6861

TRAVELING-WAVE TUBE

LOW-NOISE AMPLIFIER TYPE

Useful over frequency range of 2700 to 3500 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:
- Voltage . . . . . 5 . . . . . .ac or dc volts
- Current at 5 volts. . . . 0.65 . . . . . amp
- Starting current: The maximum instantaneous starting current must never exceed 4 amperes, even momentarily.

Minimum Cathode Heating Time. . . . . 1 minute
Frequency Range . . . . . 2700 to 3500 Mc
Cold Insertion Loss . . . . . 80 db

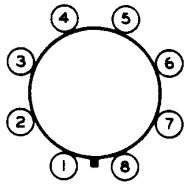
Mechanical:

Operating Position. . . . . Any
Cooling . . . . . Natural ←
Maximum Overall Length. . . . . 19-3/8"
Metal-Shell Diameter. . . . . 1.375" ± 0.005"
Weight (Approx.). . . . . 1-1/2 lbs
Collector-Terminal Connector. . . Birnbach No.403 Banana Jack ←
RF Connectors:
- Input terminal. . . . . .Type N UG-18B/U Plug ←
- Output terminal . . . . . .Type N UG-18B/U Plug ←

Base. . . . . Octal 8-Pin

BOTTOM VIEW

Pin 1 - Grid No.1
Pin 2 - No Connection
Pin 3 - Helix
Pin 4 - Grid No.4



Pin 5 - Grid No.3
Pin 6 - Grid No.2
Pin 7 - Heater
Pin 8 - Heater, Cathode

Maximum and Minimum Ratings, *Absolute Values:*

DC COLLECTOR VOLTAGE.	500 max.	volts
DC HELIX VOLTAGE.	500 max.	volts
DC GRID-No.4 VOLTAGE.	500 max.	volts
DC GRID-No.3 VOLTAGE.	300 max.	volts
DC GRID-No.2 VOLTAGE.	75 max.	volts
DC GRID-No.1 VOLTAGE.	20 max.	volts
DC COLLECTOR CURRENT.	500 max.	μa ←
DC HELIX CURRENT.	5 max.▲	μa ←
MAGNETIC FIELD STRENGTH	400 min.●	gausses
PEAK RF POWER INPUT	100 max.	watts ←
AVERAGE RF POWER INPUT.	0.4 max.	watt ←
METAL-SHELL TEMPERATURE (At hottest point).	175 max.	°C

▲ During alignment of the tube in the magnetic-focusing field, the helix current may exceed this value for short periods, but should never exceed 25 μa. ←

●: See next page.

←Indicates a change.

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Typical Operation at 3100 Mc:

DC Collector Voltage	400	volts
DC Helix Voltage	375	volts
DC Grid-No.4 Voltage	200	volts
DC Grid-No.3 Voltage	40	volts
DC Grid-No.2 Voltage (Approx.)	20	volts
DC Grid-No.1 Voltage	0	volts
DC Collector Current	150	μa
DC Helix Current	0.5	μa
DC Grid-No.4 Current DC Grid-No.3 Current DC Grid-No.2 Current DC Grid-No.1 Current	each less than 1 μa	
Magnetic-Field Strength†	525 ± 5%	gausses
Gain (Low level)	25	db
Power Output (Saturated)	1	mw
Noise Figure	6.5	db

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	*Min.*	*Max.*	
Heater Current	1	0.45	0.85	amp
Input VSWR (Non-operating)	2	–	1.7	
Output VSWR (Non-operating)	2	–	2	
DC Helix Voltage	3	350	390	volts
→ DC Grid-No.4 Voltage	3	160	275	volts
→ DC Grid-No.3 Voltage	3	20	50	volts
Saturated Power Output	3	0.25	–	mw
Gain	3	20	–	db
Noise Figure	3	–	7	db

Note 1: With heater voltage of 5 volts.

Note 2: Measured at specified connector over the frequency range of 2700 to 3500 Mc.

Note 3: Adjusted for optimum noise figure with a magnetic field of 525 gausses, signal frequency of 3100 Mc, and heater voltage of 5 volts.

OPERATING CONSIDERATIONS

The *magnetic field* required for focusing the electron beam of the 6861 may be obtained from a solenoid or permanent magnet capable of providing a uniform field of 525 gausses over the length of the tube axis starting 2 inches from the groove near the base end of the metal shell and continuing for at least 9 inches along the tube axis.

● This value of field strength will focus the electron beam, but noise figure will not be optimum.

† For RCA Solenoid Type MW-4900.

→Indicates a change.

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