

WESTERN ELECTRIC 6784 ELECTRON TUBE
TYPE DESIGNATION REGISTRATION

Reservation Date: 6-22-55

Manufacturers Designation: A-1939
JEDEC Designation: 6784

General Characteristics

The 6784 traveling wave tube employing a helix type wave propagating structure is a low noise amplifier in the 3100 to 3500 mc frequency range. The saturated power output is approximately 2 milliwatts and the tube is convection cooled. It is designed for CW service. The matching circuit is not integral with the tube. A uniform magnetic field is used to control the electron beam. This is not integral with the tube. The focusing field is provided by a permanent magnet.

Electrical Ratings, Absolute Values (Note 1)

Heater Voltage	6.3 ± 5%	Vac
Heater Current	0.37	Aac
Maximum Heater-Cathode Voltage	± 45	Vdc
Maximum Helix Voltage	700	Vdc
Maximum Helix Current	10	μAdc
Maximum Collector Voltage	1500	Vdc
Maximum Collector Current	0.70	mAdc
Maximum Collector Dissipation	1	watt
Maximum Grid #1 Voltage		
Negative Value	100	Vdc
Positive Value	0	Vdc
Maximum Grid #1 Current	1	μAdc
Maximum Grid #2 Voltage	200	Vdc
Maximum Grid #2 Current	10	μAdc
Maximum Grid #3 Voltage	200	Vdc
Maximum Grid #3 Current	10	μAdc
Maximum Grid #4 Voltage	400	Vdc
Maximum Grid #4 Current	10	μAdc
Maximum Helix Voltage to Ground	-	-
Maximum Cathode Voltage to Ground	1000	Vdc

Electrical Information

Maximum Frequency	3500	Mc
Minimum Frequency	3100	Mc
Minimum Cold Transmission Loss	50	db

TYPE DESIGNATION REGISTRATIONMechanical Information

Type of Cathode	Oxide, unipotential
Base	Cable
Type of Envelope	Glass
Magnetic Field Strength (Note 2)	500 oersteds
Length of Magnetic Field	8.5 inches
Mounting Position	Any
Weight	0.4 pounds
RF Input and Output Impedance	50 ohms
Type of Cooling	Convection
Maximum Bulb Temperature	125°C

Typical Operation (Note 1)

Center Frequency	Between 3100 & 3500 Mc
Helix Voltage	572 Vdc
Helix Current	10^{-4} mAdc
Collector Voltage	725 Vdc
Collector Current	0.5 mAdc
Grid #1 Voltage	-20 Vdc
" #1 Current	$< 10^{-4}$ mAdc
" #2 Voltage	+46 Vdc
" #2 Current	$< 10^{-4}$ mAdc
" #3 Voltage	+76 Vdc
" #3 Current	$< 10^{-4}$ mAdc
" #4 Voltage	+285 Vdc
" #4 Current	$< 10^{-4}$ mAdc
Power Output, Saturated	2 milliwatts
Gain	18 db
Noise Figure, AM	5.9 db

Note 1: Reference point for d-c voltages is the cathode.

Note 2: A permanent magnet with plug-in matching device is available.

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