AF185
2SA235	AF178;2N2495
2SA236	AF185
2SA237	AF185
2SA240	AF178;2N2495; AF185
2SA241	AF178;2N2495
2SA242	AF178;2N2495
2SA243	AF178;2N2495
2SA250	AF185
2SA253	AF185
2SA254	AF185
2SA256	AF185
2SA257	AF185
2SA258	AF185
2SA259	AF185
2SA266	AF185
2SA267	AF185
2SA268	AF185
2SA269	AF185
2SA270	AF185
2SA271	AF185
2SA272	AF185
2SA273	AF185
2SA274	AF185
2SA275	AF185
2SA285	AF185
2SA286	AF185
2SA287	AF185
2SA298	AF185
2SA307	AF185
2SA311	AF185
2SA312	AF185
2SA313	AF185
2SA314	AF185

Type to be replaced	*Application equivalent*
2SA315	AF185
2SA316	AF185
2SA322	AF185
2SA323	AF185
2SA324	AF185
2SA340	AF185
2SA341	AF185
2SA342	AF185; AF178; 2N2495
2SA380	AF185
2SA381	AF185
2SA382	AF185
2SA383	AF185
2SA384	AF185
2SA400	AF185
2SA1018	AF185
2SB26	AD149;2N2836
2SB27	AD149:2N2836
2SB28	AD149;2N2836
2SB29	AD149;2N2836
2SB30	AD149;2N2836
S2B31	AD149;2N2836
2SB32	AC126;2N2429
2SB33	AC128;2N2431
2SB34	AC128;2N2431
2SB37	AC128;2N2431
2SB38	AC128;2N2431
2SB39	AC126;2N2429
2SB41	AD149;2N2836
2SB44	AC128;2N2431
2SB46	AC126;2N2429
2SB47	AC126;2N2429
2SB48	AC126;2N2429
2SB49	AC126;2N2429; AC128;2N2431

Type to be replaced	*Application equivalent*
2SB50	AC126;2N2429
2SB51	AC128;2N2431
2SB52	AC128;2N2431
2SB53	AC128;2N2431
2SB54	AC128;2N2431
2SB55	AC128;2N2431
2SB56	AC128;2N2431
2SB57	AC128;2N2431
2SB58	AC128;2N2431
2SB59	AC126;2N2429
2SB60	AC126;2N2429
2SB60A	AC126;2N2429
2SB61	AC126;2N2429
2SB63	AD149;2N2836
2SB66	AC126;2N2429; AC128;2N2431
2SB70	AC126;2N2429
2SB71	AC126;2N2429
2SB73	AC126;2N2429
2SB74	AC126;2N2429
2SB75	AC126;2N2429
2SB76	AC126;2N2929
2SB77	AC128;2N2431
2SB78	AC128;2N2431
2SB79	AC128;2N2431
2SB80	AD149;2N2836
2SB83	AD149;2N2836
2SB89	AC128;2N2431
2SB90	AC126;2N2429
2SB91	AC128;2N2431
2SB92	AC128;2N2431
2SB94	AC128;2N2431
2SB95	AC128;2N2431
2SB96	AC128;2N2431
2SB97	AC126;2N2429
2SB98	AC128;2N2431

Type to be replaced	*Application equivalent*
2SB99	AC128;2N2431
2SB100	AC126;2N2429
2SB101	AC128;2N2431
2SB102	AC128;2N2431
2SB103	AC128;2N2431
2SB104	AC128;2N2431
2SB105	AD149;2N2836
2SB106	AD149;2N2836
2SB108	AD149;2N2836
2SB109	AD149;2N2836
2SB110	AC126;2N2429
2SB111	AC126;2N2429
2SB112	AC126;2N2429
2SB113	AC126;2N2429
2SB114	AC128;2N2431
2SB115	AC128;2N2431
2SB116	AC128;2N2431
2SB117	AC128;2N2431
2SB118	AD149;2N2836
2SB119	AD149;2N2836
2SB120	AC126;2N2429
2SB131	AD149;2N2836
2SB134	AC126;2N2429
2SB135	AC126;2N2429
2SB136	AC128;2N2431
2SB137	AD149;2N2836
2SB140	AD149;2N2836
2SB142	AD149;2N2836
2SB143	AD149;2N2836
2SB144	AD149;2N2836
2SB145	AD149;2N2836
2SB146	AD149;2N2836
2SB153	AC126;2N2429
2SB154	AC128;2N2431
2SB155	AC128;2N2431
2SB156	AC128;2N2431
2SB157	AC126;2N2429; [1])OC58
2SB158	AC126;2N2429; [1])OC58
2SB159	AC126;2N2429; [1])OC59
2SB160	AC126;2N2429; [1])OC60
2SB161	AC128;2N2431
2SB162	AC128;2N2431
2SB163	AC128;2N2431
2SB164	AC128;2N2431
2SB165	AC128;2N2431
2SB166	AC128;2N2431
2SB168	AC126;2N2429
2SB169	AC128;2N2431
2SB170	AC128;2N2431
2SB171	AC128;2N2431
2SB172	AC128;2N2431
2SB173	AC126;2N2429
2SB174	AC128;2N2431
2SB175	AC128;2N2431
2SB176	AC128;2N2431
2SB178	AC128;2N2431
2SB179	AC128;2N2431
2SB180	AD149;2N2836
2SB182	AF185
2SB183	AC126;2N2429
2SB184	AC128;2N2451
2SB185	AC126;AC128
2SB186,2SB187,	AC126;2N2429
2SB188	AC128;2N2431
2SB189	AC128;2N2431
2SB190	AC128;2N2431
2SB192	AC128;2N2431
2SB193	AC128;2N2431
2SB194	AC128;2N2431
2SB195	AC128;2N2431
2SB196	AC128;2N2431

[1]) *No type of the replacement series*

Type to be replaced	Application equivalent	Type to be replaced	Application equivalent
2SB197	AC128;2N2431	2SD63	AC127;2N2430
2SB198	AC128;2N2431	2SD64	AC127;2N2430
2SB199	AC128;2N2431	2SD65	AC127;2N2430
2SB200	AC128;2N2431	2SD66	AC127;2N2430
2SB202	AC128;2N2431	2SD75	AC127;2N2430
2SB219	AC128;2N2431	2SD77	AC127;2N2430
2SB220	AC128;2N2431	2SD178	AC127;2N2430
2SB221	AC128;2N2431	2T11	AC128;2N2431
2SB222	AC128;2N2431	2T12	AC128;2N2431
2SB223	AC128;2N2431	2T13	AC128;2N2431
2SB254	AC128;2N2431	2T14	AC128;2N2431
2SB255	AC128;2N2431	2T15	AC128;2N2431
2SB261	AC126;2N2429	2T16	AC128;2N2431
2SB262	AC126;2N2429		
2SB263	AC128;2N2431	2T17	AC128;2N2431
2SB264	AC126;2N2429	2T20	AC128;2N2431
2SB276	[1])AU103	2T21	AC128;2N2431
2SB278	[1])BCZ10	2T22	AC128;2N2431
2SB279	[1])BCZ11		
2SB280	[1])BCY10	2T23	AC128;2N2431
2SB281	[1])BCY11	2T24	AC128;2N2431
2SB282	[1])ASZ15	2T25	AC128;2N2431
2SB283	[1])ASZ16	2T26	AC128;2N2431
2SB284	[1])ASZ17	2T51	AC127;2N2430
2SB285	[1])ASZ18	2T61	AC127;2N2430
2SB345	AC126;2N2429	2T62	AC127;2N2430
2SB346	AC126;2N2429	2T63	AC127;2N2430
2SB347	AC126;2N2429		
2SB348	AC126;2N2429	2T64	AC127;2N2430
2SC183	BF115	2T64R	AC127;2N2430
2SC184	BF115	2T65	AC127;2N2430
2SC185	BF115	2T65R	AC127;2N2430
2SD33	AC127;2N2430	2T66	AC127;2N2430
2SD37	AC127;2N2430	2T66R	AC127;2N2430
2SD61	AC127;2N2430	2T67	AC127;2N2430
2SD62	AC127;2N2430	2T69	AC127;2N2430

[1]) *No type of the replacement series*

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Type to be replaced	*Application equivalent*
2T85	AC127;2N2430
2T86	AC127;2N2430
2T89	AC127;2N2430
2T201	AF178;2N2495; AF185
2T203	AF178;2N2495; AF185
2T204,2T204A	AF178;2N2495
2T205/A	AF178;2N2495
2T311	AC128;2N2431
2T312	AC128;2N2431
2T313	AC128;2N2431
2T314	AC128;2N2431
2T315	AC128;2N2431
2T321	AC128;2N2431
2T322	AC128;2N2431
2T323	AC128;2N2431
2T324	AC128;2N2431
2T508	BY100
2T681	AC127;2N2430
2T2001	AF178;2N2495
2T3030	AD149;2N2836
2T3031	AD149;2N2836
2T3032	AD149;2N2836
2T3033	AD149;2N2836
2T3041	AD149;2N2836
2T3042	AD149;2N2836
2T3043	AD149;2N2836
2X103G	[1])OA90;IN87A
2X104G	[1])OA90;IN87A
2X106G	OA95
3MC	AF185
3N25/501	AF185
3NU40	AC126;2N2429
3NU70	AC126;2N2429

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
3T508	BY100
4/10	OA95
4/12	OA95
4JD1A17	AC128;2N2431
4JX1E850	AC127;2N2430
4JX2A601	AC127;2N2430
4JX2A816	AC127;2N2430
4NU40	AC126;2N2429
4NU70	AC126;2N2429
4T508	BY100
5/2	[1])OA90;[1])1N87A
5/4	AA119
5/5	AA119
5/6	OA95
5/61	OA95
5/62	OA95
5/105	2-AA119
5A8	BY100
5C	[1])OAP12
5E8	BY100
5J/180	AA119
5MA8	BY100
5P	[1])OAP12
6MC	AF185
6XT2	AC126;2N2429
8D	AF185
8E	AF185
8F	AF185
8G7	BY100
10A	[1])OAP12
10P	[1])OAP12
11A	[1])OAP12
12J	BY114

Type to be replaced	*Application equivalent*
12H01	AF185
12MC	AF185
13J2	BY114
13P1	[1])OA90
14J2	BY114
15J2	BY114
15Z4	[1])OAZ212
16J2	BY100
16P2	BY100
17P1	OA95
17P2	[1])BA100
17Z4	[1])OAZ213
18P2	[1])BA100
19P1	[1])OA90
20MC	AF185
25T1	AF185
26T1	AF185
31T1	AF185
32T1	AF185
33T1	AF185
34-6000-3	AF185
34-6000-16	AC128;2N2431
34-6000-18	AF185
34-6000-19	AF185
34-6000-28	AC128;2N2431
34-6000-33	AC128;2N2431
34-6008	AC128;2N2431
34-6009	AC128;2N2431
34T1	AF185
35T1	AF185
36T1	AF185
37T1	AF185
40J2	BY100
40P1	AA119
41J2	BY100
42J2	BY114
43P1	OA90
44P1	AA119

Type to be replaced	*Application equivalent*
44T1	AC128;2N2431
45J2	[1])BA100
46P1	AA119
46P2	[1])BA100
47P2	[1])OA202
48P2	[1])BA100
50D8	BY100
50E8	BY100
50J2	BY100
68ASY	[1])ASZ21
75D8	BY100
75E8	BY100
80AS	BY100
80H	BY100
82T1	AD149;2N2836
99AT6	AC128;2N2431
99B5	AC128;2N2431
99BA6	AF185
99BE6	AF185
99L6	AC127;2N2430
99SQ7	AC127;2N2430
0100	[1])OA202
0101	[1])OA202
0110	[1])OA202
0111	[1])OA202
110Z4	[1])BZZ20
121-19	AC128;2N2431
121-27	AC128;2N2431
121-34	AC128;2N2431
121-44	AF185
121-45	AF185
121-46	AC128;2N2431
121-47	AC128;2N2431
121-48	AF185
121-49	AF185
121-51	AF185
121-52	AC128;2N2431
121-53	AF185
121-54	AF185

[1]) *No type of the replacement series*

Type to be replaced	Application equivalent
121-61	AC128;2N2431
121-62	AF185
121-63	AF185
121-64	AC128;2N2431
121-65	AF185
121-66	AF185
121-67	AF185
121-68	AC128;2N2431
121-69	AC128;2N2431
121-72	AF185
121-73	AF185
121-74	AF185
121-75	AF185
121-76	AF185
121-78	AF185
121-83	AF185
121-91	AF185
121-92	AF185
121-93	AF185
121-95	AC128;2N2431
121-96	AC128;2N2431
121-100	AF185
121-102	AF185
121-103	AF185
121-104	AF185
121-105	AF185
121-106	AC128;2N2431
121-107	AC128;2N2431
121-120	AC128;2N2431
121-128	AF185
121-161	AF185
121-162	AF185
121-164	AC128;2N2431
121-179	AF185
121-180	AF185
121-190	AC128;2N2431

Type to be replaced	Application equivalent
121-191	AC128;2N2431
121-192	AC128;2N2431
121-1032	AC128;2N2431
121-1033	AC128;2N2431
121-1034	AC128;2N2431
121-1035	AC128;2N2431
121-1036	AC128;2N2431
125T1	AC128;2N2431
126T1	AC128;2N2431
127T1	AC128;2N2431
153T1	AF185
154T1	AF185
155T1	AF185
156T1	AF185
157T1	AF178;2N2495
159T1	AF185
160T1	AF178;2N2495
161T1	AF178;2N2495
162T	AF178;2N2495
222	AF185
225	AF185
228	AF185
234	AF185
310	AC126;2N2429
350	AC128;2N2431
352	AC128;2N2431
353	AC128
359S	BY100
421T1	AC128;2N2431
486T1	AC126;2N2429
501T1	AF178;2N2495
503T1	AF178;2N2495
570C	[1])OC58
641T1	AC128;2N2431
665T1	AC126;2N2429

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
687T1	AC126;2N2429
688T1	AC126;2N2429
689T1	AC126;2N2429
690T1	AC126;2N2429
691T1	AC126;2N2429
692T1	AC126;2N2429
760	AF185
761	AF185
941T1	AC126;2N2429
965T1	AC126;2N2429
987T1	AC128;2N2431
988T1	AC128;2N2431
989T1	AC126;2N2429
990T1	AC126;2N2429
991T1	AC126;2N2429
992T1	AC126;2N2429
1032	AC128;2N2431
1033	AC128;2N2431
1034	AC128;2N2431
1035	AC128;2N2431
1036	AC128;2N2431
1320	AC128;2N2431
1330	AC128;2N2431
1340	AC128;2N2431
1350	AC128;2N2431
1360	AC128;2N2431
1390	AF185
1400	AF185
1410	AF185
3435	AF185
3504	AC126;2N2429
6100-35	AC128;2N2431
09390	AC128;2N2431
09391	AC128;2N2431
12119	AC128;2N2431
12152	AC128;2N2431
12153	AF185
12161	AC128;2N2431
12161	AC128;2N2431
12163	AF185
12165	AF185
12166	AF185
12173	AF185
12178	AF185
40809	1)40809
40812	1)40812
40813	1)40813
814044A	AC128;2N2431
815020	AF185
815021	AF185
815023	AC128;2N2431
815024	AC128;2N2431
815025	AF185
815025A	AF185
815027	AF185
815028	AF185
815029	AC128;2N2431
815030	AC128;2N2431
815031	AC128;2N2431
815034	AC128;2N2431
815036	AF185
815037	AF185
815038	AC128;2N2431
815041	AF185
815043	AF185
815068	AC128;2N2431
815070A	AC128;2N2431
815075	AC127;2N2430
815076	AC127;2N2430
815103	AF185
815104	AC128;2N2431
815105	AF185
825065	AF185

1) *No type of the replacement series*

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Type to be replaced	*Application equivalent*
A2K4	BY100
A2K5	BY100
A2K9	BY100
AA111	AA119
AA112	AA119
AA116	[1])OA90;[1])1N87A
AA117	OA95;1N618
AA118	OA95;1N618
AA119	AA119
AA132	OA95;1N618
AAY11	[1])AAY11
AAY21	[1])AAY21
AAY30	[1])AAY30
AAY32	[1])AAY32
AAY33	[1])AAY33
*AAZ12	[1])BAY39
*AAZ13	[1])BAY38
AAZ15	[1])AAZ15;1N3484
AAZ17	[1])AAZ17;1N3121
AAZ18	[1])AZZ18;1N3122
AC105	AC128;2N2431
AC106	AC128;2N2431
*AC107	[1])AC172;BC109
AC108	AC126;2N2429
AC109	AC126;2N2429
AC110	AC126;2N2429
AC116	AC126;2N2429
AC117	AC128;2N2431
AC120	AC128;2N2431
AC121	AC128;2N2431
AC122	AC126;2N2429
AC123	AC126;2N2429
AC124	AC128;2N2431
AC125	[1])AC125;[1])2N2428; AC126;2N2429
AC126	AC126;2N2429

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
AC127	AC127;2N2430
AC127/128	[1])AC127/128
AC127/132	[1])AC127/132;[1])2N2707
AC128	AC128;2N2431
AC128/176	[1])AC128/176
AC130	[1])AC130
AC131	AC128;2N2431
AC132	[1])AC132;AC128
AC150	AC126;2N2429
AC151	AC126;2N2429
AC152	AC128;2N2431
AC153	AC128;2N2431
AC160	[1])AC172;AC127
AC162;AC163	AC126;2N2429
AC164	[1])AC164;[1])OC59
AC170;AC171	AC126;2N2429
AC172	[1])AC172;AC127
AC175	AC127;2N2707
AC176	[1])AC176
AC187/188	[1])AC187/188
AD139	[1])AD139;AD149
*AD140	AD149;2N2836
AD149	AD149;2N2836
AD149/01	AD149;2N2836
AD149/02	AD149;2N2836
AD150	AD149;2N2836
AD152	AD149;2N2836
AD161	[1])AD161
AD161/162	[1])AD161/162
AD162	[1])AD162
ADY26	[1])ADY26
ADZ11	[1])ADZ11
ADZ12	[1])ADZ12
AF101	AF185
AF102	[1])AF102;[1])2N2494; AF178;2N2495
AF105	AF185
AF106	[1])AF178;[1])AF186

** Obsolete type with successor type*

Type to be replaced	*Application equivalent*
AF110	[1])AF181
AF111	AF185
AF112	AF185
AF113	AF178;2N2495
AF114	AF178;2N2495
AF115	AF185
AF116	AF185
AF117	AF185
AF118	[1])AF118;[1])2N2207
AF119	AF185
AF120	AF185;
AF121	[1])AF121;[1])2N3588;
	AF178;2N2495
AF122	AF178;2N2495
AF124	AF178;2N2495
	[1])AF124;[1])2N990
AF125	AF185
	[1])AF125;[1])2N991
AF126	AF185;
	[1])AF126;[1])2N992
AF127	AF185;
	[1])AF127;[1])2N993
AF127/01	AF185;AF127/01
AF129	AF178;AF185
AF130	AF178;2N2495
AF131	AF185
AF132	AF185
AF133	AF185
AF134	AF178;2N2495
AF135	AF185
AF136	AF185
AF137	AF185
AF138	[1])AF179
AF139	[1])AF186
AF178	AF178;2N2495
AF179	[1])AF179;[1])2N2654
AF180	[1])AF180;[1])2N3074
AF181	[1])AF181;[1])2N3075

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
AF185	AF185
AF186	[1])AF186
AFY19	[1])AFY19;2N2786
AFY40	[1])AFY40
AFZ12	[1])AFZ12;2N2496
ASY26	[1])ASY26
ASY27	[1])ASY27
ASY28	[1])ASY28
ASY29	[1])ASY29
*ASY31	[1])ASY26
*ASY32	[1])ASY27
ASY73	[1])ASY73
ASY74	[1])ASY74
ASY75	[1])ASY75
ASY76	[1])ASY76
ASY77	[1])ASY77
ASY80	[1])ASY80
ASZ15	[1])ASZ15;[1])2N1666
ASZ16	[1])ASZ16;[1])2N1667
ASZ17	[1])ASZ17;2N1668
ASZ18	[1])ASZ18;2N1669
ASZ20	[1])ASZ20
ASZ21	[1])ASZ21;2N2717
ASZ23	[1])ASZ23
*AU101	[1])AU103
*AU102	AC128;2N2431
AU103	[1])AU103
AU104	[1])AU104
AUY10	)AUY10
B2K5	BY100
B2K9	BY100
BA100	[1])BA100
BA102	[1])BA102;[1])1N3182
BA114	[1])BA114
BAY32	[1])BAY32
BAY33	[1])BAY33

*) *Obsolete type with successor type*

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Type to be replaced	*Application equivalent*
BAY38	1)BAY38
BAY39	1)BAY39
BAY66	1)BAY66
BAY96	1)BAY96
BAY145	1)BAY145
BC107	1)BC107
BC108	1)BC108
BC109	1)BC109
BC112	1)BC112
BCY10	1)BCY10
BCY11	1)BCY11
BCY12	1)BCY12
BCY30	1)BCY30
BCY31	1)BCY31
BCY32	1)BCY32
BCY33	1)BCY33
BCY34	1)BCY34
BCY38	1)BCY38
BCY39	1)BCY39
BCY40	1)BCY40
BCY54	1)BCY54
BCY55	1)BCY55
BCY56	1)BCY56;1)2N929
BCY57	1)BCY57;1)2N930
BCZ10	1)BCZ10
BCZ11	1)BCZ11;2N2617
BCZ12	1)BCZ12
*BCZ13	1)BCY33
*BCZ14	1)BCY34
BDY10	1)BDY10
BDY11	1)BDY11
BF109	1)BF109
BF115	1)BF115
BF167	1)BF167
BF168	1)BF168
BF172	1)BF172
BF184	1)BF184
BF185	1)BF185

1) *No type of the replacement series*

Type to be replaced	*Application equivalent*
BFY10	1)BFY10
BFY11	1)BFY11
BFY44	1)BFY44
BFY50	1)BFY50
BFY51	1)BFY51
BFY52	1)BFY52
BFY55	1)BFY55;2N2297
BFY67	1)BFY67;2N1613
BFY68	1)BFY68;2N1711
BFY70	1)BFY70
BFY90	1)BFY90
BFZ10	1)BCZ11
BLY14	1)BLY14
BLY17	1)BLY17
BPY10	1)BPY10
BR48	BY100
BSX19	1)BSX19
BSX20	1)BSX20
BSX21	1)BSX21
BSX44	1)BSX44
BSY10	1)BSY10
BSY11	1)BSY11
BSY38	1)BSY38
BSY39	1)BSY39
BSY40	1)BSY40
BSY41	1)BSY41
BSY44	1)2N1613
BSY51	1)BSY51;2N697
BSY52	1)BSY52;2N1420
BSY53	1)2N1613
BSY54	1)2N1711
BTX12/100R	1)BTX12/100R
BTX12/200R	1)BTX12/200R
BTX12/300R	1)BTX12/300R
BTX12/400R	1)BTX12/400R
BTX12/500R	1)BTX12/500R
BTX12/600R	1)BTX12/600R
BTX13/100R	1)BTX13/100R
BTX13/200R	1)BTX13/200R

* *Obsolete type with successor type*

Type to be replaced	*Application equivalent*
BTX13/300R	[1])BTX13/300R
BTX13/400R	[1])BTX13/400R
BTX13/500R	[1])BTX13/500R
BTX13/600R	[1])BTX13/600R
BTX35/500R	[1])BTX35/500R
BTX35/600R	[1])BTX35/600R
BTX35/700R	[1])BTX35/700R
BTX35/800R	[1])BTX35/800R
BTX36/500R	[1])BTX36/500R
BTX36/600R	[1])BTX36/600R
BTX36/700R	[1])BTX36/700R
BTX36/800R	[1])BTX36/800R
BTX37/500R	[1])BTX37/500R
BTX37/600R	[1])BTX37/600R
BTX37/700R	[1])BTX37/700R
BTX37/800R	[1])BTX37/800R
BTX38/500R	[1])BTX38/500R
BTX38/600R	[1])BTX38/600R
BTX38/700R	[1])BTX38/700R
BTX38/800R	[1])BTX38/800R
BTY79/100R	[1])BTY79/100R
BTY79/200R	[1])BTY79/200R
BTY79/300R	[1])BTY79/300R
BTY79/400R	[1])BTY400R
BTY80	[1])BTY80
BTY81	[1])BTY81
*BTY84	[1])BTY87/100R
*BTY85	[1])BTY87/200R
*BTY86	[1])BTY87/300R
BTY87/100R	[1])BTY87/100R
BTY87/200R	[1])BTY87/200R
BTY87/300R	[1])BTY87/300R
BTY87/400R	[1])BTY87/400R
BTY87/500R	[1])BTY87/500R

Type to be replaced	*Application equivalent*
BTY87/600R	[1])BTY87/600R
BTY87/700R	[1])BTY87/700R
BTY87/800R	[1])BTY87/800R
*BTY88	[1])BTY91/100R
*BTY89	[1])BTY91/200R
*BTY90	[1])BTY91/300R
BTY91/100R	[1])BTY91/100R
BTY91/200R	[1])BTY91/200R
BTY91/300R	[1])BTY91/300R
BTY91/400R	[1])BTY91/400R
BTY91/500R	[1])BTY91/500R
BTY91/600R	[1])BTY91/600R
BTY91/700R	[1])BTY91/700R
BTY91/800R	[1])BTY91/800R
BTY95/100R	[1])BTY95/100R
BTY95/200R	[1])BTY95/200R
BTY95/300R	[1])BTY95/300R
BTY95/400R	[1])BTY95/400R
BTY95/500R	[1])BTY95/500R
BTY95/600R	[1])BTY95/600R
BTY95/700R	[1])BTY95/700R
BTY95/800R	[1])BTY95/800R
BTY99/100R	[1])BTY99/100R
BTY99/200R	[1])BTY99/200R
BTY99/300R	[1])BTY99/300R
BTY99/400R	[1])BTY99/400R
BTY99/500R	[1])BTY99/500R
BTY99/600R	[1])BTY99/600R
BTY99/700R	[1])BTY99/700R
BTY99/800R	[1])BTY99/800R
BY100	BY100
BY114	BY114
BY118	[1])BY118
BY122	[1])BY122
BY123	[1])BY123
BY127	[1])BY127
BYX10	[1])BYX10

[1]) *No type of the replacement series*

** Obsolete type with successor type*

Type to be replaced	*Application equivalent*
BYX11	1)BYX11
BYX12	1)BYX12
BYX13/400	1)BYX13/400
BYX13/400R	1)BYX13/400R
BYX13/600	1)BYX13/600
BYX13/600R	1)BYX13/600R
BYX13/800	1)BYX13/800
BYX13/800R	1)BYX13/800R
BYX13/1000	1)BYX13/1000
BYX13/1000R	1)BYX13/1000R
BYX13/1200	1)BYX13/1200
BYX13/1200R	1)BYX13/1200R
BYX13/1600	1)BYX13/1600
BYX13/1600R	1)BYX13/1600R
BYX14/400	1)BYX14/400
BYX14/400R	1)BYX14/400R
BYX14/600	1)BYX14/600
BYX14/600R	1)BYX14/600R
BYX14/800	1)BYX14/800
BYX14/800R	1)BYX14/800R
BYX14/1000	1)BYX14/1000
BYX14/1000R	1)BYX14/1000R
BYX14/1200	1)BYX14/1200
BYX14/1200R	1)BYX14/1200R
BYX15	1)BYX15
BYX16	1)BYX16
BYX20/200	1)BYX20/200
BYX20/200R	1)BYX20/200R
BYX23/400	1)BYX23/400
BYX23/600	1)BYX23/600
BYX23/800	1)BYX23/800
BYX23/1000	1)BYX23/1000
BYX25/600	1)BYX25/600
BYX25/600R	1)BYX25/600R
BYX25/800	1)BYZ25/800
BYX25/800R	1)BYX25/800R
BYX27/400	1)BYX27/400
BYX27/1600	1)BYX27/600

1) *No type of the replacement series*

Type to be replaced	*Application equivalent*
BYX27/800	1)BYX27/800
BYX27/800R	1)BYX27/800R
BYX30/200	1)BYX30/200
BYX30/200R	1)BYX30/200R
BYX30/300	1)BYX30/300
BYX30/300R	1)BYX30/300R
BYX30/400	1)BYX30/400
BYX30/400R	1)BYX30/400R
BYX30/500	1)BYX30/500
BYX30/500R	1)BYX30/500R
BYY10	1)BYY10
BYY15	1)BYY15
BYY16	1)BYY16
*BYY20	1)BYX20/200R
*BYY21	1)BYX20/200
BYY22	1)BYY22
BYY23	1)BYY23
BYY24	1)BYY24
BYY25	1)BYY25
BYY67	1)BYY67
BYY68	1)BYY68
BYY73	1)BYY73
BYY74	1)BYY74
BYY75	1)BYY75
BYY76	1)BYY76
BYY77	1)BYY77
BYY78	1)BYY78
BYZ10	1)BYZ10
BYZ11	1)BYZ11
BYZ12	1)BYZ12
BYZ13	1)BYZ13
BYZ14	1)BYZ14
BYZ15	1)BYZ15
BYZ16	1)BYZ16
BYZ17	1)BYZ17
BYZ18	1)BYZ18
BYZ19	1)BYZ19

** Obsolete type with successor type*

Type to be replaced	*Application equivalent*
BZ100	[1])BZ100;[1])1N4095
BZY56	[1])BZY56
BZY57	[1])BZY57
BZY58	[1])BZY58
BZY59	[1])BZY59
BZY60	[1])BZY60
BZY61	[1])BZY61
BZY62	[1])BZY62
BZY63	[1])BZY63
BZY64	[1])BZY64
BZY65	[1])BZY65
BZY66	[1])BZY66
BZY67	[1])BZY67
BZY68	[1])BZY68
BZY69	[1])BZY69
BZY74	[1])BZY74
BZY75	[1])BZY75
BZY76	[1])BZY76
BZY88/C3V3	[1])BZY88/C3V3
BZY88/C3V6	[1])BZY88/3CV6
BZY88/C3V9	[1])BZY88/C3V9
BZY88/C4V3	[1])BZY88/C4V3
BZY88/C4V7	[1])BZY88/C4V7
BZY88/C5V1	[1])BZY88/C5V1
BZY88/C5V6	[1])BZY88/C5V6
BZY88/C6V2	[1])BZY88/C6V2
BZY88/C6V8	[1])BZY88/C6V8
BZY88/C7V5	[1])BZY88/C7V5
BZY88/C8V2	[1])BZY88/C8V2
BZY88/C9V1	[1])BZY88/C9V1
BZY91/C10	[1])BZY91/C10
BZY91/C11	[1])BZY91/C11
BZY91/C12	[1])BZY91/C12
BZY91/C13	[1])BZY91/C13
BZY91/C15	[1])BZY91/C15
BZY91/C16	[1])BZY91/C16
BZY91/C18	[1])BZY91/C18
BZY91/C20	[1])BZY91/C20
BZY91/C22	[1])BZY91/C22
BZY91/C24	[1])BZY91/C24
BZY91/C27	[1])BZY91/C27
BZY91/C30	[1])BZY91/C30
BZY91/C33	[1])BZY91/C33
BZY91/C36	[1])BZY91/C36
BZY91/C39	[1])BZY91/C39
BZY91/C43	[1])BZY91/C43
BZY91/C47	[1])BZY91/C47
BZY91/C51	[1])BZY91/C51
BZY91/C56	[1])BZY91/C56
BZY91/C62	[1])BZY91(C62
BZY91/C68	[1])BZY91/C68
BZY91/C75	[1])BZY91/C75
BZY94/C10	[1])BCY94/C10
BZY94/C11	[1])BCY94/C11
BZY94/C12	[1])BCY94/C12
BZY94/C13	[1])BCY94/C13
BZY94/C15	[1])BCY94/C15
BZY94/C16	[1])BCY94/C16
BZY94/C18	[1])BCY94/C18
BZY94/C20	[1])BCY94/C20
BZY94/C22	[1])BCY94/C22
BZY94/C24	[1])BZY94/C24
BZY94/C27	[1])BZY94/C27
BZY94/C30	[1])BZY94/C30
BZY94/C33	[1])BZY94/C33
BZY94/C36	[1])BZY94/C36
BZY94/C39	[1])BZY94/C39
BZY94/C43	[1])BZY94/C43
BZY94/C47	[1])BZY94/C47
BZY94/C51	[1])BZY94/C51
BZY94/C56	[1])BZY94/C56
BZY94/C62	[1])BZY94/C62
BZY94/C68	[1])BZY94/C68
BZY94/C75	[1])BZY94/C75
BZY95/C9V1	[1])BZY95/C9V1
BZY95/C10	[1])BZY95/C10
BZY95/C11	[1])BZY95/C11
BZY95/C12	[1])BZY95/C12

[1]) *No type of the replacement series*

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
BZY95/C13	1)BZY95/C13
BZY95/C15	1)BZY95/C15
BZY95/C16	1)BZY95/C16
BZY95/C18	1)BZY95/C18
BZY95/C20	1)BZY95/C20
BZY95/C22	1)BZY95/C22
BZY95/C24	1)BZY95/C24
BZY95/C27	1)BZY95/C27
BZY95/C30	1)BZY95/C30
BZY95/C33	1)BZY95/C33
BZY95/C36	1)BZY95/C36
BZY95/C39	1)BZY95/C39
BZY95/C43	1)BZY95/C43
BZY95/C47	1)BZY95/C47
BZY95/C51	1)BZY95/C51
BZY95/C56	1)BZY95/C56
BZY95/C62	1)BZY95/C62
BZY96/C5V6	1)BZY96/C5V6
BZY96/C6V2	1)BZY96/C6V2
BZY96/C6V8	1)BZY96/C6V8
BZY96/C7V5	1)BZY96/C7V5
BZY96/C8V2	1)BZY96/C8V2
BZZ10	1)BZZ10
BZZ11	1)BZZ11
BZZ12	1)BZZ12
BZZ13	1)BZZ13
BZZ14	1)BZZ14
BZZ15	1)BZZ15
BZZ16	1)BZZ16
BZZ17	1)BZZ17
BZZ18	1)BZZ18
BZZ19	1)BZZ19
BZZ20	1)BZZ20
BZZ21	1)BZZ21
BZZ22	1)BZZ22
BZZ23	1)BZZ23
BZZ24	1)BZZ24
BZZ25	1)BZZ25
BZZ26	1)BZZ26
BZZ27	1)BZZ27
BZZ28	1)BZZ28
BZZ29	1)BZZ29
CER72	BY100
CER72D	BY100
CER720	BY100
CG1C	OA95
CG1E	OA95
CG12-E	1)OA90
CK705	OA95
CK706A	1)OA90
CK707	OA95
CK708	OA95
CK713A	OA95
CK721	AC126;2N2429
CK722	AC126;2N2429
CK724	AC126;2N2429
CK725	AC126;2N2429
CK727	AC126;2N2429
CK751	AC128;2N2431
CK759	AF185
CK760	AF185
CK761	AF185
CK762	AF185
CK766	AF185
CK766A	AF185
CK870	AC126;2N2429
CK871	AC126;2N2429
CK872	AC128;2N2431
CK878	AC128;2N2431
CK882	AC128;2N2431
CK888	AC128;2N2431
CK896/A	1)OC58
CK897/A	1)OC58
CK898/A	1)OC59

1) *No type of the replacement series*

Type to be replaced	*Application equivalent*	*Type to be replaced*	*Application equivalent*
CODI 538	BY100	DS44	AC127;2N2430
CODI 618	BY100	DS46	AC126;2N2429
CTP1004	AD149;2N2836	DS60	OA95;1N618
CTP1005	AD149;2N2836	DS61	OA95;1N618
CTP1032	AC126;2N2429	DS61A	OA95;1N618
CTP1033	AC126;2N2429	DS62	OA95;1N618
CTP1034	AC126;2N2429	DS501	AD149;2N2836
CTP1035	AC126;2N2429	DS604	OA95;1N618
CTP1036	AC126;2N2429	DS611	OA95;1N618
CTP1104	AD149;2N2836	DS621	OA95;1N618
CTP1108	AD149;2N2836	EA080	BY100
CTP1109	AD149;2N2836	ED2911	BY100
CTP1320	AC126;2N2429	ED2923	BY100
CTP1330	AC126;2N2429	ER81	BY100
CTP1340	AC126;2N2429	ER308	BY100
CTP1350	AC126;2N2429	ERD800	BY100
CTP1360	AC126;2N2429	F8	BY100
CTP1390	AF185	FST1/4	BY100
CTP1400	AF185	G2,5/9	OA95;1N618
CTP1410	AF185	G4/10	OA95;1N618
CTP1514	AD149;2N2836	G4/12	OA95;1N618
CV nrs	see page 444	G5/2	[1])OA90;[1])1N87A
D85C	BY100	G5/4	[1])OA90;[1])1N87A
D105C	BY100	G5/5	AA119
DD058	BY100	G5/6	OA95;1N618
DD268	BY100	G5/61	OA95;1N618
DI 48S	BY100	G5/103	AA119
DI 58S	BY100	G5/104	AA119
DI 65	BY100	G5/105	AA119
DP6	OA95;1N618		
DP6C	OA95;1N618	G5/161	OA95;1N618
DR126	[1])OC58	G26	OA95;1N618
DR128	[1])OC58	G48	OA95;1N618
DR313	OA95;1N618	G63	OA95;1N618
DR800	BY100	G67	OA95;1N618
DS25	AF185	G68	OA95;1N618
DS26	AC128;2N2431	G69	OA95;1N618
DS34	AF178;2N2495	G1050	BY100
DS41	AF178;2N2495	GA1	OA95;1N618

[1]) *No type of the replacement series*

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
GA52829	AC126;2N2429
GD1E	AA119
GD1P	2-AA119
GD1Q	OA95;1N618
GD2E	OA95;1N618
GD2Q	OA95;1N618
GD3	[1])OA90;1N87A
GD3E	OA95;1N618
GD4E	AA119
GD4S	AA119
GD5	AA119
GD5E	AA119
GD6	[1])OA90;[1])1N87A
GD6E	AA119
GD8	OA95;1N618
GD8E	[1])OA90;[1])1N87A
GD11E	[1])OA90;[1])1N87A
GD12E	[1])OA90;[1])1N87A
GD13E	[1])OA90;[1])1N87A
GD71E	AA119
GD71E2	[1])OA90;[1])1N87A
GD71E3	[1])OA90;[1])1N87A
GD71E4	[1])OA90;[1])1N87A
GD71E5	[1])OA90;[1])1N87A
GD72E/3	AA119
GD72E/4	AA119
GD72E/5	OA95;1N618
GD73E/3	AA119
GD73E/4	AA119
GD73E/5	AA119
GD74E/3	OA95;1N618
GD74E/4	OA95;1N618
GD74E/5	OA95;1N618
GET3	AC126;2N2429
GET4	AC126;2N2429
GET102	AC126;2N2429
GET103	AC126;2N2429
GET104	AC126;2N2429
GET106	AC126;2N2429
GET114	AC128;2N2431
GET873	AF185
GET874	AF185
GET883	AF185
GET884	AF185
GEX34	AA119
GEX36	[1])OA90;[1])1N87A
GEX37	[1])OA90;[1])1N87A
GEX44	OA95;1N618
GEX45/1	OA95;1N618
GEX45/2	OA95;1N618
GEX54	OA95;1N618
GFT20	AC126;2N2429
GFT21	AC126;2N2429
GFT25	AC126;2N2429
GFT32	AC126;2N2429; AC128;2N2431
GFT41	AF178;2N2495
GFT42A	AF178;2N2495
GFT42B	AF185
GFT43/A/B	AF185
GFT44	AF185
GFT44/15E	AF185
GFT45	AF185
GFT2006/30	AD149;2N2836
GFT3008/20	AD149;2N2836
GFT3008/40	AD149;2N2836
GFT3408/20	AD149;2N2836
GFT3408/40	AD149;2N2836
GFT4012/30	AD149;2N2836
GFT8024	AD149;2N2836
GSD2	OA95;1N618
GSD4/10	OA95;1N618
GSD4/12	OA95;1N618
GSD5/2	[1])OA90;[1])1N87A
GSD5/4	AA119
GSD5/6	OA95;1N618

[1]) *No type of the replacement series*

Type to be replaced	Application equivalent
GSD5/61	OA95;1N618
GSD5/62	OA95;1N618
GSD5/103	2-AA119
GSD5/104	2-AA119
GSD5/105	2-AA119
GSD5/106	2-AA119
GSD5/161	2-AA119
GT3	AC126;2N2429
GT4A	AC128;2N2431
GT11	AF185
GT12	AF185
GT13	AF185
GT14	AC128;2N2431
GT14H	1)OC58
GT20	AC128;2N2431
GT20H	1)OC58
GT31	AC126;2N2429
GT32	AC128;2N2431
GT33	AC128;2N2431
GT34	AC126;2N2429
GT38	AC126;2N2429
GT41	AF185
GT42	AF185
GT43	AF185
GT74	AC126;2N2429
GT81	AC126;2N2429; AC128;2N2431
GT81H	1)OC58;AC126;2N2429
GT81HS	AC126;2N2429
GT81R	AC128;2N2431
GT83	AC126;2N2429
GT87	AC126;2N2429
GT109	AC128;2N2431
GT109R	AC128;2N2431
GT122	AC126;2N2429
GT161	AF185
GT222	AC126;2N2429
GT310	AC128;2N2431
GT760	AF185

Type to be replaced	Application equivalent
GT760R	AF185
GT761	AF185
GT761R	AF185
GT762	AF185
H2	AD149;2N2836
H3	AD149;2N2836
H4	AD149;2N2836
H8DEF	AF185
HA1	AC126;2N2429
HA2	AC126;2N2429
HA3	AC126;2N2429
HA8	1)OC58/59/60
HA9	1)OC58/59/60
HA10	1)OC58/59/60
HC1	AC126;2N2429
HD197	AC128;2N2431
HD2053	OA95;1N618
HD2057	OA95;1N618
HD2060	OA95;1N618
HD2063	OA95;1N618
HF1	AF185
HF2	AF185
HJ15	AC126;2N2429
HJ17	AC128;2N2431
HJ17D	AC128;2N2431
HJ22	AF185
HJ22D	AF185
HJ23	AF185
HJ23D	AF185
HJ34	AC128;2N2431
HJ34A	AC128;2N2431
HJ50	AC126;2N2429
HJ51	AC128;2N2431
HJ55	AF185
HJ56	AF185
HJ57	AF185
HJ60	AF185

1) *No type of the replacement series*

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
HJ62	AF185
HJ70	AF185
HJ71	AF185
HJ72	AF185
HJ73	AF185
HJ74	AF185
HJ75	AF185
IF1	AF185
IF2	AF185
IF3	AF185
IWP	BY100
JP1	AC128;2N2431
K2.5/9	OA95;1N618
K4/10	OA95;1N618
K5/2	OA90;1N87A
K5/4	AA119
K5/6	AA119
H5/61	OA95;1N618
K5/103	AA119
K5/104	AA119
K5/161	OA95;1N618
KSKE125C500	BY100
M8HZ	BY100
M10H	AF178;2N2495
M10L	[1])AC176
M12H	AF178;2N2495
M34A/1N34A	OA95;1N618
M38A/1N38A	OA95;1N618
M51/1N51	AA119
M60/1N60	AA119
M69/1N69	OA95;1N618
M70/1N70	OA95;1N618
M72	BY100
M72D	BY100
M81/1N81	OA95;1N618
M94/1N95	OA95;1N618
M550	OA95;1N618

Type to be replaced	*Application equivalent*
M550A	OA95;1N618
M550B	OA95;1N618
M820	OA95;1N618
M1230	OA95;1N618
M3100	OA95;1N618
M6100	OA95;1N618
MA23	AC127;2N2430
MA51	AA119
MA51A	AA119
MA211	BY100
MA215	BY114
MC-101	AF185
MCP70	[1])OCP70
MFT122	AC128;2N2431
MFT123	AC128;2N2431
MMR6/1	AC126;2N2429
MMR6/2	AF178;2N2495
MMR6/3	AF185
MMR6/11	AC128;2N2431
MMR6/12	AD149;2N2836
MN24	AD149;2N2836
MN25	AD149;2N2836
MN26	AD149;2N2836
MTC70	AC128;2N2431
MTC71	AC126;2N2429
MTC72	AC128;2N2431
MTC76	AC128;2N2431
NA85	BY100
NKT132	AF185
NKT133	AF185
NKT202	AC126;2N2429
NKT203	AC126;2N2429
NKT204	AC126;2N2429
NKT205	AC126;2N2429
NKT206	AC126;2N2429
NKT208	AC128;2N2431
NKT251	AC128;2N2431
NKT252	AC126;2N2429

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
NU34	OA95;1N618
NU38	OA95;1N618
NU58	OA95;1N618
*OA5	[1])AAZ15
*OA5D	[1])AAZ15
OA6	[1])AAZ15
*OA7	[1])AAZ17
*OA9	[1])AAZ18
OA21	[1])OA90;1N87A
OA31	[1])OA31
OA41	[1])AAY11
*OA45	[1])AAZ15
OA47	[1])OA47;1N698
*OA48	[1])AAZ17
*OA49	[1])AAZ18
*OA50	OA95;1N618
*OA51	OA95;1N618
*OA52	OA95;1N618
*OA53	OA95;1N618
*OA54	OA95;1N618
*OA55	OA95;1N618
*OA56	OA95;1N618
OA57	OA95;1N618
OA58	OA95;1N618
OA59	OA90;1N87A
OA60	[1])OA90;1N87A
OA61	OA95;1N618
*OA70	[1])OA90;[1])1N87A
*OA71	OA95;1N618
*OA72	AA119
OA73	[1])OA73;[1])OA90; [1])1N87A
OA74	OA95;1N618
OA79,OA79/01	[1])OA79;[1])1N541; AA119
OA80/10	OA95;1N618
OA81	[1])OA81;[1])1N476; OA95;1N618

Type to be replaced	*Application equivalent*
OA81C	OA95;1N618
OA85	[1])OA85;[1])1N478; OA95;1N618
OA85C	OA95;1N618
*OA86	[1])AAY11
*OA86C	[1])AAY11
OA87	[1])AAY11
OA90	[1])OA90;1N87A
OA91	[1])OA91;[1])1N617
OA92	[1])OA92
OA95	OA95;1N618
*OA96	[1])AAY11
OA100/30	OA95;1N618
OA127	[1])OA202
OA128	[1])OA202
OA129	[1])OA202
OA150	OA95;1N618
OA160	[1])OA90;1N87A
OA161	OA95;1N618
OA172	2-AA119
OA174	OA95;1N618
OA179	AA119
OA180	[1])AAZ15
OA182	[1])AAZ15
OA186	[1])AAY11
*OA200	[1])OA202
OA202	[1])OA202
*OA210	BY114
*OA211	BY100
*OA214	BY100
OA257	[1])OA90;1N87A
OA258	[1])OA90;1N87A
OA261	OA95;1N618
OA285	OA95;1N618
OA266	OA95;1N618
OAP12	[1])OAP12
OAZ200	[1])BZY88/C4V7
OAZ201	[1])BZY88/C5V1
OAZ202	[1])BZY88/C5V6

[1]) *No type of the replacement series*

* *Obsolete type with successor type*

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	Application equivalent
OAZ203	[1])BZY88/C6V2
OAZ204	[1])BZY88/C6V8
OAZ205	[1])BZY88/C7V5
OAZ206	[1])BZY88/C8V2
OAZ207	[1])BZY88/C9V1
OAZ208	[1])BKY88/C4V3
OAZ209	[1])BZY88/C5V1
OAZ210	[1])BZY88/C6V2
OAZ211	[1])BZY88/C7V5
OAZ212	[1])BZY88/C9V1
OAZ213	[1])BZY94/C12
*OC13	AC126;2N2429
*OC16	AD149;2N2836
OC22	[1])OC22
OC23	[1])OC23
OC24	[1])OC24
OC25	AD149;2N2836
*OC26	AD149;2N2836
OC28	[1])ASZ15;2N1666
OC29	[1])ASZ16;[1])2N1667
*OC30	[1])AD139;AD149
OC34	AC126;2N2429
OC35	[1])ASZ17;[1])2N1668
OC36	[1])ASZ18;[1])2N1669
OC38	AC126;2N2429
OC44	[1])OC44;AF185
OC45	[1])OC45;AF185
*OC46	[1])ASY26
*OC47	[1])ASY27
*OC57	[1])OC58
OC58	[1])OC58
OC59	[1])OC59
OC60	[1])OC60
*OC66	AC126;2N2429
*OC70	AC126;2N2429
*OC71	AC126;2N2429
OC71N	AC126;2N2429
*OC72	AC128;2N2431

[1]) *No type of the replacement series*

Type to be replaced	Application equivalent
*OC74	AC128;2N2431
*OC75	AC126;2N2429
*OC76	[1])ASY76
OC76N	[1])ASY76
*OC77	[1])ASY77
*OC79	AC128;2N2431
OC80	[1])ASY80
OC110	AC126;2N2429
OC120	AC126;2N2429
OC122	[1])OC122
OC123	[1])OC123
OC130	AC126;2N2429
*OC139	[1])ASY73
*OC140	[1])ASY74
*OC141	[1])ASY75
*OC169	[1])AF126/127;AF185
*OC170	[1])AF125/126;AF185
*OC171	[1])AF124/125;AF178; 2N2495
OC200	[1])BCZ10
OC201	[1])BCZ11;[1])2N2617
OC203	[1])BCZ12
OC204	[1])BCY10
OC205	[1])BCY11
OC206	[1])BCY12
OC302	AC126;2N2429
OC318	AC128;2N2431
OC320	[1])OC58
OC330	[1])OC58
OC331	[1])OC58
OC340	[1])OC58
OC341	[1])OC58
OC342	[1])OC59
OC343	[1])OC60
OC350	[1])OC60;AC126
OC351	[1])OC60
OC360	[1])OC58
OC361	[1])OC58

* *Obsolete type with replacement type*

Type to be replaced	*Application equivalent*
OC362	1)OC59
OC363	1)OC60
OC390	AF185
OC400	AF185
OC410	AF185
OC601	AC126;2N2429
OC602	AC126;2N2429
OC604	AC126;2N2429
OC604sp	AC126;AC128
OC612	AF185
OC613	AF185
OC614	AF185
OC615	AF178;2N2495
OC615V	AF178;2N2495
OC622	1)OC58
OC623	1)OC58;1)OC59
OC624	1)OC60
OC810	AC126;2N2429
OC811	AC126;2N2429
OC6015	AF178;2N2495
OCP70	1)OCP70
OD603	AD149;2N2836
OD603/50	AD149;2N2836
OD604	AD149;2N2836
OD605	AD149;2N2836
OS33	1)BA100
OS34	1)OA202
OS35	1)OA202
OX3003	AC126;2N2429
OX3004	AC128;2N2431
OX4001	AF185
OY100	BY100
OY101	BY100
OY241	BY100
OY252	BY100
OY253	BY100

Type to be replaced	*Application equivalent*
OY256	BY100
OY257	BY100
OY312	BY100
OY313	BY100
OY316	BY100
OY317	BY100
OY5061	BY100
OY5062	BY100
OY5063	BY100
OY5064	BY100
OY5065	BY100
OY5066	BY100
OY5067	BY100
P6RP8	BY100
PA380	BY100
PADT23	AF185
PADT24	AF178;2N2495
PADT25	AF178;2N2495
PADT28	AF178;2N2495
PADT30	AF178;2N2495
PADT31	AF178;2N2495
PH108	BY100
PH1021	BY100
PP580	BY100
Q6	AC128;2N2431
Q7	AC128;2N2431
Q8	AC128;2N2431
RF1	AF185
RL31	AA119
RL31g	AA119
RL32g	AA119
RL34g	OA95;1N618
RL41g	1)OA90;1)1N87A
RL43g	OA95;1N618
RL44g	OA95;1N618
RL52	1)OA90;1)1N87A
RL143	OA95;1N618

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
RL231	2-AA119
RL232g	AA119
RL232Bg	2-AA119
RL246g	OA95;1N618
RL247g	OA95;1N618
RL252g	[1])2×OA90;2×[1])1N87A
RR14Z	[1])OC58
RR20Z	[1])OC58
RR34Z	[1])OC58
RR83	AC126;2N2429
RR87	AC126;2N2429
RR117	AC126;2N2429
RR160	AF185
RR161	AF185
RR162	AF185
RRJ14	AC126;2N2429
RRJ20	AC126;2N2429
RRJ34	AC126:2N2429
RRJZ14	[1])OC58
RRJZ20	[1])OC58
RRJZ34	[1])OC58
RRJZ38	[1])OC58
S8AR1	BY100
S20	BY100
S28	BY100
S63	BY100
S258	BY100
SB100	AF185
SC8C	BY100
SC8E	BY100
SC12	AC126;2N2429
SD1B	BY100
SD34	OA95;1N618
SD34A	OA95;1N618
SD38	OA95;1N618
SD46	AA119
SD54	OA95;1N618
SD60	[1])OA90;[1])1N87A

Type to be replaced	*Application equivalent*
SFD104	[1])OA90;[1])1N87A
SFD106	[1])OA90;[1])1N87A
SFD107	[1])OA90;[1])1N87A
SFD108	OA95;1N618
SFD110	AA119
SFD111	AA119
SFD112	AA119
SFD112	2-AA119
SFR151	BY100
SFR152	BY100
SFR153	BY100
SFR154	BY100
SFR155	BY100
SFR164	BY100
SFT101	AC126;2N2429
SFT102	AC126;2N2429
SFT103	AC126;2N2429
SFT105	AC126;2N2429
SFT106	AF185
SFT107	AF185
SFT108	AF185
SFT109	AC126;2N2429
SFT113	AD149;2N2836
SFT115	AF185
SFT116	AF185
SFT117	AF178;2N2495
SFT118	AF178;2N2495
SFT119	AF185
SFT120	AF185
SFT121	AC128;2N2431
SFT122	AC128;2N2431
SFT123	AC128;2N2431
SFT124	AC128;2N2431
SFT125	AC128;2N2431
SFT130	AC128;2N2431

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
SFT131	AC128;2N2431
SFT151	AC126;2N2429
SFT152	AC126;2N2429
SFT306	AF185
SFT307	AF185
SFT308	AF185
SFT315	[1])AF118;2N2207
SFT316	AF185
SFT317	AF185
SFT319	AF185
SFT320	AF185
SFT321	AC126;AC128
SFT322	AC126;AC128
SFT323	AC126;AC128
SFT337	AC126;2N2429
SFT351	AC126;2N2429
SFT351	AC126;2N2429
SFT352	AC126;2N2429
SFT353	AC126;2N2429
SFT354	AF185
SFT357	AF178;2N2495
SFT357P	[1])AF118;2N2207
SFT358	AF178;2N2495
SFT523	AC128;2N2431
SG805	BY100
Si3	BY100
SK3003	AC126;2N2429; AC128;2N2431
SK3004	AC126;2N2429; AC128;2N2431
SK3005	AF185
SK3006	AF178;2N2495
SK3007	AF178;2N2495
SK3008	AF185
SK3009	AD149;2N2836
SK3010	AC127;2N2430

[1]) *No type of the replacement series*

Type to be replaced	*Application equivalent*
SK3011	BF115(silicon)
SK3012	AD149;2N2836
SK3013	2-AD149
SK3014	AD149;2N2836
SK3015	2-AD149
SK3016	BY100
SK3017	BY114
SLA560	BY100
SLA2616	BY100
SLA3196	BY100
SM83	BY100
SM280	BY100
SO88	AC128;2N2431
SP8A	AC126;2N2429
SP8B	AC126;2N2429
SP8C	AC126;2N2429
SR4201A	BY100
ST5	AD149;2N2836
ST28C	AF185
ST36	AD149;2N2836
ST37D	AF185
ST121	AC126;2N2429
ST122	AC128;2N2431
ST123	AC126;2N2429
ST124	AC126:2N2429
ST125	AC126;2N2429
ST171	AF185
ST172	AF185
ST301	AC126;2N2429
ST302	AC126;2N2429
ST303	AC126;2N2429
SW05C	BY100
SX638	BY100
T34D	AC128;2N2431
T34E	AC128;2N2431
T34F	AC128;2N2431
T65	AC126;2N2429

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
T1040	AD149;2N2836
T1041	AD149;2N2836
T1159	AC128;2N2431
T1360	AF185
T1361	AF185
T1369	AD149;2N2836
T1375	AF185
T1376	AC128;2N2431
T1377	AC128;2N2431
T1390	AF185
T1675	AF185
T1690	AF185
T1691	AF178;2N2495
T1692	AF185
T1695	AF178;2N2495
T1727	AF185
T1737	AF185
T1814	AF185
T2379	AF178;2N2495
T2384	AF185
T2384	AF178;2N2495
T2399	AF178;2N2495
T2400	AF185
TF65	AC126;2N2429
TF65/30	AC126;2N2429
TF66/I	AC128;2N2431
TF66/II	AC128;2N2431
TF66/III	AC128;2N2431
TF66/30	AC128;2N2431
TF68	AF185
TF69/30	AC128;2N2431
TF75	AC128;2N2431
TF77	AC128;2N2431
TF77/30	AC128;2N2431
TF78	AD149;2N2836
TF80	AD149;2N2836
TF80/30	AD149;2N2836
TF81/30	AD149;2N2836

Type to be replaced	*Application equivalent*
TF85	AD149;2N2836
TF90	AD149;2N2836
TF90/30	AD149;2N2836
THP44	AC128;2N2431
THP45	AD149;2N2836
THP46	AD149;2N2836
THP50	AD149;2N2836
THP51	AD149;2N2836
THP52	AD149;2N2836
TJ320	AC126;2N2429
TJ363	AF185
TJ364	AF185
TJ385	AF185
TJ386	AF185
TJ387	AF185
TJ388	AF185
TJ389	AF185
TJ397	AF185
TJ398	AF185
TJ399	AF185
TJN1	AC126;2N2429
TJN1B	AC126;2N2429
TJN2F	AC126;2N2429
TJN2FB	AC126;2N2429
TJN2G	AC126;2N2429
TJN2GB	AC126;2N2429
TJN3	AC126;2N2429
TJN4	AC126;2N2429
TJN300/2	AD149;2N2836
TJN300/2A	AD149;2N2836
TKF80	BY100
TM86	BY100
TR722	[1])OC58
TR760	AF185
TR761	AF185
TRC44	AF185
TRC45	AF185

Type to be replaced	*Application equivalent*	*Type to be replaced*	*Application equivalent*
TRC70	AC126;2N2429	XA101	AF185
TRC71	AC126;2N2429	XA102	AF185
TRC72	AC128;2N2431	XA111	AF185
TRC360	[1])OC58	XA112	AF185
TRC601	AC126;2N2429	XA131	AF178;2N2495
TRC602	AC126;2N2429	XA141	AF178;2N2495
TS1	AF185	XA142	AF178;2N2495
TS2	AF185	XA143	AF178;2N2495
TS3	AF185	XA161	AF178;2N2495
TS7	AF185	XB102	AC126;2N2429
TS8	AF185	XB103	[1])OC58
TS8(rect.)	BY100	XB104	AC126;2N2429
TS9	AC128;2N2431	XB112	AC126;2N2429
TS13	AC126;2N2429		
TS14	AC126;2N2429	XB113	AC126;2N2429
TS161	2-AC128	XC101	AC128;2N2431
TS162	AC126;2N2429	XC131	AC128;2N2431
TS163	AC126;2N2429	XC171	AC128;2N2431
TS164	AC126;2N2429		
TS165	AC126;2N2429	XU604	BY100
TS166	AC126;2N2429	Y363	AC126;2N2429
TS176	AD149;2N2836	Y482	AF185
TS306	AC128;2N2431	Y483	AF185
TS620	[1])OC58	Y485	AF185
TS621	[1])OC58	Y633	AC128;2N2431
TS739	AC126;2N2429	ZJ13	AC128;2N2431
TS739B	AF185	ZS4	AF185
TS740	AC128;2N2431	ZS5	AF185
V10/15	AC126;2N2429	ZS8	AF185
V10/30	AC126;2N2429	ZS12	AC128;2N2431
V10/50	AC126;2N2429	ZS15	AC128;2N2431
V30/20P	AD149;2N2836	ZS30	AF185
V30/30P	AD149;2N2836	ZS31	AF185
V208	AD149;2N2836	ZS34	AC128;2N2431
V308	AD149;2N2836	ZS35	AF185
VD11	OA95;1N618	ZS36	AF185
VD12	[1])OA90;1N87A	ZS38	AC128;2N2431
VD13	[1])OA90;1N87A	ZS41	AF185

[1]) *No type of the replacement series*

REPLACEMENT GUIDE FOR SEMICONDUCTORS

Type to be replaced	*Application equivalent*
ZS43	AF185
ZS45	AF185
ZS52	AF185
ZS56	AC128;2N2431
ZS78/B	BY100

Type to be replaced	*Application equivalent*
ZS91	AC128;2N2431
ZS109	AF185
ZS110	AF185
ZS112	AF185
ZS141	AF185
ZS142	AF185

VERVANGINGSSERIE VOOR HALFGELEIDERS VOOR NIET-PROFESSIONELE TOEPASSINGEN

DIODEN

AA119 – germanium-miniatuur-puntcontactdiode, in glazen omhulling, voor AM-detector- en verhoudingsdetectorschakelingen, frequentie 10,7 MHz, gemiddelde doorlaatstroom 35 mA, tegenspanning 30 V.

OA95 – universele germanium-miniatuurdiode voor hoge spanning, in glazen omhulling, gemiddelde doorlaatstroom 50 mA, tegenpiekspanning 115 V. EIA-nr. 1N618.

BY100 – dubbele-diffusie-siliciumvermogendiode, in metalen omhulling DO-1, voor netspanningsgelijkrichters in televisie-ontvangers, gemiddelde doorlaatstroom 0,75 A, repeterende piektegenspanning 800 V.

BY114 – dubbele-diffusie-siliciumvermogendiode, in metalen omhulling DO-1, voor netspanningsgelijkrichters in televisieontvangers, gemiddelde doorlaatstroom 0,45 A, repeterende piektegenspanning 450 V.

TRANSISTORS

AF178 – ruisarme VHF-PNP-germanium-legeringsdiffusietransistor, in metalen omhulling TO-12, voor mengtrap en oscillator, frequentie tot 260 MHz, voedingsspanning tot 14 V, dissipatie 75 mW. EIA-nr. 2N2495.

BF115 – planaire HF-NPN-silicium-epitaxietransistor, in metalen omhulling TO-18, voor AM/FM-toepassingen en autoradio's, frequentie tot 100 MHz, collector-basisspanning 50 V, dissipatie 145 mW.

AF185 – ruisarme HF-PNP-germanium-legeringsdiffusietransistor, in metalen omhulling TO-12, voor HF-versterk-, meng-, oscillator- en MF-versterktrappen in AM-autoradio's, frequentie tot 27 MHz, voedingsspanning tot 14 V, dissipatie 120 mW.

AC126 – germanium-LF-PNP-legeringslagentransistor met grote versterking, in metalen omhulling TO-1, voor voorversterk- en stuurtrappen van radio-apparaten, voedingsspanning tot 14 V, dissipatie 500 mW. EIA-nr. 2N2429.
Typenummer van koelplaat: enkel 56227, dubbel 56226.

AC127 – germanium-LF-NPN-legeringslagentransistor voor semi-groot vermogen, in metalen omhulling TO-1, ook geschikt voor complementair gebruik met AC128 of AC132, voedingsspanning tot 14 V, dissipatie 340 mW. EIA-nr. 2N2430.
Typenummer van koelplaat: enkel 56227, dubbel 5622.

AC128 – germanium-LF-PNP-legeringslagentransistor voor semi-groot vermogen in metalen omhulling TO-1, hoofdzakelijk voor klasse-B uitgangsvermogenversterker, voedingsspanning tot 14 V, dissipatie 0,7 W. EIA-nr. 2N2431.
Typenummer van koelplaat: enkel 56227, dubbel 56226.

AD149 – germanium-LF-PNP-legeringslagenvermogentransistor voor hoge spanning, metalen omhulling TO-3, voor klasse-A of -B uitgangsversterkers voor groot vermogen en verticale afbuigtrappen, collector-basisspanning 50 V, dissipatie 22,5 W. EIA-nr. 2N2836.

MILITARY SPECIFICATION TYPES

SEMICONDUCTOR DEVICES

A. UNITED KINGDOM CV-SPECIFICATION SEMICONDUCTOR TYPES

Type No.	*Our type*	*Nato Stock No.*	*Type No.*	*Our type*	*Nato Stock No.*
CV425	—	**5960-99**-000-0425	CV5876	ASZ15	**5960-99**-037-2954
CV442	OA70	-000-0442	CV5930	OAZ213	-037-3125
CV448	OA81	-000-0448	CV5953	OA7	-037-3157
CV1353	OA81	-000-1353	CV5965	OAZ210	-037-3173
CV1354	OA85	-000-1354	CV5969	2-ASZ15	-037-3178
CV2389	OC71	-000-2389	CV7001	OC72	-037-2001
CV2400	OC71	-000-2400	CV7002	OC72	-037-2002
CV5105	OC45	-000-5105	CV7003	OC44	-037-2003
CV5209	OA5	-037-2050	CV7004	OC45	-037-2004
CV5308	OAZ203	-037-2259	CV7005	OC71	-037-2005
CV5323	OA200		CV7006	OC72	-037-2006
CV5324	OA200		CV7007	OC77	-037-2007
CV5328	2-ASZ17		CV7026	BY100	-037-2045
CV5329	2-ASZ15		CV7027	BY100	-037-2046
CV5357	OAZ207	-037-2367	CV7028	BY100	-037-2047
CV5378	OAZ202	-037-2351	CV7029	BY100	-037-2048
CV5379	OAZ205	-037-2352	CV7030	BY100	-037-2049
CV5432	2-ASZ17	-037-2429	CV7040	OA202	-037-2016
CV5439	OC75	-037-2436	CV7041	OA95	-037-2027
CV5449	ASZ20	-037-2476	CV7043	BCZ10	-037-2086
CV5457	OC70	-037-2478	CV7047	OA5	-037-2056
CV5710	OC44	-037-2543	CV7048	OA5	-037-2077
CV5711	OC77	-037-2544	CV7054	OC23	-037-2100
CV5712	OC71	-037-2545	CV7075	BCZ11	-037-2133
CV5713	OC72	-037-2546	CV7076	OA47	-037-2134
CV5738	OA31	-037-2578	CV7083	ASZ16	-037-2158
CV5804	OC170	-037-2881	CV7084	ASZ17	-037-2159
CV5813	OC123	-037-2890	CV7085	ASZ15	-037-2160
CV5815	OAZ200	-037-2898	CV7086	ASZ18	-037-2161
CV5816	OAZ204	-037-2899	CV7089	OC171	-037-2207
CV5818	ASZ23	-037-2901	CV7099	BZY64	-037-2199
CV5829	OAZ206	-037-2913	CV7100	BZY56	-037-2200
CV5848	BCZ11	-037-2926	CV7101	BZY57	-037-2201
CV5855	OA95	-037-2933	CV7102	BZY58	-037-2202
CV5864	OA47	-037-2942	CV7103	BZY59	-037-2203
CV5871	ASZ16	-037-2949	CV7104	BZY60	-037-2204
CV5872	OC139	-037-2950	CV7105	BZY61	-037-2205
CV5873	OC140	-037-2951	CV7111	OC139	-037-2241
CV5874	OC44	-037-2952	CV7112	OC140	-037-2242
CV5875	OC44	-037-2953	CV7113	OA210	-037-2244

A. UNITED KINGDOM CV-SPECIFICATION SEMICONDUCTOR TYPES

Type No.	*Our type*	*Nato Stock No.*
CV7114	OA211	**5960-99**-037-2257
CV7118	OC72	
CV7127	AAZ17	-037-2302
CV7128		-037-3140
CV7130	OA91	-037-3373
CV7141	BZY64	-037-2391
CV7142	BZY63	-037-2392
CV7143	BZY68	-037-2393
CV7144	BYZ69	-037-2394
CV7188	BCY11	-037-2529
CV7311	BYZ13	-037-2718
CV7312	BYZ13	-037-2719
CV7313	BYZ12	-037-2720
CV7314	BYZ11	-037-2721
CV7315	BYZ10	-037-2722
CV7316	BYZ19	-037-2723
CV7317	BYZ19	-037-2724
CV7318	BYZ18	-037-2725
CV7319	BYZ17	-037-2726
CV7320	BYZ16	-037-2727
CV7321	2-OC72	-037-2730
CV7332	OA202	-037-2903
CV7335	AFZ12	-037-3135
CV7338	ASZ21	-037-3138
CV7341	BCY33	-037-2955
CV7342	BCY34	-037-2956
CV7344	BCY30	-037-2958
CV7345	BCY31	-037-2959
CV7346	BCY32	-037-2960
CV7348	2N1302	-037-2972
CV7349	2N1304	-037-2973
CV7350	2N1306	-037-2974
CV7351	2N1308	-037-2975
CV7352	2N1303	-037-2976
CV7353	2N1305	-037-2977
CV7354	2N1307	-037-2978
CV7355	2N1309	-037-2979
CV7363	BCZ11	-037-3121
CV7364	AAZ12	-037-3131
CV7369	OA91	-037-3177

Type No.	*Our type*	*Nato Stock No.*
CV7389	AAZ13	**5960-99**-037-3359
CV7395		
CV7430	BSY38	-037-3488
CV7431	BSY39	-037-3489
CV7460	AUY10	-037-3595
CV7492	2N929	-037-3703
CV7493	2N930	-037-3704
CV7498		-037-3731
CV7606	ADZ11	
CV7607	ADZ12	
CV7608	ADY26	
CV8035	OA70	-037-3247
CV8036	OA81	-037-3248
CV8086	OA5	-037-3298
CV8099	OAZ211	-037-3310
CV8110	BYZ11	-037-3320
CV8243	OA70	-037-3392
CV8308		
CV8315	OC44	
CV8316	OC45	
CV8332	OA90	-037-3527
CV8339	OAZ201	-037-3532
CV8340	OA202	-037-3533
CV8341	OC24	-037-3534
CV8342	ASZ15	-037-3535
CV8343	OC44	-037-3536
CV8344	OC71	-037-3537
CV8345	OC140	-037-3538
CV8346	OC77	-037-3539
CV8354	OC170	-037-3547
CV8356	ASZ16	-037-3549
CV8510	BZY61	-037-3739

B. NETHERLANDS MILITARY SPECIFICATION SEMICONDUCTOR TYPES

Type No.	*Spec. sheet*	*Nato Stock No.*
AAY11	**MMR-6**/32	**5960-17**-024-5437
AAZ18	34	-021-7601
AFY19	49	-024-5438
ASY26	25 (ARMY)	
BAY38	68	
BAY39	69	
BCY12	62 (ARMY)	-026-4308
BFY10	67	-024-5439
BFY11	67	-024-5440
BSY10	66	-024-5441
BSY11	66	-024-5442
BSY39	48	-024-5261
OA31	50 (ARMY)	-025-7453
OA47	43	
OA73	28 (ARMY)	-024-1721
OA79	35	-705-1031

Type No.	*Spec. sheet*	*Nato Stock No.*
OA95	**MMR-6**/33 (ARMY)	**5960-17**-024-1728
OAZ200	51 (ARMY)	
OAZ201	51 (ARMY)	
OAZ202	51 (ARMY)	
OAZ203	51 (ARMY)	-025-7460
OAZ204	51 (ARMY)	-025-7452
OAZ205	51 (ARMY)	-025-7449
OAZ206	51 (ARMY)	-025-9153
OAZ207	51 (ARMY)	
OC74	11	-015-2082
OC75	1	-015-1861
OC80	54 (ARMY)	-025-3668
OC140	13B	-015-2106
OC141	13B	-706-5936
*2N284	16A (ARMY)	-015-1881
2N1314	12	-015-2048

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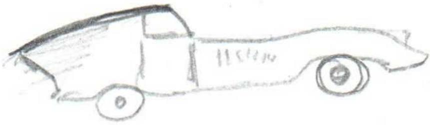

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