



# 50DC4

## DIODE

### FOR HALF-WAVE POWER RECTIFIER APPLICATIONS

## DESCRIPTION AND RATING

The 50DC4 is a miniature half-wave rectifier designed for use in line-operated equipment having series-connected heaters. The heater is tapped to permit operation of a panel lamp.

### GENERAL

#### ELECTRICAL

Cathode—Coated Unipotential	
Heater Voltage, AC or DC*	50 ± 10% Volts
Heater-Tap Voltage*	7.5 Volts
Heater Current*	0.15 Amperes

#### MECHANICAL

Mounting Position—Any  
 Envelope—T-5½, Glass  
 Base—E7-1, Miniature Button 7-Pin

### MAXIMUM RATINGS

#### RECTIFIER SERVICE—DESIGN-MAXIMUM VALUES

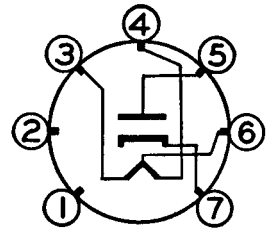
Peak Inverse Plate Voltage	330 Volts
Steady-State Peak Plate Current	720 Milliamperes
DC Output Current	
Without Panel Lamp	120 Milliamperes
With Panel Lamp and Shunting Resistor	110 Milliamperes
With Panel Lamp and No Shunting Resistor	70 Milliamperes
Heater-Tap Voltage When Panel Lamp Fails, RMS	16.5 Volts
Heater-Cathode Voltage	
Heater Positive with Respect to Cathode	330 Volts
Heater Negative with Respect to Cathode	330 Volts

Design-Maximum Ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in tube characteristics.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, and environmental conditions.

### BASING DIAGRAM

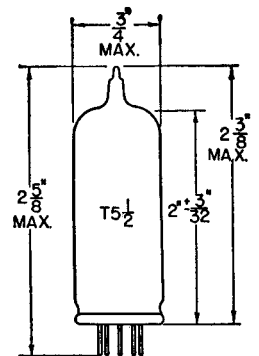


EIA 5BQ

### TERMINAL CONNECTIONS

- Pin 1—No Connection
- Pin 2—No Connection
- Pin 3—Heater
- Pin 4—Heater
- Pin 5—Plate
- Pin 6—Heater Tap
- Pin 7—Cathode

### PHYSICAL DIMENSIONS



EIA 5-3

**CHARACTERISTICS AND TYPICAL OPERATION**

**HALF-WAVE RECTIFIER WITH PANEL LAMP NUMBER 40 OR NUMBER 47**

Heater Voltage (Pin 3 to Pin 4)	45	45	45	45	Volts
Heater-Tap Voltage (Pin 4 to Pin 6)	5.5	5.5	5.5	5.5	Volts
Heater Current (Between Pins 3 and 6)	150	150	150	150	Milliamperes
AC Plate-Supply Voltage, RMS	117	117	117	117	Volts
Filter Input Capacitor	40	40	40	40	Microfarads
Total Effective Plate-Supply Impedance	15	15	15	15	Ohms
Panel-Lamp Shunting Resistor	450	200	100	75	Ohms
DC Output Current	70	80	90	100	Milliamperes

**HALF-WAVE RECTIFIER WITHOUT PANEL LAMP**

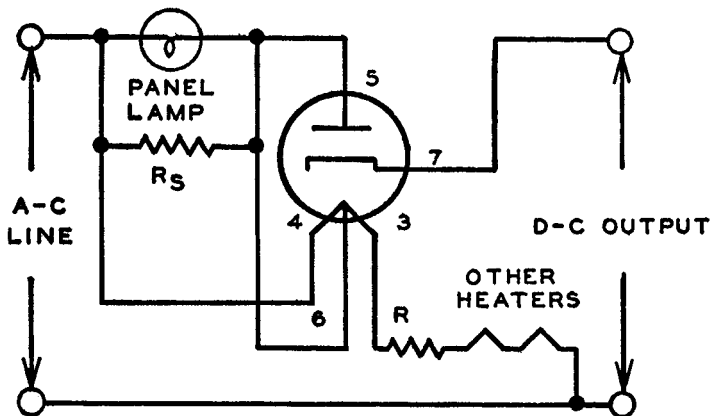
Heater Voltage (Pin 3 to Pin 4)	50	Volts
Heater-Tap Voltage (Pin 4 to Pin 6)	7.5	Volts
Heater Current (Between Pins 3 and 4)	150	Milliamperes
AC Plate-Supply Voltage, RMS	117	Volts
Filter Input Capacitor	40	Microfarads
Total Effective Plate-Supply Impedance	15	Ohms
DC Output Current	110	Milliamperes
DC Output Voltage at Filter Input, approximate		
For DC Output Current of 55 Milliamperes	130	Volts
For DC Output Current of 110 Milliamperes	110	Volts

**Tube Voltage Drop**

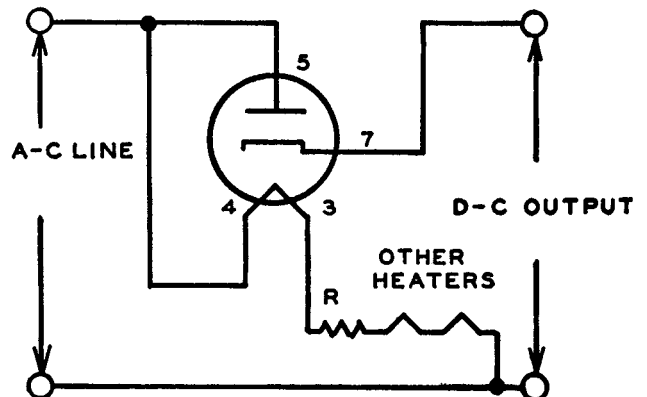
$I_b = 240$ Milliamperes DC	.21	Volts
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\*Operation without panel lamp.

**TYPICAL CIRCUIT FOR OPERATION WITH PANEL LAMP**



**TYPICAL CIRCUIT FOR OPERATION WITHOUT PANEL LAMP**



$R_s$  = PANEL-LAMP SHUNTING RESISTOR

DROP ACROSS R AT 0.15 AMPERE SHOULD EQUAL DIFFERENCE BETWEEN LINE VOLTAGE AND TOTAL OF ALL RATED HEATER VOLTAGES

### AVERAGE PLATE CHARACTERISTICS

