



ELECTRONIC TUBE REFERENCE

12A8G

Voltage Radio Detector Converter electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

HEPTODE

Heptode converter for superheterodyne receivers, combining local-oscillator and mixer action in one multi-grid structure. Its series-heater characteristics make it well suited to AC/DC radio receiver designs.

GENERAL CHARACTERISTICS

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

SECTION RATINGS

SECTION 1 Heptode	
PLATE RESISTANCE	600000 Ω
TRANSCONDUCTANCE	0.0005 S
MAXIMUM PLATE VOLTAGE	250 V
MAXIMUM SCREEN VOLTAGE	100 V
<i>Promoted ratings/characteristics read from the approved National Union datasheet.</i>	

12A8G — Heptode Frequency Converter

The **12A8G** is an indirectly heated heptode frequency converter designed for superheterodyne radio receiver applications. It combines mixer and oscillator functions within a single glass envelope. The tube features a 12.6 V heater, an ST-12 glass bulb, a standard 8-pin octal base, and a miniature top cap.

Mechanical Construction and Basing

The 12A8G is constructed with an ST-12 (or ST-12C) glass envelope. It utilizes an 8-pin octal shell base (designated as 8-A) and a miniature top cap for the control grid connection.

The physical dimensions of the tube are:

- **Maximum overall length:** 4-15/32 inches
- **Maximum seated height:** 3-29/32 inches
- **Maximum diameter:** 1-9/16 inches

Pinout Configuration

The basing arrangement (8A, viewed from the bottom) provides the following connections:

- **Pin 1:** No Connection (or Shield/Ground connection in some configurations)
- **Pin 2:** Heater
- **Pin 3:** Plate
- **Pin 4:** Screen (Grids 3 and 5, designated as G3 + G5)
- **Pin 5:** Oscillator Grid (Grid 1, designated as G1)
- **Pin 6:** Anode-Grid (Grid 2, designated as G2)
- **Pin 7:** Heater
- **Pin 8:** Cathode (or Cathode and Grid 4, designated as K + G4)
- **Top Cap:** Control Grid (Grid 4, designated as G or G4)

Heater and Electrical Ratings

The 12A8G is designed for series or parallel heater operation, requiring a nominal heater voltage of 12.6 volts and drawing a current of 0.150 amperes (150 mA).

Maximum Ratings

The absolute maximum electrical limits for the 12A8G are:

- **Plate Voltage:** 250 max. volts
- **Screen Voltage (Grids 3 and 5):** 100 max. volts
- **Anode-Grid Supply Voltage (Grid 2):** 250 max. volts

Typical Operating Conditions and Characteristics

Under typical operating conditions as a frequency converter, the 12A8G operates with the following parameters:

- **Control-Grid Voltage (Grid 4):** -3 volts
- **Anode-Grid Series Resistor:** 20,000 ohms
- **Oscillator Grid Resistor:** 50,000 ohms

- **Plate Current:** 3.5 mA
- **Screen Current:** 2.7 mA
- **Anode-Grid Current:** 4 mA
- **Oscillator-Grid Current (minimum recommended):** 0.3 mA
- **Conversion Conductance:** 550 μmhos
- **Plate Resistance:** 0.36 M Ω (360,000 ohms)
- **Grid Voltage for Conversion Cutoff:** -35 volts (for a conversion conductance of 2 to 5 μmhos)

Interelectrode Capacitances

When measured with a form-fitting shield, the interelectrode capacitances of the 12A8G are:

Capacitance Parameter	Value
Grid 4 to Plate	0.26 μF
Grid 4 to Grid 5 (or Grid 2)	0.15 μF
Grid 4 to Grid 1	0.15 to 0.16 μF
Grid 1 to Grid 2	1.1 μF
RF Input (Grid 4 to all other electrodes)	9.5 μF
Oscillator Output (Except Grid 1)	4.5 μF
Oscillator Input (Except Grid 2)	6.0 μF
Converter Output	12.0 μF

Related Designations and Comparisons

The electrical characteristics and applications of the 12A8G are identical to those of the Sylvania type [6A8G](#), with the exception of its heater ratings and specific interelectrode capacitances. The [6A8G](#) operates with a different heater supply, whereas the 12A8G is optimized for 12.6 V, 0.150 A operation.

Technical Summary

The **12A8G** is an octal-based, indirectly heated heptode frequency converter featuring a 12.6 V / 0.150 A heater, an ST-12 glass envelope, and a top cap. It is designed to perform both oscillator and mixer functions in superheterodyne receivers. With a conversion conductance of 550 μmhos and a plate resistance of 0.36 M Ω under typical operating conditions, the 12A8G provides reliable frequency conversion.