



**ELECTRONIC  
INNOVATIONS  
IN ACTION**

**TUBES**

# Diode

## 19DK3

**FOR TV DAMPING DIODE APPLICATIONS**

■ COLOR TV TYPE

■ LOW TUBE DROP

■ 6,500 VOLTS DC AND PEAK

■ 400 MILLIAMPERES DC

The 19DK3 is a heater-cathode type diode intended for service as the damping diode in the horizontal-deflection circuit of color television receivers. It utilizes a unique heater-cathode insulating system making possible a rating of 6,500 volts peak. The 19DK3 also features a top cap connection to the cathode, a T-9 bulb and a 9-pin glass button base with a 0.687-inch pin circle.

## GENERAL

### ELECTRICAL

Cathode - Coated Unipotential	
Heater Characteristics and Ratings	
Heater Voltage, AC or DC *	19 Volts
Heater Current •	0.6±0.04 Amperes
Heater Warm-up Time, average ▲	11 Seconds
Direct Interelectrode Capacitances, approximate ◆	
Cathode to Plate and Heater: k to (p+h)	.22 pf
Plate to Cathode and Heater: p to (k+h)	.13.6 pf
Heater to Cathode: (h to k)	1.10 pf

### MECHANICAL

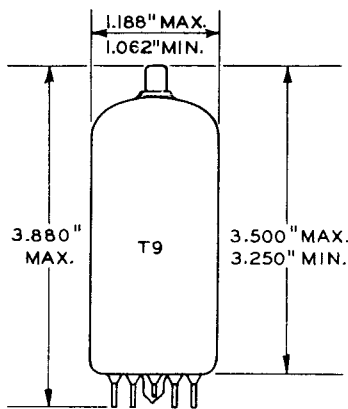
Operating Position - Any	
Envelope - T-9, Glass	
Base - E9-89, Button 9-Pin	
Top Cap - C1-2, Skirted Miniature	
Outline Drawing - EIA 9-117	
Maximum Diameter	1.188 Inches
Minimum Diameter	1.062 Inches
Maximum Over-all Length	3.880 Inches
Maximum Seated Height	3.500 Inches
Minimum Seated Height	3.250 Inches

## MAXIMUM RATINGS

### TV DAMPER SERVICE § — DESIGN-MAXIMUM VALUES

Peak Inverse Plate Voltage	6,500	Volts
Plate Dissipation	9.0	Watts
Steady-State Peak Plate Current	1,200	Milliamperes
DC Output Current	400	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	300	Volts
Heater Negative with Respect to Cathode		
DC Component	900	Volts
Total DC and Peak	6,500	Volts
Bulb Temperature □	220	°C

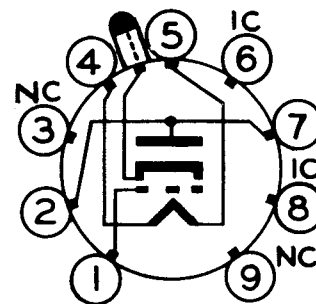
### PHYSICAL DIMENSIONS



### TERMINAL CONNECTIONS ⊕

- Pin 1 - Heater Insulation Coil
- Pin 2 - Plate
- Pin 3 - No Connection
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Internal Connection - Do Not Use
- Pin 7 - Plate
- Pin 8 - Internal Connection - Do Not Use
- ⊕ Pin 9 - No Connection
- Cap - Cathode

### BASING DIAGRAM



EIA 9SG

**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.

**AVERAGE CHARACTERISTICS**

Tube Voltage Drop

I <sub>b</sub> = 400 Milliampères .....	16	Volts
I <sub>b</sub> = 800 Milliampères .....	25	Volts

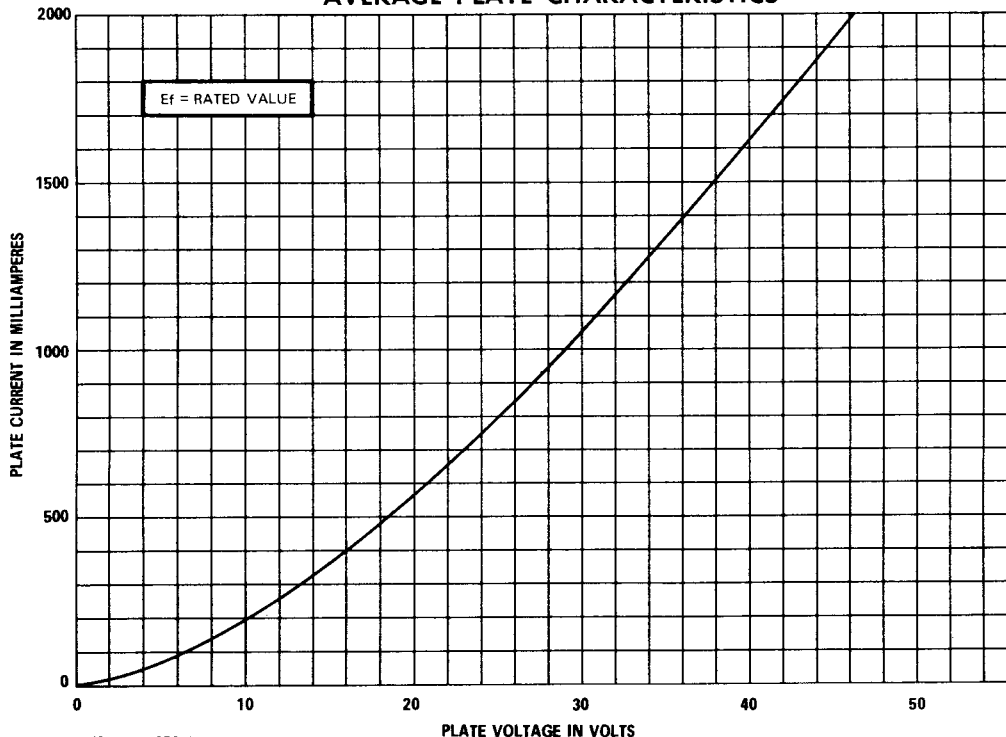
**NOTES**

- ★ Heater voltage for a bogey tube at I<sub>f</sub> = 0.6 amperes.
- The equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.
- ▲ The time required for the voltage across the heater to reach 80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.
- ◆ Without external shield.
- § 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.
- Measured with an infrared thermometer, Ircon Model 700 BC or equivalent
- Ⓢ May be used as tie point for components at or near heater potential

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**AVERAGE PLATE CHARACTERISTICS**



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