

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

17AX4GTA

1 SECTION
CONSTRUCTION
RECTIFIER

Rectifier - Damper Diode electronic tube

Half-wave vacuum rectifier designed for television horizontal-deflection damper service, with high inverse-voltage and pulse-current ratings and controlled warm-up.

GENERAL CHARACTERISTICS

BASE DESIGNATION	4CG	BASE PINS	8
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	5.3 W
PEAK INVERSE VOLTAGE	5000 V
NOMINAL OUTPUT CURRENT	165 mA
PEAK FORWARD CURRENT	1 A
FORWARD VOLTAGE DROP	32 V
MAXIMUM HEATER-CATHODE VOLTAGE	5000 V
WARM-UP TIME	11 s
Damper rectifier; voltage drop specified at 250 mA. Inherited from explicitly referenced 6AX4GTB electrical characteristics; heater differs per current sheet.	

17AX4GTA — Half-Wave Vacuum Rectifier

The **17AX4GTA** (also designated as the **17DM4A**) is a single heater-cathode diode designed for use as a damping diode in the horizontal-deflection circuits of both color and black-and-white television receivers. It is particularly suited for autotransformer deflection systems where high pulse voltages are applied to the cathode.

Overview and Relationships

The 17AX4GTA is a half-wave vacuum rectifier utilizing a coated unipotential cathode. It is electrically identical to the **6AX4GTB**, **12AX4GTB**, and **25AX4GT** vacuum tubes, differing only in its heater ratings and characteristics.

Because of its specialized design for handling high-voltage pulses in television deflection systems, operation of the 17AX4GTA as a standard power rectifier is not recommended.

Heater Ratings and Series Operation

The heater of the 17AX4GTA is designed for series-string television receiver applications and can be operated on either AC or DC.

Heater Parameter	Value
Nominal Heater Voltage	16.8 V
Nominal Heater Current	0.45 A (450 mA ± 30 mA)
Average Warm-up Time	11.0 seconds

The heater warm-up time is defined as the time required for the heater voltage to reach 80% of its rated value when four times the rated voltage is applied to a circuit consisting of the heater in series with an external resistance equal to three times the nominal heater operating resistance. For reliable series-string

operation, the equipment must be designed so that at normal supply voltage, a bogey tube operates at the nominal current of 0.45 A.

Physical Construction, Base, and Pinout

The 17AX4GTA is constructed in a T-9 glass envelope with an intermediate-shell octal base. It can be mounted in any position, but requires adequate ventilation during operation.

Physical Dimensions

- **Maximum Overall Length / Height:** 3-5/16 inches (3.313 inches)
- **Maximum Seated Height:** 2-3/4 inches (2.750 inches)
- **Maximum Envelope Diameter:** 1-3/16 inches (1.188 inches) to 1-5/16 inches (1.3125 inches)
- **Maximum Base Diameter:** 1-9/32 inches

Pin Connections and Basing

The tube utilizes a 5-pin octal base requiring a standard octal socket. There are variations in the documented pin connections for the 4CG basing diagram:

- **Primary Configuration:**
 - Pin 3: Cathode (K)
 - Pin 5: Plate (P)
 - Pin 7: Heater (H)
 - Pin 8: Heater (H)
 - Pins 1, 2, 4, and 6 are designated as No Connection (NC) or Internal Connection (IC). Pin 1 may sometimes be omitted from the base entirely.
- **Alternative Configuration:**
 - Pin 2: Heater (H)
 - Pin 3: No Connection (NC)
 - Pin 5: Plate (P)
 - Pin 7: Heater (H)
 - Pin 8: Cathode (K)

Critical Installation Note: Regardless of the specific pinout configuration, socket terminals 1, 2, 4, and 6 must not be used as tie points for external circuit connections.

Electrical Capacitances

The direct interelectrode capacitances of the 17AX4GTA, measured without an external shield, are approximately:

- **Cathode to Plate and Heater:** 8.5 pF
- **Plate to Cathode and Heater:** 5.0 pF
- **Heater to Cathode:** 4.0 pF

Design-Maximum Ratings for TV Damper Service

The ratings of the 17AX4GTA are established under the Design-Maximum System for operation in a 525-line, 30-frame television scanning system.

Parameter	Limit Value
Peak Inverse Plate Voltage	4400 V to 5000 V *
Peak Plate Current (Steady-State)	1000 mA
DC Output / Average Plate Current	165 mA
Plate Dissipation	5.3 W

* *Note on Peak Inverse Voltage:* The maximum peak inverse plate voltage is rated at 4400 V or 5000 V depending on the specific equipment design standards. In all cases, the pulse duration must not exceed 15% of a horizontal scanning cycle, or a maximum of 10 microseconds.

Heater-Cathode Voltage Ratings

Due to the high pulse voltages present in damper service, the heater-to-cathode insulation is rated to withstand significant potential differences:

- **Heater Positive with Respect to Cathode:**
 - DC Component: 100 V
 - Total DC and Peak: 300 V
- **Heater Negative with Respect to Cathode:**
 - DC Component: 900 V
 - Total DC and Peak: 5000 V

Operating Characteristics and Conduction Curves

Under typical operating conditions, the tube exhibits a low internal voltage drop. When conducting a direct current of 250 mA, the instantaneous tube voltage drop is **32 V**.

The plate characteristic curves of the 17AX4GTA show a smooth, non-linear diode conduction behavior. Depending on the specific production design, the relationship between plate voltage and plate current typically follows these trends:

- At 15 V, plate current is approximately 100 mA.
- At 32 V to 36 V, plate current is approximately 250 mA to 300 mA.
- At 50 V to 51 V, plate current is approximately 500 mA.
- At 64 V to 70 V, plate current reaches approximately 700 mA to 750 mA.

Technical Summary

The **17AX4GTA** is an octal-based, half-wave vacuum rectifier designed specifically for television damper service. Featuring a 16.8 V, 0.45 A heater with a controlled 11-second warm-up time, it is optimized for series-string heater circuits. The tube is capable of handling peak inverse voltages up to 5000 V and peak currents up to 1000 mA, with a maximum plate dissipation of 5.3 W. Its low internal voltage drop of 32 V at 250 mA and robust heater-cathode insulation make it highly effective in demanding horizontal-deflection environments.



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
Service	Television damper diode	—



SOURCE OPERATING CONDITIONS

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1966 Tung Sol Electronic Tubes 3 of 4

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
MAX	5 mA	Published datasheet
MAXIMUM PEAK INVERSE PLATE VOLTAGE	4400 V	Published datasheet
MAXIMUM PLATE DISSIPATION	5 W	Published datasheet
MAXIMUM DC OUTPUT ~C UR RENT	165 mA	Published datasheet
DC COMPONENT	9 V	Published datasheet
TOTAL DC AND P,E AK	5000 V	Published datasheet
HEATER WARM-UP TIME* (APPROX.)	11 s	Published datasheet
ROF OF ITS RATED YOITAGE AFTER APP LTING	4 V	Published datasheet

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
E QUIPYENT MAMU FACTO RER SMOU LD DESIGN	50 mA	Published datasheet
OPERATING CON	5 V	Published datasheet
B FOR SERIES HEATER OPEfLATI ON, EQUIPMENT SMOU LD BE	50 V	Published datasheet

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HEATER VOLTAGE	16 V	Published datasheet
HEATER CURRENT B	450 mA	Published datasheet
TUBE VOLTAGE DROP Ib	32 V	Published datasheet
OF THE VOLTAGE PULSE MUST NOT EXCEED	15 V	Published datasheet



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

1971 RCA HB3 Binder 5 of 7

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 nominal	16.8 V	—
Warm-up time	11 s	Average
Heater current	450 mA	—
Peak inverse plate voltage	5000 V	DamperService
Peak plate current	1000 mA	DamperService
DC plate current	165 mA	DamperService
Plate dissipation	5.3 W	DamperService
Heater voltage	16.8 V	Reference sheet; AC or DC at rated heater current
Heater current	450 mA	Reference sheet nominal current

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tube voltage drop at 250 mA	32 V	DamperService


SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1975 RCA RC30

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1975 RCA RC30

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak inverse plate voltage	5000 V	DamperService
Peak plate current	1000 mA	DamperService
Average plate current	165 mA	DamperService
Plate dissipation	5.3 W	DamperService

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tube voltage drop	32 V	PlateCurrent=250mA
Heater warm-up time	11 s	Average

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode-to-plate/heater capacitance	8.5 pF	Approximate
Plate-to-cathode/heater capacitance	5 pF	Approximate
Heater-to-cathode capacitance	4 pF	Approximate