



ELECTRONIC TUBE REFERENCE

15A2

Voltage - Radio Detector Converter electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

HEPTODE

Heptode frequency changer for superheterodyne radio receivers, combining oscillator and mixer action within one multi-grid valve. Manufacturer data specify its conversion characteristics and operating conditions for dedicated receiver frequency-changing service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	8
NOMINAL HEATER	4 V / 650 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Heptode

PLATE RESISTANCE	360000 Ω
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Brimar 15A2 heptode frequency changer, English octal base; 4.0 V 0.65 A heater. Typical converter circuit: anode 250 V at 3.5 mA, screen grids G3/G5 100 V at 2.7 mA, oscillator anode G2 200 V at 4.0 mA, mixer control G4 -3 V, oscillator grid G1 resistor 50 k Ω , oscillator grid current 0.4 mA. Conversion conductance 0.55 mA/V is conversion gain characteristic, not intrinsic static transconductance; anode resistance ~360 k Ω already recorded. Brimar refers to 6A8G for further characteristics; operating voltages do not establish unrestricted maxima.

15A2 — Heptode Frequency Changer

An indirectly heated heptode vacuum tube designed primarily for use as a frequency changer in radio receivers. It features an English base configuration and is characterized by its low-voltage, high-current heater compared to its close relatives in the same family.

Overview and Family Relationship

The 15A2 belongs to a family of heptode frequency changers that also includes the [15D1](#) and [15D2](#). While these three tubes share identical internal electrode structures and electrical operating characteristics, they are distinguished by their heater ratings to accommodate different receiver power supply designs.

The 15A2 is designed for a 4.0 V heater supply, making it suitable for standard AC-operated receivers. In contrast, the [15D1](#) and [15D2](#) are designed for 13.0 V operation, with heater currents of 0.2 A and 0.15 A respectively, typically used in series-string or mobile applications.

The electrical characteristics of the 15A2 family are equivalent to the widely documented [6A8G](#) (also referred to in some historical references as the **6ABG**).

Physical Construction and Pinout

The 15A2 is constructed in a glass envelope with a maximum diameter of 1-9/16 inches and a maximum overall height of 3-7/8 inches. It utilizes a standard 7-pin English base along with a top cap connector for the control grid. This physical arrangement ensures isolation of the sensitive input grid from the other electrodes, minimizing unwanted coupling and frequency drift in frequency conversion stages.

The pin connections, viewed from the bottom of the English base, are assigned as follows:

Pin / Terminal	Electrode Connection
Pin 1	Oscillator Grid (G1)
Pin 2	Oscillator Anode (G2)
Pin 3	Screen Grid (G3, G5)
Pin 4	Heater (H)
Pin 5	Heater (H)
Pin 6	Cathode (K)
Pin 7	Anode (A)
Top Cap	Control Grid (G4)

Electrical Characteristics and Operating Points

The 15A2 operates as a pentagrid converter (heptode), where the first two grids (G1 and [G2](#)) function as the grid and anode of an oscillator, while the fourth grid (G4) acts as the control grid for the incoming radio frequency (RF) signal. Grids 3 and 5 (G3, G5) are internally connected to act as a screen grid, shielding the control grid from the oscillator and anode sections.

Heater Ratings

Parameter	15A2	<u>15D1</u>	<u>15D2</u>	Unit
Heater Voltage	4.0	13.0	13.0	V
Heater Current	0.65	0.2	0.15	A

Typical Operating Conditions

When operated as a frequency changer, the typical electrical parameters for the 15A2 are defined at the following operating point:

- **Anode Voltage:** 250 V
- **Anode Current:** 3.5 mA
- **Screen Grid (G3, G5) Voltage:** 100 V
- **Screen Grid Current:** 2.7 mA
- **Oscillator Anode (G2) Voltage:** 200 V
- **Oscillator Anode Current:** 4.0 mA
- **Control Grid (G4) Voltage:** -3 V
- **Oscillator Grid (G1) Resistor:** 50,000 ohms
- **Oscillator Grid Current:** 0.4 mA
- **Anode Impedance:** 0.36 megohms
- **Conversion Conductance:** 0.55 mA/V

These parameters demonstrate that the tube achieves a conversion conductance of 0.55 mA/V under standard operating conditions, providing efficient frequency translation with a high anode impedance of 360,000 ohms to maintain excellent selectivity in the subsequent intermediate frequency (IF) stages.

Technical Summary

The **15A2** is an English-base heptode frequency changer featuring a 4.0 V, 0.65 A heater. It is electrically identical to the 13.0 V types 15D1 and 15D2, and shares its electrical characteristics and curves with the 6A8G (or **6ABG**). With its specialized seven-electrode structure, including a top-cap control grid (G4), it provides stable oscillator and mixer performance in superheterodyne receivers, delivering a conversion conductance of 0.55 mA/V at an anode voltage of 250 V.

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 · Heptode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Voltage	250 V	—
Anode Current	3.5 mA	—
Screen Voltage	100 V	G3,G5
Screen Current	2.7 mA	—
Oscillator Anode Voltage	200 V	G2
Oscillator Anode Current	4 mA	—
Control Grid Voltage	-3 V	G4
Oscillator Grid Resistor	50000 ohm	G1
Oscillator Grid Current	0.4 mA	—
Conversion Conductance	550 uS	—

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