

JEDEC TYPE DESIGNATION REGISTRATION FOR PULSED MAGNETRONS

Manufacturer's Designation: 7589  
JEDEC Designation: 7589  
Manufacturer: Western Electric Co.

GENERAL CHARACTERISTICS

The 7589 is a pulsed magnetron oscillator tube which operates at a tunable frequency of 8500 to 9600 megacycles. The peak power output is approximately 425 kilowatts and the tube is air cooled. The tube uses an integral magnet and incorporates a high-speed mechanical tuning mechanism.

GENERAL ELECTRICAL DATA

Pre-heat Heater Voltage . . . . . 20 ± 0.3 volts  
Pre-heat Heater Current at 20 volts . . . . . 4.0 ± 0.2 amp.  
Minimum Pre-heat Time . . . . . 180 sec.  
Heater Cold Resistance . . . . . 0.5 ohm approximate  
Anode-Cathode Capacitance . . . . . 14 μuf approximate

ABSOLUTE MAXIMUM RATINGS

Heater Voltage . . . . . 22 volts  
Heater Current . . . . . 4.5 amp.  
Heater Surge Current . . . . . 16 amp.  
Peak Anode Voltage . . . . . 40 kv  
Peak Anode Current . . . . . 40 amp.  
Average Power Input . . . . . 500 watts  
Duty Cycle . . . . . .0005  
Pulse Duration . . . . . 3.0 μsec.  
Rate of Rise of Anode Voltage (above 80% point). . . . . 325 kv/μs  
Output Circuit Pressurization . . . . . 45 PSIA  
Max. Altitude without Pressurization  
    Output Circuit . . . . . Sea Level  
    Input Terminals . . . . . Sea Level  
Anode Temperature . . . . . 150°C  
Cathode Stem Temperature . . . . . 250°C  
VSWR (Magnetron Load) . . . . . 1.3:1

TYPICAL OPERATING RATINGS

Frequency . . . . . 8500 to 9600 Mc  
 Peak Anode Voltage at 8500 Mc . . . . 33.5 ± 1.0 kv  
 Pulling Figure (VSWR 1.2:1) . . . . . 13 Mc

Current Pulse Duration	Duty Factor	Peak Anode Current	Stability	Peak Power Output	Voltage Pulse Rate-of-Rise	RF Band Width at 1/4 pts.	Heater Current
μsec		Amperes	% Missing Pulses (1.2 VSWR)	Kilo-watts (1.05 VSWR Max.)	kv per μsec (above 80 % point)	Mc (1.2 VSWR at worst phase of load)	Amps ±5.0%
0.24 ± .02	.00031	32.2	2% Max.	425	290	6	2.9

GENERAL MECHANICAL CHARACTERISTICS

Mounting Position . . . . . Any  
 Mounting Support . . . . . See four hole mounting plate on Outline Drawing - page 3  
 Weight . . . . . 16 pounds approximate  
 Coupling - Load to Tube ... RG 51/U waveguide with UG 51/U cover flange or modified (clearance holes instead of #8-32 tapped holes) UG 52A/U choke flange (or the equivalent aluminum waveguide and flanges).  
 Cooling data . . . . . 10 cfm min. required through cooling fins to limit the rise in body temperature to a maximum of 100°C for a dissipation of 270 watts.  
 Recommended input temperature.. The input temperature, measured on the cathode terminal immediately adjacent to the input glass to metal seal, should be 160°C ± 15°C with 0 anode voltage applied to the magnetron and with a filament current of 3.6 amperes.

