



ELECTRONIC TUBE REFERENCE

12B6GM

Voltage - Triode (with diode, heptode or hexode) electronic tube

CONSOLIDATED TECHNICAL
DATA

2 SECTIONS
CONSTRUCTION
DIODE-TRIODE

Rogers 12B6 (GM) indirectly heated diode/high-mu triode with shared cathode, 12.6 V 0.15 A heater, metal-sprayed shield and top-cap triode control grid.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	8
NOMINAL HEATER	12.6 V / 150 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Common cathode	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Diode

No fixed ratings recorded.

Published ratings and characteristics promoted from the supplied Rogers/Rogers Majestic source.

SECTION2 Triode

PLATE RESISTANCE	91000 Ω
TRANSCONDUCTANCE	0.0011 S
AMPLIFICATION FACTOR	100
MAXIMUM PLATE VOLTAGE	250 V

Rogers RMA 1940 12B6 (GM) high-mu triode section, common cathode with diode. Class A max plate 250 V, minimum grid bias -1 V, typical V_a 250 V, V_g -2 V, I_a 0.9 mA, μ 100, r_p 91000 Ω , g_m 1100 μ mhos (0.0011 A/V). C_{gp} 1.7 pF, input 2.5 pF, output 7 pF. Control grid on miniature metal top cap; triode plate pin3, common cathode pin8.

12B6GM — Diode High-Mu Triode Vacuum Tube

An indirectly heated, unipotential cathode receiving tube designed for voltage amplification service, combining a high-mu triode system with a single diode plate in a single envelope.

Physical Construction and Basing

The 12B6GM features a T9 metal spray bulb construction with a small octal shell base and a miniature metal top cap. The physical dimensions of the tube are specified as follows:

- **Maximum Diameter:** 1-3/16 inches
- **Maximum Overall Length:** 4-1/4 inches
- **Maximum Seated Height (including top cap):** 3-11/16 inches

The tube is designed to operate in any mounting position. It utilizes the 6Y basing designation, which provides the following pin and cap connections when viewed from the bottom of the base:

Pin / Cap	Connection
Pin 1	Metal Spray Shield
Pin 2	Heater
Pin 3	Plate (triode)
Pin 4	No connection
Pin 5	Diode plate
Pin 6	No connection
Pin 7	Heater
Pin 8	Cathode
Top Cap	Control grid (triode)

Heater and Electrical Ratings

The 12B6GM is equipped with an indirectly heated, unipotential cathode. The heater is designed to operate from either an alternating current (AC) or direct current (DC) supply.

Heater Parameter	Value
Heater Voltage	12.6 V
Heater Current	0.150 A
Calculated Heater Power	1.89 W

Note: The heater power of 1.89 W is a calculated value derived from the nominal heater voltage of 12.6 V and nominal heater current of 0.150 A (12.6 V multiplied by 0.150 A).

For Class A voltage amplifier service, the tube is constrained by the following maximum and minimum ratings:

- **Maximum Plate Voltage:** 250 V
- **Minimum Grid Bias Voltage:** -1 V

Typical Class A Operating Characteristics

Under typical Class A voltage amplifier operating conditions, the triode section of the 12B6GM exhibits a high amplification factor combined with a high plate resistance. The typical operating parameters are defined as:

- **Plate Voltage:** 250 V
- **Grid Voltage:** -2 V
- **Plate Current:** 0.9 mA
- **Plate Resistance:** 91,000 ohms
- **Transconductance:** 1,100 micromhos (μmhos)
- **Amplification Factor (μ):** 100

The relationship between these typical characteristics is consistent with standard triode design principles, where the amplification factor is approximately equal to the product of transconductance and plate resistance. A calculation using these typical values yields:

$$\mu \approx g_m \times r_p = 0.0011 \text{ S} \times 91,000 \Omega = 100.1$$

This calculated value closely matches the nominal amplification factor of 100.

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the triode unit are measured approximately as follows:

- **Grid-to-Plate (Grid-Plate):** 1.7 μpF
- **Input (Grid-to-Cathode and Shield):** 2.5 μpF
- **Output (Plate-to-Cathode and Shield):** 7.0 μpF

These capacitance values are critical for determining the high-frequency response and input loading effects of the triode stage when configured as a high-gain voltage amplifier.

Technical Summary

The 12B6GM is a specialized diode high- μ triode receiving tube featuring a unipotential cathode, a 12.6 V heater, and a T9 metal spray bulb with a small octal shell base. Designed for Class A voltage amplification, its triode section provides a high amplification factor of 100 with a transconductance of 1,100 μmhos and a plate current of 0.9 mA at a plate voltage of 250 V. The inclusion of a separate diode

plate and an integrated metal spray shield connected to Pin 1 makes it a compact solution for combined detection and high-gain audio voltage amplification in radio receiver designs.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1959 Rogers

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1959 ROGERS

Section 1 · Diode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterOrFilamentVoltage	12.6 V	—
HeaterOrFilamentCurrent	150 mA	—

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