

JEDEC TYPE 7976  
SPONSOR Western Electric Co.

JEDEC TYPE DESIGNATION  
REGISTRATION FOR PULSED MAGNETRON

GENERAL CHARACTERISTICS

The 7976 is a pulsed magnetron oscillator tube which operates at a tunable frequency of 13600 to 15600 Mc. The peak power output is approximately 135 kilowatts and the tube is forced-air cooled. The tube uses an integral magnet. Special vibration resistant design features minimize vibration induced frequency modulation.

GENERAL ELECTRICAL DATA

Pre-heat Heater Voltage . . . . .	12.6 ± 5% volts
Pre-heat Heater Current at 12.6 Volts . . . . .	3.25 ± 0.25 amperes
Minimum Pre-heat Time . . . . .	270 seconds
Heater Cold Resistance (approx.) . . . . .	0.4 ohm
Anode-Cathode Capacitance (nominal) . . . . .	14 μμf

RATINGS, ABSOLUTE SYSTEM

Heater Voltage (max) . . . . .	13.9 volts
Heater Current (max) . . . . .	3.5 amperes
Heater Surge Current (max) . . . . .	13.6 amperes
Peak Anode Current . (max) . . . . .	20 amperes
Peak Anode Current . (min) . . . . .	5 amperes
Peak Anode Voltage (max) . . . . .	20 kilovolts
Average Power Input (max) . . . . .	350 watts
Duty Cycle (max) . . . . .	0.001
Pulse Duration . (max) . . . . .	3.3 microseconds
Pulse Duration . (min) . . . . .	0.20 microseconds
Rate of Rise of Anode Voltage	
Above 50% Point . (max) . . . . .	120 KV/μsec
Above 50% Point . (min) . . . . .	60 KV/μsec
Output and Input Circuit	
Pressurization . . . (max) . . . . .	45 psia
Pressurization . . . (min) . . . . .	15 psia
Maximum Altitude without pressurization:	
Output Circuit . . . . .	sea level
Input Terminals . . . . .	sea level
Body Temperature (max) . . . . .	150°C
Cathode Stem Temperature (max) . . . . .	300°C
VSWR (Magnetron Load) (max) . . . . .	1.5:1
Tuner Torque (max) . . . . .	50 in. oz.

TYPICAL OPERATING VALUES

Frequency . . . . .	13600 to 15600 Mc
Peak Anode Voltage at 15.6 kmc . . . . .	17.5 kv
Pulling Figure (VSWR 1.5/1) . . . . .	6 Mc

Current Pulse Duration	Duty Factor	Peak Anode Current	Stability	Peak Power Output	Voltage Pulse Rate-of- Rise	RF Band width at 1/4 po pts.	Heater Voltage
μsec		Amperes	% Missing Pulses	Kilo- watts	KV per μsec (above 50 % point)	6'-1.5:1 worst phase Mc	Volts±5%
0.25 3	0.0007 0.001	19 19	0.01% 0.01%	135 135	100 100	4.5 Mc 0.45 Mc	8.6 6.8

GENERAL MECHANICAL CHARACTERISTICS

Mounting Position . . . . . any  
 Mounting Support . . . . . See 4 hole  
   Mounting Plate in  
   outline drawing  
 Weight . . . . . 14 lbs. Max.

## Coupling between Tube and Load:

Waveguide (RG91/U) per outline drawing. The mating  
 flange may be UG419/U cover flange or a modified (clearance  
 holes instead of tapped 6-32) UG541/U choke flange.

## Cooling Data

To limit rise in body temperature to 100°C for a  
 dissipation of 200 watts - 10 cfm, min.

Recommended cathode stem temperature 225°C ± 25°C.

## Pressurization of Output Circuit:

The need for pressurization depends on the particular com-  
 ponents used in the output circuit and on the pulse width.  
 In general, it is recommended that the output circuit be  
 pressurized for peak anode currents greater than 15 amperes.

