SYLVANIA

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engineering data service

6493

MECHANICAL DATA

Envelope	Metal Capsule	
Power Connector	Winchester PM6P[1]	
RF Connectors	Type N Jack[1]	
Focusing	Electromagnetic Solenoid Required	
Cooling[2]	Forced Air	
Mounting Position	Any	
Tube Weight (Approx.)	1	lb
Solenoid Weight (Approx.):		
Military (Aluminum foil-wound)	7	lbs
Non-Military (Copper wire-wound)	18	lbs

ELECTRICAL DATA[3]

HEATER CHARACTERISTICS

Voltage	6.3 ± 10%	V
Current (at 6.3 V)	0.64 - 0.96	A
Minimum Preheat Time	1	Minute

RATINGS (Absolute Maximum)

Helix, Collector Voltage	510	Vdc
Grid 1 Voltage	0 to -175	Vdc
Grid 2 Voltage	510	Vdc
Cathode Current	5	mAdc
CW RF Input	1	W

TYPICAL OPERATION[4]

Conditions

Frequency	2.0 to 4.0	Gc
Magnetic Focusing Field Density	285	Gausses
Minimum Uniform Length	11	Inches
Helix, Collector Voltage (Approx.)[5]	450	Vdc
Grid 1 Voltage	0	Vdc
Voltage to Gate-Off (55 db Insertion Loss)	-80	Vdc
Grid 2 Voltage (Approx.)[5]	300	Vdc

Characteristics	Min.	Max.	
Cathode Current	-	4.5	mAdc
Grid 1 Current	-	0.3	mAdc
Grid 2 Current	-	0.2	mAdc
Small Signal Gain (-40 dbm Input)	35	45	db
Small Signal Gain Variation	-	±3	db
Fine-Grain Variation of Gain for any 100-Mc Segment	-	±2	db
Noise Power Output[6]	-	0.03	mW
Saturation Power Output	10	-	mW

CIRCUIT DESIGN INFORMATION[7]

Helix Voltage Range	400 to 500	Vdc
Grid 1 Voltage Range	0 to -170	Vdc
Grid 2 Voltage Range[8]	190 to 500	Vdc

QUICK REFERENCE DATA

Traveling-wave Amplifier
Full Octave Coverage
2.0 to 4.0 Gc
Over 10 mW Power Output
Over 35 db Small Signal Gain
CW or Pulsed
Suitable for Airborne Applications

POWER CONNECTIONS

A. Grid 1
B. Grid 2
C. Helix
D. Heater, Cathode
E. Heater
F. Capsule, Collector

SYLVANIA ELECTRIC PRODUCTS INC.
MICROWAVE DEVICE OPERATIONS
Mountain View, California

January 10, 1961

from JEDEC release #1377A, April 10, 1961

NOTES:

1. Alternative connectors supplied on request.

2. In addition to the cooling air requirements for the solenoid used with this tube it is recommended that at least 0.04 lbs/min of less than 100°F cooling air be passed along this tube.

3. All voltages given are with respect to cathode except where specified otherwise. Any one of pins A, B, C, D, or E may be connected to pin F which, for safety, should be grounded.

4. The quoted tube performance is for operation in a Sylvania-approved solenoid. Additional information will be supplied on request.

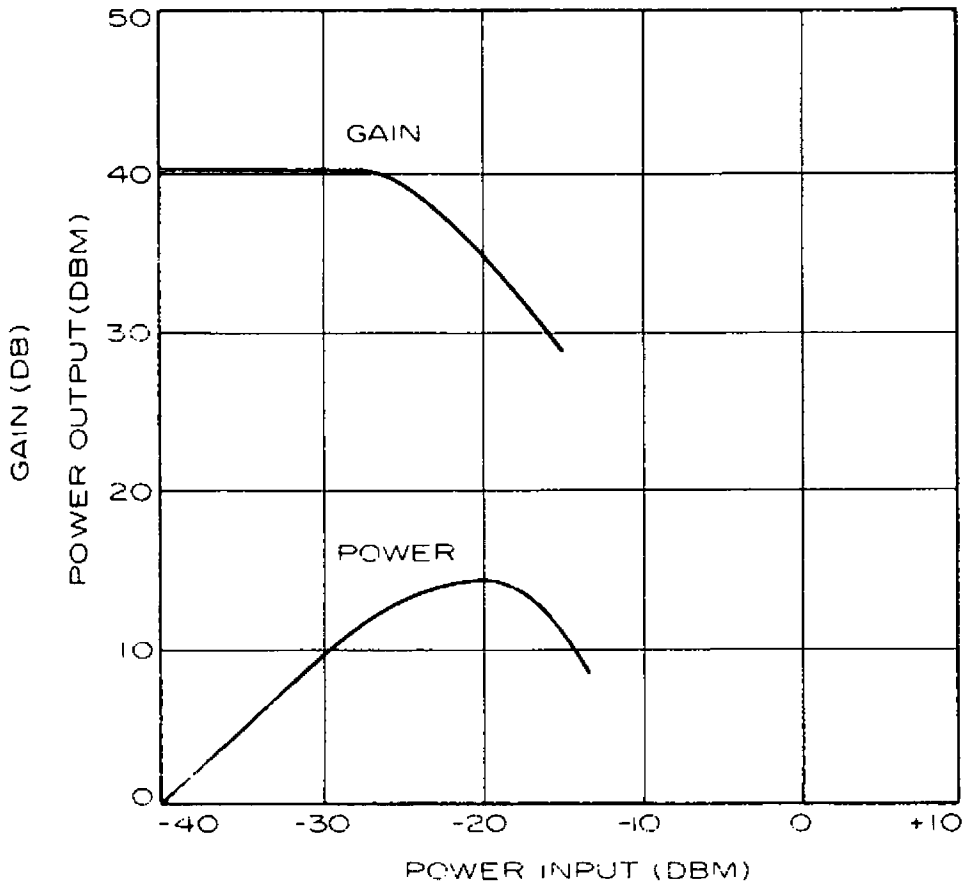
5. This voltage should be set to the value stated on the data sheet supplied with each tube.

6. As measured by a broadband bolometer with a frequency response from 0.5 to 10.0 Gc.

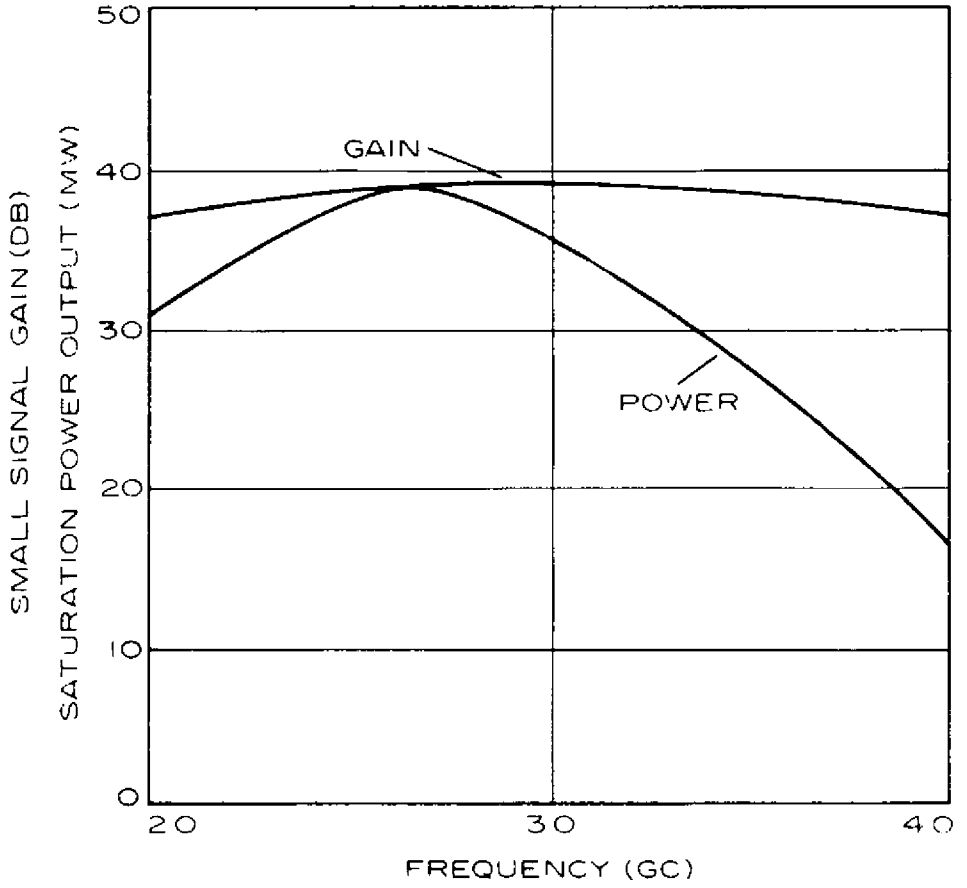
7. Ranges include values required as a result of initial spread in tube characteristics as well as those to accommodate changes throughout life.

8. For initial setup, it is desirable that grid 2 voltage be adjustable upward from zero.

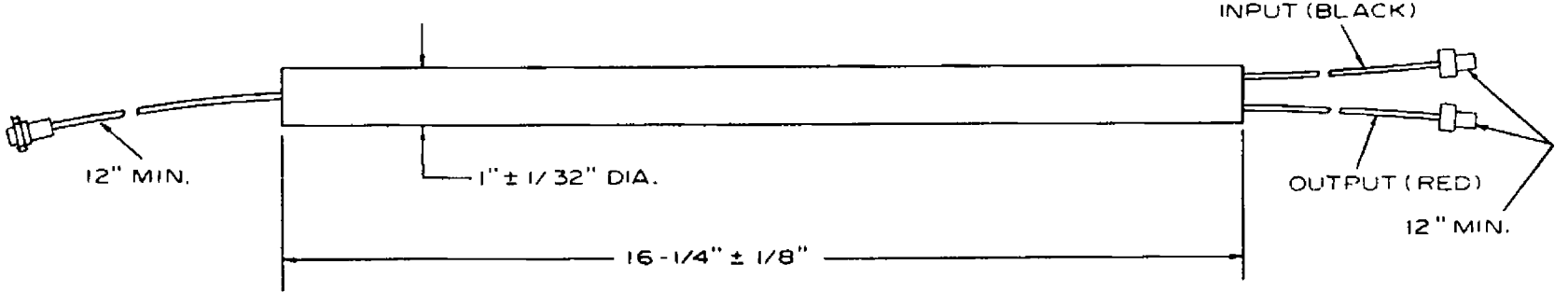
TYPICAL PERFORMANCE CHARACTERISTICS


50
40
30
20
10
0
GAIN
POWER
GAIN (DB)
POWER OUTPUT (DBM)
-40
-30
-20
-10
0
+10
POWER INPUT (DBM)

Type 6493


50
40
30
20
10
0
GAIN
POWER
SMALL SIGNAL GAIN (DB)
SATURATION POWER OUTPUT (MW)
20
30
40
FREQUENCY (GC)

Type 6493



Type 6493