

## Diode

### 1DG3-A

**FOR TV HIGH-VOLTAGE  
RECTIFIER APPLICATIONS**

■ MONOCHROME TYPE

■ 22000 VOLTS DC

■ 0.5 MILLIAMPERES DC

■ X-RADIATION RATING

The 1DG3-A is a filamentary diode designed for use in television receivers as the high-voltage rectifier to supply power to the anode of the television picture tube. It is primarily intended for use in flyback types of power supplies.

Features of the 1DG3-A include built-in X-radiation shielding and additional design and specification controls to reduce the radiation output to very low levels even under conditions of equipment misadjustment and/or circuit failure mode operation.

### GENERAL

#### ELECTRICAL

Cathode - Coated Filament

Filament Characteristics and Ratings

Filament Voltage, AC or DC ★ ..... 1.25 ± 0.2 Volts

Filament Current • ..... 0.2 Amperes

Direct Interelectrode Capacitances, approximate▲

Plate to All: p to (f+i.s.) ..... 1.6 pf

#### MECHANICAL

Operating Position - Any

Envelope - T-9, Glass

Base - B8-251, Ultra-Short Small-Wafer Octal 8-Pin

Top Cap - C1-49, Small

Outline Drawing

Maximum Bulb Diameter ..... 1.188 Inches

Maximum Seal Diameter ..... 1.250 Inches

Minimum Bulb Diameter ..... 1.062 Inches

Maximum Over-all Length ..... 3.563 Inches

Maximum Seated Height ..... 3.000 Inches

Minimum Seated Height ..... 2.625 Inches

### MAXIMUM RATINGS

#### FLYBACK RECTIFIER SERVICE§—DESIGN-MAXIMUM VALUES UNLESS OTHERWISE STATED

Peak Inverse Plate Voltage

DC Component (Absolute-Maximum Value) ..... 22000 Volts

Total DC and Peak (Absolute-Maximum Value) ⊕ ..... 26000 Volts

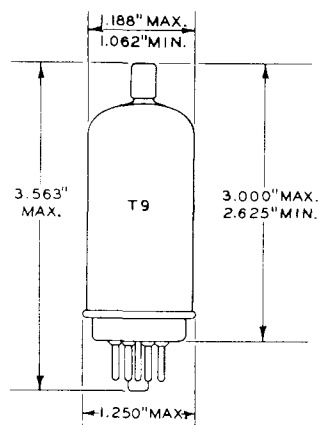
Steady-State Peak Plate Current ..... 50 Milliamperes

DC Output Current ..... 0.5 Milliamperes

Filament Voltage, AC or DC (Absolute-Maximum Value) ⊕ ..... 1.45 Volts

Filament Voltage, AC or DC (Absolute-Minimum Value) ..... 1.05 Volts

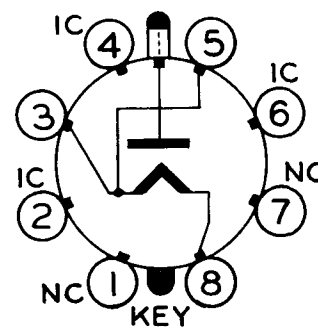
#### PHYSICAL DIMENSIONS



#### TERMINAL CONNECTIONS ♦

- ♦ Pin 1 - No Connection
- Pin 2 - Internal Connection - Do Not Use
- Pin 3 - Filament
- Pin 4 - Internal Connection - Do Not Use
- Pin 5 - Filament
- Pin 6 - Internal Connection - Do Not Use
- ♦ Pin 7 - No Connection
- Pin 8 - Filament and Internal Shield
- Cap - Plate

#### BASING DIAGRAM



EIA 8ND

MAXIMUM RATINGS (Cont'd)

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron 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, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

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, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

Absolute-Maximum ratings are limiting values of operating and environmental conditions applicable to any electron 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, making no allowance for equipment variations, environmental variations, and the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration and of

all other electron devices in the equipment.

The equipment manufacturer should design so that initially and throughout life no absolute-maximum value for the intended service is exceeded with any tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of the tube under consideration and of all other electron devices in the equipment.

AVERAGE CHARACTERISTICS

|                                |           |
|--------------------------------|-----------|
| Tube Voltage Drop, approximate |           |
| Ib = 7.0 Milliamperes .....    | 225 Volts |

X-RADIATION RATING §  
MAXIMUM RATED OPERATING CONDITIONS

| Total DC and<br>Peak Inverse Voltage | Maximum<br>X-Radiation Output |
|--------------------------------------|-------------------------------|
| ②6 KV .....                          | 0.5 mR/hr                     |

Based on accumulated sample test data taken initially and during life test, tubes do not exceed the maximum rating limit of 0.5 mR/hr at any time throughout their useful life, when operated within the maximum ratings, including filament voltage, specified on this data sheet.

This X-radiation maximum rating is based on the use of the Victoreen 440 RF/C survey meter as the standard instrument for X-radiation measurement. X-radiation is measured with the plastic spacer of the 440 RF/C survey meter at a distance of four (4) inches from the external surface of the tube under test. This rating information is not necessarily applicable when a different radiation measuring instrument is used.

Operation at voltages outside of the Absolute-Maximum Ratings will cause permanent damage to the tube resulting in short life and/or catastrophic failure. Any tube known to have operated above 26 KV peak inverse voltage and/or 1.45 V filament voltage should be replaced with the latest version of the same tube type.

The X-radiation characteristics are measured in accordance with JEDEC Publication No. 67A, "Recommended Practice for Measurement of X-Radiation from Receiving Tubes," and controlled in accordance with JEDEC Publication No. 73A, "Recommended Practice for Quality Control of X-Radiation from High Voltage Rectifier and Shunt Regulator Receiving Tubes."

The General Electric Company makes no representation concerning the X-radiation output from these tubes when operated beyond the maximum ratings set forth herein, except as noted under "X-Radiation Characteristics."

**X-RADIATION CHARACTERISTICS****EQUIPMENT MISADJUSTMENT AND/OR CIRCUIT FAILURE MODE OPERATION**

The 1DG3-A will produce varying levels of X-radiation depending upon operating conditions. Based on known attenuation factors of tube construction materials and accumulated sample test data taken initially and during life test, X-radiation output is not expected to exceed the indicated value under equipment misadjustment and/or circuit failure mode operations of plate and filament voltage listed below.

| Total DC and<br>Peak Inverse Voltage | Maximum<br>Filament Voltage | Maximum Expected<br>X-Radiation Output |
|--------------------------------------|-----------------------------|----------------------------------------|
| ⊕30 KV .....                         | ⊕2.0 V .....                | 0.5 mR/hr                              |

The General Electric Company makes no representation concerning the X-radiation output from these tubes when operated with total DC and peak inverse voltage above 30 KV, or with filament voltage above 2.0 V.

Operation at voltages outside of the Absolute-Maximum Ratings will cause permanent damage to the tube resulting in short life and/or catastrophic failure. Any tube known to have operated above 26 KV peak inverse voltage and/or 1.45 V filament voltage should be replaced with the latest version of the same tube type.

**WARNING****X-RADIATION**

X-radiation in excess of 0.5 mR/hr may constitute a health hazard on prolonged exposure at close range. Therefore, equipment design must provide for adequate shielding.

Operation of the 1DG3-A with total DC and peak inverse voltage greater than 30 KV may result in radiation in excess of the "Maximum Expected X-Radiation Output" listed under "X-Radiation Characteristics".

Precautions must be exercised during the servicing of the equipment employing the 1DG3-A to assure that the high voltage is adjusted to the recommended value and that any shielding components are replaced to their intended positions before the equipment is operated.

**SHOCK HAZARD**

The high voltages at which the 1DG3-A is operated can be extremely dangerous to the user or serviceman. Extreme care should be taken in the use of and in the servicing and adjustment of any high voltage circuit.

Precautions must be exercised during the replacement or servicing of the 1DG3-A in equipment to assure that the high voltage output terminal is properly grounded while inserting or removing the tube from its socket or while connecting or disconnecting the top cap connector.

**THE EQUIPMENT MANUFACTURER SHOULD PROVIDE A WARNING LABEL IN AN APPROPRIATE POSITION ON THE EQUIPMENT TO ADVISE THE SERVICEMAN OF ALL PRECAUTIONS HEREIN.**

**NOTES**

- ★ The equipment designer should design the equipment so that filament voltage is centered at the specified bogey value, with filament supply variations restricted to maintain filament voltage within the specified tolerance.
- Filament current of a bogey tube at  $E_f = 1.25$  volts.
- ▲ Without external shield.
- ◆ May be used as a tie-point for filament dropping resistor or may be connected to filament. Do not connect to any other circuits.
- § For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.
- ⊕ **CAUTION** -Operation at voltages outside of the Absolute-Maximum Ratings will cause permanent damage to the tube resulting in short life and/or catastrophic failure. Any tube known to have operated above 26 KV peak inverse voltage and 1.45 V filament voltage should be replaced with the latest version of the same type.

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**GENERAL  ELECTRIC**