



ELECTRONIC TUBE REFERENCE

117Z4GT

Rectifier - Half Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

RECTIFIER

Indirectly heated half-wave rectifier for three-way portable receiver supplies. Its 117 V heater is designed for line-series operation while providing modest rectified DC output.

GENERAL CHARACTERISTICS

BASE DESIGNATION	5AA	BASE PINS	6
NOMINAL HEATER	117 V / 40 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
PEAK INVERSE VOLTAGE	350 V
NOMINAL OUTPUT CURRENT	90 mA
PEAK FORWARD CURRENT	540 mA
FORWARD VOLTAGE DROP	22.5 V
MAXIMUM HEATER-CATHODE VOLTAGE	175 V
<i>Published ratings/characteristics promoted where semantically applicable.</i>	

117Z4GT — Half-Wave High-Vacuum Rectifier

The **117Z4GT** is a half-wave high-vacuum rectifier tube designed primarily for service in three-way portable radio receivers. It features a coated unipotential cathode and a high-voltage heater designed for direct operation across a standard 117-volt AC or DC power line, eliminating the need for a series dropping resistor or power transformer in line-operated equipment.

Mechanical Construction and Pin Configuration

The 117Z4GT is constructed in a T-9 glass bulb envelope with an intermediate shell 6-pin octal base. The physical dimensions of the tube are compact to facilitate installation in portable equipment:

- **Maximum overall length:** 2-15/16 inches
- **Maximum seated height:** 2-3/8 inches
- **Maximum bulb diameter:** 1-5/16 inches

The tube can be mounted and operated in **any position**.

The electrical connections are arranged according to the **5AA** basing diagram. Viewed from the bottom of the tube, the pin assignments are as follows:

- **Pin 1:** Plate (P)
- **Pin 2:** Heater (H)
- **Pin 3:** No Connection (NC)
- **Pin 5:** No Connection (NC)
- **Pin 7:** Heater (H)
- **Pin 8:** Cathode (K)

Pins 4 and 6 are omitted from the physical base structure, resulting in a 6-pin configuration on the standard octal footprint.

Heater and Maximum Ratings

The heater of the 117Z4GT is designed to run directly on line voltage, minimizing auxiliary power supply components. The electrical ratings, interpreted according to the RMA Standard M8-210, establish the safe operating boundaries for the device:

Parameter	Value	Unit
Heater Voltage (AC or DC)	117	V
Heater Current	0.040 (40)	A (mA)
Maximum AC Plate Voltage (RMS)	117	V
Maximum Peak Inverse Plate Voltage	350	V
Maximum Steady-State Peak Plate Current	540	mA
Maximum DC Heater-Cathode Potential	175	V

During operation, the internal resistance of the tube results in a voltage drop. The nominal tube voltage drop is **22.5 Volts** when conducting a direct current of **180 mA**.

Typical Operating Conditions and Circuit Design

In typical applications, the 117Z4GT operates as a half-wave rectifier supplying power to a condenser-input filter network. Under these conditions, the typical operating parameters are:

- **AC Plate Voltage (RMS):** 117 Volts
- **DC Output Current:** 90 mA
- **Minimum Total Effective Plate Supply Impedance:** 30 Ohms

Filter Impedance Considerations

When designing the rectifier circuit, the choice of the input filter capacitor is critical for tube longevity. The minimum specified total effective plate supply impedance of 30 Ohms must be maintained to limit peak inrush and steady-state currents. If the input filter condenser has a capacitance larger than **40 μ F**, it may be necessary to add additional series plate supply impedance to protect the cathode from excessive peak current demands.

Technical Summary

The **117Z4GT** is a specialized, line-voltage-operated half-wave high-vacuum rectifier. By utilizing a 117 V, 40 mA heater, it allows direct line-power rectification without the bulk and heat of dropping resistors or step-down transformers, making it highly suitable for compact three-way portable receivers. Housed in a T-9 glass envelope with a 6-pin octal base (5AA basing), it supports any mounting orientation. Under typical operating conditions with a condenser-input filter, it delivers up to 90 mA of DC output current from a 117 V RMS supply, provided that a minimum plate supply impedance of 30 Ohms is maintained and filter capacitance limits are respected.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
RMS supply voltage	117 V	HalfWave

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Forward current at published voltage drop	180 mA	VoltageDrop=2.5V

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
AC Plate Voltage RMS	117 V	CapacitorInputFilter
Effective Plate Supply Impedance	30 ohm	CapacitorInputFilter
Heater Voltage (Ac Or Dc)	117 V	—
Max. Ac Plate Voltage	117 V	—
Max. Dc Heater Cathode Potential	175 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Max., Peak Inverse Plate Voltage	350 V	—
Ac Plate Voltage (Rms)	117 V	—
Dc Output Current	90 mA	—
Min., Total Effective Plate Supply Impedancea	20 ohm	—

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