R.F. PENTODE with variable transconductance for use as wide-band amplifier

PHYSICAL SPECIFICATIONS
Cathode Coated unipotential
Base Small button noval 9-pin
Maximum overall length 2 5/8 inches
Maximum seated height 2 3/8 inches
Bulb length excluding tip 2 ±3/32 inches
Maximum diameter 7/8 inch
Mounting position any
Basing connections - JETEC basing designation 9 AQ

Pin 1 - Cathode
Pin 2 - Grid No.1
Pin 3 - Cathode
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Internal shield
Pin 7 - Plate
Pin 8 - Grid No.2
Pin 9 - Grid No.3

GENERAL ELECTRICAL DATA
Heater voltage 6.3 volts
Heater current 0.3 ampere

Direct Interelectrode Capacitances
Grid No.1 to all other elements 7.2 μF
Plate to all other elements 3.7 μF
Plate to grid No.1 max. 0.007 μF
Grid No.1 to heater max. 0.15 μF
**Maximum Ratings** (design center values)

- **Plate voltage**: 250 volts
- **Plate voltage (without current)**: 550 volts
- **Plate dissipation**: 2.5 watts
- **Grid No.2 voltage**: 250 volts
- **Grid No.2 voltage (without current)**: 550 volts
- **Grid No.2 dissipation**: 0.65 watt
- **Cathode current**: 15 m amps
- **Grid No.1 circuit resistance**: 3 megohms
- **Grid No.1 current starting point.**
  (Grid No.1 voltage at grid No.1 current = +0.3 \( \mu \)amp) = -1.3 volts
- **External resistance between heater and cathode**: 20,000 ohms
- **Voltage between heater and cathode**: 150 volts

**Operating characteristics**

- **Supply voltage**: 250 volts
- **Plate voltage**: 250 volts
- **Grid No.3 voltage**: 0 volt
- **Grid No.2 series resistor**: 60,000 ohms
- **Grid No.1 bias**: -2 \(-35\) volts
- **Grid No.2 voltage**: 100 \(-\) volts
- **Plate current**: 10 \(-\) m amps
- **Grid No.2 current**: 2.5 \(-\) m amps
- **Transconductance**: 6000 \(60\) micromhos
- **Plate resistance**: 0.5 >5 megohms
- **Equivalent noise resistance**: 1500 \(-\) ohms
- **Input damping at 100 Mc**: 2250 \(-\) ohms

Note - The 6BY7 can be used in combination with the 6AJ8 with a common screen grid resistor. In the case that the 6AJ8 is used as frequency changer this common resistor should be 18,000 ohms and in the case that the 6AJ8 is used as R.F. or I.F. amplifier 22,000 ohms.

N.V. PHILIPS' GLOEILAMPENFABRIKEN, Eindhoven, Holland.
Plate voltage = 250 volts
Grid No3 voltage = 0 volt

Supply voltage = 250 volts
Grid No2 series resistor = 60,000 ohms
Supply voltage = 250 volts
Plate voltage = 250 volts
Grid No.2 series resistor = 60,000 ohms
Grid No.3 voltage = 0 volt

Plate resistance (megohms)

Equivalent noise resistance (megohms)

Plate current

Grid No.2 current

Plate resistance

Equivalent noise resistance

Transconductance

Currents (microamps) / Transconductance (micromhos)

-80 -60 -40 -20 0

Grid No.1 bias (volts)

1 0.1 10

0.01 1

0.001 1

4.4.1952
Supply voltage = 250 volts
Plate voltage = 250 volts
Grid No2 series resistor = 600,000 ohms
Grid No3 voltage = 0 volt

Grid No1 A.C. voltage (millivolts, R.M.S.)

Cross modulation = 1 percent
Modulation hum = 1 percent

Transconductance (micromhos)