



ELECTRONIC TUBE REFERENCE

12K8GT

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

CONSOLIDATED TECHNICAL
DATA

2 SECTIONS
CONSTRUCTION
HEXODE-TRIODE

GT-envelope triode-hexode converter for superheterodyne receivers. The triode generates the local oscillator signal while the hexode performs frequency conversion to the receiver intermediate frequency.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8KV	BASE PINS	8
NOMINAL HEATER	12.6 V / 150 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

SECTION RATINGS

SECTION1 Triode

No fixed ratings recorded.

Published ratings/characteristics promoted where semantically applicable.

SECTION2 Hexode

PLATE RESISTANCE	600000 Ω
TRANSCONDUCTANCE	0.00035 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	150 V
<i>Hexode converter section uses SectionType=Other because Hexode is not present in the locked SectionType vocabulary.</i>	

12K8GT — Triode-Hexode Converter Vacuum Tube

The **12K8GT** is an international octal-based glass vacuum tube designed for use as a frequency changer (converter) in superheterodyne radio receivers. It is particularly suited for AC/DC receiver designs utilizing 150 mA heater series-strings. The device combines a triode oscillator and a hexode mixer within a single envelope. Its physical design is optimized to minimize interaction between the oscillator and mixer sections, ensuring stable operation at high frequencies as well as across the standard broadcast band.

Except for its heater ratings, the electrical characteristics, physical dimensions, and maximum ratings of the 12K8GT are identical to those of the 6.3 V type [6K8GT](#).

Construction, Heater, and Pinout

The 12K8GT features an indirectly heated, coated unipotential cathode. The heater is designed for either AC or DC operation.

Heater Parameter	Value
Heater Voltage	12.6 V
Heater Current	0.15 A
Heater Supply	AC or DC

Physical Dimensions

The tube is housed in a T-9 glass bulb with a small wafer 8-pin octal base featuring a metal shell.

- **Maximum Overall Length:** 3-1/8 inches
- **Maximum Diameter:** 1-5/16 inches

Pin Connections

The 12K8GT uses an 8-pin octal base (basing arrangement 8KV) with an external top cap. The pin connections, viewed from the bottom of the base, are as follows:

- **Pin 1:** Metal Shell / Shield (internally connected to the metal shell)
- **Pin 2:** Heater
- **Pin 3:** Hexode Plate (Anode) [P]
- **Pin 4:** Hexode Screen (Grids 2 and 4) [Gs]
- **Pin 5:** Oscillator Grid / Hexode Grid 1 [Go] (internally connected)
- **Pin 6:** Oscillator Anode (Triode Anode) [Po]
- **Pin 7:** Heater
- **Pin 8:** Cathode [K]

- **Top Cap:** Hexode Control Grid (Signal Input Grid) [g]

Electrical Characteristics and Operating Points

The 12K8GT is typically operated in converter service. The table below outlines the typical operating conditions and characteristics under two different hexode plate voltage conditions:

Parameter	Operating Point A	Operating Point B
Hexode Plate (P) Voltage	100 V	250 V
Hexode Screen (Gs) Voltage	100 V	100 V
Hexode Control Grid (G) Voltage	-3 V	-3 V
Oscillator Anode (Po) Voltage	100 V	100 V
Hexode Plate Current	2.3 mA	2.5 mA
Hexode Screen Current	6.2 mA	6.0 mA
Oscillator Anode Current	3.8 mA	3.8 mA
Oscillator Grid (Go) Current	0.15 mA	0.15 mA
Total Cathode Current	12.5 mA	12.5 mA
Oscillator Grid Resistor	50,000 Ω	50,000 Ω
Conversion Transconductance	325 μmhos	350 μmhos
Hexode Plate Resistance (Approx.)	0.4 M Ω	0.6 M Ω
Hexode Control Grid Voltage (Approx.)*	-30 V	-30 V

When the oscillator section is not oscillating, its transconductance is approximately 3,000 μmhos under the condition where the triode plate voltage is 100 V and the triode grid voltage is 0 V.

Maximum Ratings

The maximum ratings for the 12K8GT must be observed to ensure reliable operation. These limits are defined as follows:

- **Maximum Hexode Plate (P) Voltage:** 300 V
- **Maximum Hexode Screen (Gs) Supply Voltage:** 300 V
- **Maximum Hexode Screen (Gs) Voltage:** 150 V
- **Maximum Hexode Plate Dissipation:** 0.75 W

- **Maximum Hexode Screen Dissipation:** 0.7 W
- **Maximum Total Cathode Current:** 16 mA
- **Minimum External Signal Grid (g) Bias Voltage:** 0 V
- **Maximum Oscillator Anode (Po) Voltage:** 125 V
- **Maximum Oscillator Anode Dissipation:** 0.75 W

Interelectrode Capacitances

Direct interelectrode capacitances are measured with an external shield connected to the cathode. The capacitance values are:

- **Signal Grid to Mixer Plate (g to P):** 0.08 pF (Maximum)
- **Signal Grid to Oscillator Plate (g to Po):** 0.05 pF (Maximum)
- **Signal Grid to Oscillator Grid (g to Go):** 0.2 pF (Maximum)
- **Oscillator Grid to Oscillator Plate (Go to Po):** 1.8 pF
- **Signal Input (G to all other electrodes):** 4.6 pF
- **Oscillator Input (Go to all other electrodes except Po):** 6.5 pF
- **Oscillator Output (Po to all other electrodes except Go):** 3.4 pF
- **Mixer Output (P to all other electrodes):** 4.8 pF
- **Oscillator Grid to Mixer Plate (Go to P):** 0.15 pF (Maximum)

Technical Summary

The **12K8GT** is an octal-based, indirectly heated triode-hexode converter tube designed for AC/DC superheterodyne radio receivers. Operating with a 12.6 V, 0.15 A heater, it integrates a triode oscillator and a hexode mixer in a single envelope. The tube features a conversion transconductance of 325 to 350 μmhos and a hexode plate resistance of 0.4 to 0.6 M Ω under typical operating conditions. By shielding the oscillator and mixer sections internally, the 12K8GT achieves stable frequency conversion with minimal interaction, making it highly effective for both broadcast and high-frequency applications.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1948 Brimar Radio Valve Manual

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

1948 BRIMAR RADIO VALVE MANUAL

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Supply Voltage	250 V	—
Anode Voltage	100 V	—
Anode Resistor	40000 ohm	—
Anode Current	3.8 mA	—
Grid Resistor	50000 ohm	—
Grid Current	0.15 mA	—

1948 BRIMAR RADIO VALVE MANUAL

Section 2 · Hexode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Voltage	250 V	—
Anode Current	2.5 mA	—
Screen Voltage	100 V	G2,G4
Screen Current	6 mA	—
Control Grid Voltage	-3 V	G3
Cathode Bias Resistor	300 ohm	—
Conversion Conductance	360 uS	—
Control Grid Voltage for Low Conversion Conductance	-30 V	ConversionConductance=0.002mA/V

195X General Electric Essential Characteristics

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

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Triode oscillator plate voltage	100 V	Converter
Triode oscillator plate current	3.8 mA	Converter

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 2 · Hexode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	Converter
Screen voltage	100 V	Converter
Grid voltage	-3 V	Converter
Plate current	2.5 mA	Converter
Screen current	6 mA	Converter

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Oscillator grid current	0.15 mA	Converter



1961 Ferranti Technical Handbook

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

1961 FERRANTI TECHNICAL HANDBOOK

Section 1 · Triode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Oscillator	—

1961 FERRANTI TECHNICAL HANDBOOK

Section 2 · Hexode

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Frequency changer / mixer	—