2B33

Beam Power Tetrode

2B33 is a beam power tetrode having an indirectly heated unipotential cathode.

2B33 is used as a driver or a power amplifier of a transmitter up to a frequency of 60 MHz.

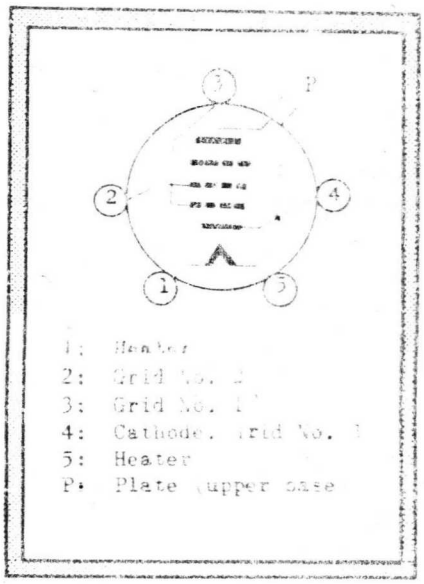
2B33 can also be used with triode connection, so that tube is suitable for an AF Power Amplifier or a Modulator.

Electrical Data:

General Data:

Cathode: Indirectly-Heated Oxide Coated Unipotential

	Min.	Bogie	Max.	Unit
Heater Voltage	5.7	6.3	6.9	V
Heater Current (at 6.3 volts)	-	0.9	-	A
Transconductance ..... (for Eb=250Vdc, Ec2=250Vdc Ec1=-14Vdc)	-	6000	-	μ℧
Direct Interelectrode Capacitances:				
Grid No. 1 to Plate (Note 1)	-	-	0.2	μμF
Input	-	10	-	μμF
Output	-	5.3	-	μμF
Frequency	-	-	60	MHz



TERMINAL CONNECTIONS

Mechanical Data:

Dimensions:

Overall Length	123	128	133	mm
Maximum Diameter	-	-	39.7	mm
Net Weight (approx.)	-	60	-	gr.

Base:

Upper Part	JIS A9S
Bottom Part	JIS E19S-1

Nippon Electric Company, Limited

Components:

Socket	JIS C 7006 Type Y
Cap	A9S
Mounting Position	any

Cooling: Natural Convection and Radiation (Note 2)

Note 1. "No. 312 shielded" (see EIAJ ET-21) is used.

Note 2. When used in a closed chamber, some means for forced-air cooling should be taken into account in order to prevent the stem temperature rise.

AF Power Amplifier and Modulator-Class AB1 (Note 3)

(Triode-connection, grid No. 2 is connected to plate)

Maximum Ratings:

DC Plate Voltage	400 Vdc
Max-Signal DC Plate Current (Note 4)	125 mAdc
Max-Signal Plate Input (Note 4)	50 W
Plate Dissipation (Note 4)	25 W
Peak Heater to Cathode Voltage	±135 V

Typical Operation: (Values are for 2 tubes)

DC Plate Voltage	400 Vdc
DC Grid No. 1 Voltage	-45 Vdc
Peak AF Grid No. 1 to Grid No. 1 Voltage	90 V
Zero-Signal DC Plate Current	64 mAdc
Max-Signal DC Plate Current	140 mAdc
Effective Load Resistance (Plate to Plate)	3000 Ω
Max-Signal Driving Power (approx.)	0 W
Max-Signal Plate Power Output (approx.)	15 W
Maximum Grid No. 1 Circuit Resistance:	
In case of fixed bias	100 kΩ
In case of cathode bias	500 kΩ

AF Power Amplifier and Modulator-Class AB1 (Note 3)

Maximum Ratings: Absolute Values:

DC Plate Voltage	600 Vdc
DC Grid No. 2 Voltage	300 Vdc
Max.-Signal DC Plate Current (Note 4)	120 mAdc

Max.-Signal Plate Input (Note 4)	60 W
Max.-Signal Grid No. 2 Input (Note 4)	3.5 W
Plate Dissipation (Note 4)	25 W
Peak Heater to Cathode Voltage	±135 V

Typical Operation: (Values are for 2 tubes)

DC Plate Voltage	400	500	600 Vdc
DC Grid No. 2 Voltage (Note 6)	300	300	300 Vdc
DC Grid No. 1 Voltage (Note 7)	-30	-32	-34 Vdc
Peak AF Grid No. 1 to Grid No. 1 Voltage	60	64	68 V
Zero-Signal DC Plate Current	50	44	36 mAdc
Max-Signal DC Plate Current	143	141	139 mAdc
Zero-Signal DC Grid No. 2 Current	2	1	0.6 mAdc
Max-Signal DC Grid No. 2 Current	16	15	15 mAdc
Effective Load Resistance (Plate to Plate)	6800	8200	10000 Ω
Max-Signal Driving Power (approx.)	0	0	0 W
Max-Signal Plate Power Output (approx.)	36	46	56 W
Grid No. 1 Circuit Resistance			
In case of fixed bias			100 kΩ
In case of cathode bias			Not recommended

AF Power Amplifier and Modulator-Class AB2 (Note 5)

Maximum Ratings: Absolute Values

DC Plate Voltage	600 Vdc
DC Grid No. 2 Voltage	300 Vdc
Max-Signal DC Plate Current (Note 4)	120 mAdc
Max-Signal Plate Input (Note 4)	60 W
Max-Signal Grid No. 2 Input (Note 4)	3.5 W
Plate Dissipation (Note 4)	25 W
Peak Heater to Cathode Voltage	±135 V

Typical Operation: (Values are for 2 tubes)

DC Plate Voltage	400	500	600 Vdc
DC Grid No. 2 Voltage (Note 6)	300	300	300 Vdc
DC Grid No. 1 Voltage (Note 7)	-28	-30	-32 Vdc
Peak AF Grid No. 1 to Grid No. 1 Voltage	80	86	90 V
Zero-Signal DC Plate Current	72	60	48 mAdc

Max-Signal DC Plate Current	240	240	200 mAdc
Zero-Signal DC Grid No. 2 Current	2	0.9	0.7 mAdc
Max-Signal DC Grid No. 2 Current	20	20	18 mAdc
Effective Load Resistance (Plate to Plate)	3700	4600	6900 Ω
Max-Signal Driving Power (approx.)	0.2	0.2	0.1 W
Max-Signal Power Output (approx.)	55	75	80 W

Maximum Grid No. 1 Circuit Resistance:

In case of fixed bias ..... 30 kΩ

In case of cathode bias ..... Not recommended

Note 3. A suffix "1" means that grid No. 1 current does not flow even at peak condition of maximum input signal. Maximum input signal voltage limit for the operating class of AB_1 will be reached when peak instantaneous grid No. 1 voltage becomes zero volts.

Note 4. Averaged over any audio-frequency cycle of sine-wave form.

Note 5. A suffix "2" means that grid No. 1 current will flow during some part of the input signal cycle.

Note 6. This voltage should be applied by a private source or by a voltage devider from the plate source.

Note 7. This voltage is delivered by a fixed bias.

RF Power Amplifier-Class B Telephony

(Carrier conditions per tube for use with a max. modulation factor of 1.0)

Maximum Ratings: Absolute Values

DC Plate Voltage	600 Vdc
DC Grid No. 2 Voltage	300 Vdc
DC Plate Current	80 mAdc
Plate Input	37.5 W
Plate Dissipation	25 W
Grid No. 2 Dissipation	2.5 W
Peak Heater to Cathode Voltage	±135 V

Typical Operation: :

DC Plate Voltage	400	500	600 Vdc
DC Grid No. 2 Voltage	300	300	300 Vdc
DC Grid No. 1 Voltage (Note 8)	-40	-40	-40 Vdc
Peak RF Grid No. 1 Voltage	40	38	36 V
DC Plate Current	75	70	62.5 mAdc