ELECTRONIC TUBE REFERENCE

17DM4A

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
RECTIFIER

> Glass-octal half-wave vacuum rectifier designed for television horizontal-deflection damper service.

General characteristics

BASE DESIGNATION	4CG	**BASE PINS**	9
NOMINAL HEATER	16.8 V / 450 mA	**PARALLEL HEATER**	— / —
HEATING	Indirect	**SERIES OPERATION**	Not specified
CATHODE ARRANGEMENT	Separate cathodes	**SECTION CONSTRUCTION**	Similar

4CG - Terminal pinout

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 — IC	—	—	IC
PIN2 — IC	—	—	IC
PIN3 — K	A	K — Cathode	CONNECTED
PIN5 — P	A	P — Plate (Anode)	CONNECTED
PIN7 — H	—	H — Heater	CONNECTED
PIN8 — H	—	H — Heater	CONNECTED

Section ratings

SECTION1 Rectifier	
MAXIMUM PLATE DISSIPATION	6.5 W
PEAK INVERSE VOLTAGE	6000 V
NOMINAL OUTPUT CURRENT	200 mA
PEAK FORWARD CURRENT	1.2 A
FORWARD VOLTAGE DROP	35 V
MAXIMUM HEATER-CATHODE VOLTAGE	5000 V
WARM-UP TIME	11 s
Damper rectifier; voltage drop specified at 400 mA.	

17DM4A — Half-Wave Vacuum Rectifier

An indirectly heated, half-wave vacuum diode designed for high-voltage damper service in the horizontal-deflection circuits of television receivers.

Overview

The **17DM4A** is a half-wave vacuum rectifier engineered specifically to serve as a damper diode in horizontal-deflection circuits. Housed in a glass T-9 envelope with an octal base, the tube features a coated unipotential cathode and is designed to withstand the severe high-voltage pulses characteristic of television scanning systems.

The 17DM4A belongs to a family of damping diodes that includes the **6DM4A** and **12DM4A**, sharing identical electrical and physical characteristics with these types except for its heater ratings. It is also identical to the **6DA4** except for heater ratings. Compared to the prototype **17DM4**, the 17DM4A offers higher plate current ratings, providing improved performance margins in demanding deflection circuits. Additionally, some documentation groups the 17DM4A with the **17AX4GTA**, reflecting its role as a color television type damper.

Construction, Physical Specifications, and Socketing

The 17DM4A is constructed with a coated unipotential cathode and a single anode (plate) enclosed in a T-9 glass bulb. The tube is designed to operate in any mounting position, provided there is adequate ventilation to dissipate heat during operation.

The physical dimensions of the tube are as follows:

- **Maximum Diameter:** 1.188 inches (with a maximum base diameter of 1.281 inches).
- **Maximum Overall Length:** 3.812 inches (or 3-13/16 inches).
- **Maximum Seated Height:** 2.750 to 3.250 inches (or 3-1/4 inches).
- **Maximum Overall Height:** 3.313 inches.

The tube is equipped with a 5-pin octal base, which may be a short intermediate-shell octal base (JEDEC B5-85 or B5-147) or an intermediate-shell octal base (JEDEC B5-82). The physical outline corresponds to JEDEC 9-44 or 9-11 configurations.

Socketing Restrictions

Due to the high peak voltages present in horizontal-deflection damper service, specific socketing precautions must be observed:

- **Pins 1, 2, 4, and 6 must not be used as circuit tie points.**
- Although pins 1, 4, and 6 are physically absent from the base of the tube, positions 1 and 6 may have internal connections to stem leads. Pin 2 is designated as an Internal Connection (IC) and may also connect to a stem lead.
- To prevent voltage breakdown and reduce the risk of electrical arcover, it is recommended to avoid using these socket terminals for any wiring. Some specifications recommend removing the socket clips for positions 1, 2, 4, and 6 entirely.

Heater Characteristics

The heater of the 17DM4A is specifically designed for operation in series-connected heater strings, incorporating a controlled warm-up characteristic to minimize voltage surges across other tubes in the string during start-up.

Heater Parameter	Value
Nominal Heater Voltage (AC or DC)	16.8 V
Nominal Heater Current	0.45 A (450 mA)
Heater Current Limits	450 □ 30 mA
Average Warm-up Time	11 seconds

The heater warm-up time is formally defined as the time required for the heater voltage to reach 80% of its rated value (13.44 V) when a voltage equal to four times the rated heater voltage (67.2 V) is applied to a circuit consisting of the tube heater in series with a resistance equal to three times the nominal heater operating resistance.

Pinout and Interelectrode Capacitances

The 17DM4A utilizes the JEDEC 4CG basing diagram. Depending on the manufacturer's design, the pin assignments for the active electrodes vary, though the physical socket layout remains compatible:

- **Pin 2:** Internal Connection (IC) — Do not use.
- **Pin 7:** Heater (H)
- **Pin 8:** Heater (H)

- **Active Electrodes (Configuration A):** Pin 3 is connected to the Cathode (K), and Pin 5 is connected to the Plate (P).
- **Active Electrodes (Configuration B):** Pin 3 is connected to the Plate (P), and Pin 5 is connected to the Cathode (K).

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the 17DM4A vary slightly depending on the measurement conditions and shielding. Typical unshielded values include:

- **Heater to Cathode:** 4.0 pF
- **Plate to Cathode (or Plate to Cathode and Heater):** 5.0 pF to 8.5 pF
- **Cathode to Plate and Heater:** 8.5 pF to 11.5 pF

Electrical Ratings and Damper Service

The maximum ratings of the 17DM4A are defined under the Design-Maximum System (EIA RS-239). These ratings are specified for operation in a standard 525-line, 30-frame television system, where the duty cycle of the horizontal voltage pulse must not exceed 15% of one scanning cycle (equivalent to a maximum pulse duration of 10 microseconds).

Rating Parameter	Design-Maximum Value
Peak Inverse Plate Voltage	5000 V max.
Peak Plate Current	1000 to 1200 mA max.
DC (Average) Plate Current	165 to 200 mA max.
Plate Dissipation	5.3 to 6.5 W max.
Heater-Cathode Voltage (Heater Negative)	
— DC Component	900 V max.
— Total DC and Peak	5000 V max.
Heater-Cathode Voltage (Heater Positive)	
— DC Component	100 V max.
— Total DC and Peak	300 V max.

Typical Operating Characteristics and Plate Curves

Under typical operating conditions, the 17DM4A exhibits a low internal voltage drop, which is critical for maintaining efficiency in television deflection circuits. The typical tube voltage drop is documented as:

- **35 V** at an instantaneous plate current (I_b) of 400 mA.

- **32 V** at an instantaneous plate current (I_b) of 250 mA.

Average Plate Characteristics

The average plate characteristic curve, plotted as plate current in milliamperes versus plate voltage in volts at the rated heater voltage of 16.8 V, reveals the following behavior:

- **0 to 10 V:** The plate current is low, remaining under 50 mA (with approximately 75 mA at 10 V).
- **20 V:** The plate current rises to approximately 180 mA.
- **25 V:** The plate current reaches approximately 250 mA.
- **35 V:** The plate current is 400 mA, corresponding to the typical voltage drop point.
- **41 V:** The plate current reaches approximately 500 mA.
- **50 V:** The plate current is approximately 650 to 680 mA.
- **55 V:** The plate current reaches approximately 750 mA.
- **68 V:** The plate current reaches approximately 1000 mA.
- **70 V:** The plate current is approximately 1050 to 1060 mA.
- **72 V:** The plate current reaches approximately 1100 mA.

The curve exhibits a smooth, non-linear upward slope at very low voltages (below 20 V) and transitions into a nearly linear region from 20 V up to 72 V, demonstrating the highly efficient conduction characteristics of the tube's large-area cathode and anode structure.

Technical Summary

The **17DM4A** is an octal-based, indirectly heated half-wave vacuum rectifier designed specifically for television damper service. Operating with a **16.8 V, 0.45 A** heater featuring a controlled 11-second warm-up time, it is optimized for series-string heater applications. The tube is capable of handling peak inverse voltages up to **5000 V** and peak plate currents up to **1200 mA**, with a low typical voltage drop of **32 to 35 V** under normal conduction. Its robust design, high heater-to-cathode insulation ratings, and strict socketing guidelines ensure reliable operation under the severe pulsed voltage conditions of horizontal deflection systems.

SOURCE OPERATING CONDITIONS

1961 Tung Sol

SOURCE PDF

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**
Heater voltage	**16.8 V**	Nominal
Heater current	**300 mA**	Nominal

SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

1965 Sylvania Electronic Tubes Vol3

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

1965 SYLVANIA ELECTRONIC TUBES VOL3

Section 1 · Rectifier

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Peak inverse voltage	**5000 V**	—
Peak plate current	**1200 mA**	—
DC plate current	**200 mA**	—

CAPACITANCE		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater-to-cathode capacitance	**4 pF**	—
Plate-to-cathode/heater capacitance	**8.5 pF**	—

SOURCE OPERATING CONDITIONS

1966 Tung Sol Electronic Tubes 3 of 4

SOURCE PDF

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

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

Section 1 · Rectifier

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Peak inverse plate voltage	**5000 V**	DamperService
Peak plate current	**1200 mA**	DamperService
DC output current	**200 mA**	DamperService
PLATE TO CATHODE	**6.5 pF**	Published datasheet
CATHODE TO PLATE AND HEATER	**11.5 pF**	Published datasheet
DESIGN MAXIMUM VALUES -SEE EIA STANDARD RS	**-239 mA**	Published datasheet
AVERAGE CHARACTERISTICS	**450 mA**	Published datasheet
HEATER WARM-UP TIMER'	**11 s**	Published datasheet
HEATERNEGATIVE WITH RESPECT TO CATHODE	**900 V**	Published datasheet
TOTAL DC AND PEAK	**5000 V**	Published datasheet
TOTAL DC AND PEAK	**300 V**	Published datasheet
PEAK INVERSE VOLTAGE	**5000 V**	Published datasheet
PLATE DISSIPATION	**6.5 W**	Published datasheet

CHARACTERISTICS		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Tube voltage drop	**35 V**	PlateCurrent=400mA
CURRENT OPERATION	**45030 mA**	Published datasheet
DC PLATE CURRENT	**200 mA**	Published datasheet
VOLTAGE DROP AT Ib =	**35 V**	Published datasheet
CYCLE OF THE VOLTAGE PULSE NOT TO EXCEED	**15 V**	Published datasheet

SOURCE OPERATING CONDITIONS

1971 RCA HB3 Binder 5 of 7

SOURCE PDF

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Rectifier

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater voltage	**16.8 V**	AC or DC at 0.450 A
Peak inverse plate voltage	**5000 V**	DamperService
Peak plate current	**1200 mA**	DamperService
DC plate current	**200 mA**	DamperService
Plate dissipation	**6.5 W**	DamperService
Heater current	**450 mA**	Nominal
Warm-up time	**11 s**	Average
Heater-cathode voltage, heater negative peak	**5000 V**	Heater negative with respect to cathode
Heater-cathode voltage, heater negative DC component	**900 V**	Heater negative with respect to cathode
Heater-cathode voltage, heater positive peak	**300 V**	Heater positive with respect to cathode
Heater-cathode voltage, heater positive DC component	**100 V**	Heater positive with respect to cathode

CAPACITANCE		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater-to-cathode capacitance	**4 pF**	Approximate
Plate-to-cathode/heater capacitance	**8.5 pF**	Approximate
Cathode-to-plate/heater capacitance	**11.5 pF**	Approximate

CHARACTERISTIC		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Tube voltage drop	**35 V**	Plate current = 400 mA

SOURCE OPERATING CONDITIONS

1975 RCA RC30

SOURCE PDF

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

1975 RCA RC30

Section 1 · Rectifier

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater Voltage (ac/dc) 6.3	**16.8 V**	Published in approved 17DM4A target datasheet entry; Section1
Heater Current 1.2	**450 mA**	Published in approved 17DM4A target datasheet entry; Section1
Heater Warm-up Time (Average)	**11 seconds**	Published in approved 17DM4A target datasheet entry; Section1
Peak Inverse Plate Voltage*	**6000 V**	Published in approved 17DM4A target datasheet entry; Section1
Peak Plate Current +100	**1200 mA**	Published in approved 17DM4A target datasheet entry; Section1
+300	**200 mA**	Published in approved 17DM4A target datasheet entry; Section1
Plate Dissipation	**6.5 W**	Published in approved 17DM4A target datasheet entry; Section1
Peak value	**-5000 V**	Published in approved 17DM4A target datasheet entry; Section1
Average value	**-900 V**	Published in approved 17DM4A target datasheet entry; Section1
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	**10 microseconds**	Published in approved 17DM4A target datasheet entry; Section1

An independent reference for electronic tubes, vacuum tubes, and their source documents.

Catalog Tube types Full books Blog Feedback & corrections

© 2026 Tube Tinker