



ELECTRONIC TUBE REFERENCE

17BCP1

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Cathode-ray display tube with approximately 65-degree deflection, typically operated from a 12 kV anode supply with a 250 V second-grid supply and adjustable focus voltage.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12L	BASE PINS	12
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	16000 V
MAXIMUM SCREEN VOLTAGE	500 V
MAXIMUM HEATER-CATHODE VOLTAGE	125 V
<i>Published applicable promoted ratings populated; remaining device-specific values retained as parameters.</i>	

17BCP1 — Cathode Ray Tube

The **17BCP1** is a cathode ray tube designed for display applications requiring high ambient light performance. It features electromagnetic deflection with an approximate 65° deflection angle and electrostatic focusing. The tube incorporates a metal-backed screen and a zero-focus-type electron gun, which provides substantially automatic focus independent of variations in the accelerator voltage. The 17BCP1 does not require an ion trap. The designation represents the 17BC tube type equipped with a P1 phosphor screen, though the tube is also available with P2, P7, P11, P15, and P19 phosphors.

Physical Construction and Screen Dimensions

The 17BCP1 is constructed with a rectangular glass envelope and a metal-backed screen. The metal backing is designed to handle high ambient light levels and provides protection against ion burns, eliminating the need for an external ion trap magnet.

The physical dimensions of the tube are as follows:

- **Greatest screen diagonal:** 16 5/8 ± 1/8 inches
- **Overall face height:** 12 1/4 ± 1/8 inches
- **Overall face width:** 15 5/8 ± 1/8 inches
- **Useful screen minimum width:** 14 1/4 inches
- **Useful screen minimum height:** 10 3/4 inches

The electrical connection to the anode is made via a small recessed cavity cap located in the bulb wall, which connects to the conductive inner wall coating and Grid #3.

Heater, Base, and Pinout

The 17BCP1 utilizes an indirectly heated cathode. The heater is rated for a nominal voltage of 6.3 Volts and a current of 0.6 Amperes.

The tube uses a **Small Shell Duodecal 7 Pin** base, designated as **RTMA 12L**. The pin connections, viewed from the bottom of the base, are configured as follows:

Pin Number	Connection
Pin 1	Heater (H)
Pin 2	Grid #1 (G#1 / control electrode)
Pin 6	Focus
Pin 7	No Connection (NC)
Pin 10	Grid #2 (G#2 / accelerating electrode)
Pin 11	Cathode (K)
Pin 12	Heater (H)
Recessed Cap	Anode (Conductive inner wall coating and Grid #3)

Electrical Characteristics and Operating Points

The 17BCP1 operates with electrostatic focusing and electromagnetic deflection. The zero-focus-type electron gun is designed to maintain focus automatically, even when the accelerator voltage varies.

Typical Operating Conditions

Under typical operating conditions, the tube is set up with the following parameters:

- **Heater Voltage:** 6.3 V
- **Anode Voltage:** 12,000 V D.C.
- **Grid #2 Voltage:** 250 V D.C.
- **Grid #1 Voltage (for cutoff):** -27 to -63 V D.C.
- **Focus Voltage:** 0 V

Maximum Ratings (Absolute D.C. Values)

To ensure reliable operation and prevent damage, the following maximum ratings must not be exceeded:

- **Anode Voltage:** 16,000 V Max.
- **Grid #2 Voltage:** 500 V Max.
- **Grid #1 Voltage (Negative Bias):** 125 V Max.
- **Grid #1 Voltage (Positive Bias):** 0 V Max.
- **Grid #1 Voltage (Positive Peak):** 2 V Max.
- **Peak Heater-to-Cathode Voltage (Heater Negative with respect to Cathode):** 125 V Max.
- **Peak Heater-to-Cathode Voltage (Heater Positive with respect to Cathode):** 125 V Max.
- **Focus Voltage Range:** ± 500 V Max.

Circuit-Specific Resistance Requirements

The external circuitry connected to the electrodes must comply with specific resistance limits to maintain stable operation:

- **Grid #1 Circuit Resistance:** Must be between a minimum of 150 Ohms and a maximum of 1.5 Megohms.
- **Grid #2 Circuit Resistance:** Must be at least 470 Ohms.
- **Anode Circuit Resistance:** Must be at least 15,000 Ohms.

Technical Summary

The **17BCP1** is a 65° electromagnetic deflection cathode ray tube featuring electrostatic self-focusing and a metal-backed screen. Operating typically at an anode voltage of 12,000 V and a Grid #2 voltage of 250 V, it provides a bright display suitable for high ambient light environments without requiring an ion trap. The tube is built on an RTMA 12L Small Shell Duodecal 7-pin base and is available with several phosphor options, including the standard green P1 phosphor.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1955 Vacuum Tube Products

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

1955 VACUUM TUBE PRODUCTS

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical Anode Voltage	12000 V	—
Typical Grid 2 Voltage	250 V	—
Grid 1 Voltage Range	-63--27 V	—
Focus Voltage Range	-500-500 V	—
Grid 1 Circuit Resistance Maximum	1.5 Mohm	—
Grid 2 Circuit Resistance Minimum	470 ohm	—
Anode Circuit Resistance Minimum	15000 ohm	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection Angle	65 degree	—

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