

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA  
**1 SECTION**  
CONSTRUCTION  
**CATHODERAY**

# 17CSP4

Specialized - Cathode Ray electronic tube

Seventeen-inch direct-view picture and monitor CRT with magnetic deflection and high-voltage anode operation. Sylvania documentation supplies capacitance and operating data and includes an explicit warning concerning X-ray radiation.

## GENERAL CHARACTERISTICS

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

## SECTION RATINGS

|                                                                                                                                      |         |
|--------------------------------------------------------------------------------------------------------------------------------------|---------|
| SECTION1 Cathode Ray                                                                                                                 |         |
| MAXIMUM PLATE VOLTAGE                                                                                                                | 17600 V |
| MAXIMUM SCREEN VOLTAGE                                                                                                               | 550 V   |
| Maximum anode/grid ratings and capacitance presence promoted from supplied Sylvania CRT data. X-ray warning is explicitly published. |         |

## 17CSP4 — Rectangular Glass Television Picture Tube

The **17CSP4** is a 17-inch direct-viewed, rectangular glass television picture tube. Designed for lightweight television receiver applications, it features a spherical faceplate made of gray filter glass, an aluminized screen, electrostatic focusing, and magnetic deflection. The tube operates without an ion trap and incorporates an external conductive coating.

## Physical and Mechanical Construction

The 17CSP4 is constructed using a rectangular glass envelope designated as bulb J132 1/2 A1 or J132 1/2 B1. The complete assembly weighs approximately 10 pounds.

## Screen and Faceplate Characteristics

The tube features a spherical faceplate composed of gray filter glass, which provides a light transmittance of approximately 77%. This filter glass improves picture contrast under ambient light conditions. The screen utilizes an aluminized P4 phosphor that produces white fluorescence with short-to-medium persistence.

## Deflection and Coating

Deflection is achieved magnetically, with wide-angle coverage to minimize the overall depth of the television cabinet. The approximate deflection angles are:

- **Horizontal:** 105°
- **Diagonal:** 110°
- **Vertical:** 87°

An external conductive coating is applied to the envelope. This coating must be grounded during operation, as it forms a capacitor with the internal anode coating to assist in high-voltage filtering.

## Heater, Base, and Electrical Connections

The 17CSP4 is equipped with an indirectly heated cathode. The heater is designed for reliable operation in series or parallel heater chains.

## Heater Ratings

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 A  $\pm$  5%
- **Heater Warm-up Time:** 11 seconds

The heater warm-up time is defined as the time required for the heater voltage to reach 5.0 V when tested in a standard JETEC test circuit with an applied voltage of 25 V and a series resistance of 31.5  $\Omega$ .

## Base and Pinout Configuration

The tube uses a **B6-185** base with a **7FA** basing arrangement. High-voltage connection to the anode is made via a recessed small cavity cap (J1-21) located on the bulb cone. The base pin No. 7 is aligned with the anode contact within an angular tolerance of 30°.

The pin connections, viewed from the bottom of the base, are as follows:

| Pin Number | Connection                            |
|------------|---------------------------------------|
| Pin 1      | Heater (H)                            |
| Pin 2      | Cathode (K)                           |
| Pin 3      | Grid No. 4 (G4, Focusing Electrode)   |
| Pin 5      | Grid No. 1 (G1, Control Grid)         |
| Pin 6      | Grid No. 2 ( <u>G2</u> , Screen Grid) |
| Pin 7      | Heater (H)                            |
| Cap        | Anode (A, J1-21 Cavity Cap)           |

## Electrical Characteristics and Capacitances

The interelectrode capacitances of the 17CSP4 are relatively low, which helps prevent unwanted circuit loading. The approximate capacitance values are:

- **Cathode to all other electrodes:** 5  $\mu\text{F}$
- **Grid No. 1 to all other electrodes:** 6  $\mu\text{F}$
- **External conductive coating to anode:** 900  $\mu\text{F}$  (minimum) to 1400  $\mu\text{F}$  (maximum)

## Operating Conditions and Maximum Ratings

The 17CSP4 requires high operating voltages for proper focus and brightness. The tables below outline the typical operating conditions and the absolute maximum ratings.

### Typical Operating Conditions

At a typical operating point, the tube is set up with the following parameters:

- **Anode Voltage:** 14,000 V dc
- **Grid No. 4 Voltage (for Focus):** -50 to +350 V dc
- **Grid No. 2 Voltage:** 300 V dc
- **Grid No. 1 Voltage for Cutoff:** -35 to -72 V dc (This range is required for the visual extinction of a focused raster. Extinction of a stationary focused spot requires approximately 5 V more negative bias.)

### Absolute Maximum Ratings

These ratings are limiting values above which the serviceability and safety of the tube may be impaired:

| Parameter     | Absolute Maximum Value |
|---------------|------------------------|
| Anode Voltage | 17,600 V dc            |

| Parameter                                                                    | Absolute Maximum Value |
|------------------------------------------------------------------------------|------------------------|
| Grid No. 4 Voltage (Focusing Electrode)                                      | -550 to +1100 V dc     |
| Grid No. 2 Voltage                                                           | 550 V dc               |
| Grid No. 1 Negative Bias Value                                               | 154 V dc               |
| Grid No. 1 Negative Peak Value                                               | 220 V                  |
| Grid No. 1 Positive Bias Value                                               | 0 V dc                 |
| Grid No. 1 Positive Peak Value                                               | 2 V                    |
| Peak Heater-Cathode Voltage (Heater negative to cathode, warm-up $\leq$ 15s) | 450 V                  |
| Peak Heater-Cathode Voltage (Heater negative to cathode, after warm-up)      | 200 V                  |
| Peak Heater-Cathode Voltage (Heater positive to cathode)                     | 200 V                  |

## Circuit Constraints

To ensure stable operation and prevent damage to the control grid, the Grid No. 1 circuit resistance must not exceed a maximum value of **1.5 M $\Omega$** .

## Safety and Shielding Requirements

When operating the 17CSP4, safety precautions regarding X-ray radiation must be observed. If the tube is operated at anode voltages exceeding 16,000 V or the maximum rated anode voltage of 17,600 V (whichever is less), it may produce X-rays. Under these conditions, appropriate shielding must be installed in the television receiver to protect users from exposure.

## Technical Summary

The **17CSP4** is a lightweight, 17-inch rectangular glass television picture tube utilizing electrostatic focus and wide-angle magnetic deflection (110° diagonal). It features an aluminized P4 white phosphor screen, a gray filter glass faceplate with 77% light transmittance, and an external conductive coating that must be grounded. Operating typically at an anode voltage of 14,000 V, the tube provides sharp focus via a dedicated Grid No. 4 focusing electrode (adjustable from -50 to +350 V). It uses a standard B6-185 base with a 7FA pinout and a 6.3 V, 0.6 A heater with a controlled 11-second warm-up time.

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1950 Sylvania

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

## 1950 SYLVANIA

## Section 1 · Cathode Ray

| CHARACTERISTIC                              |                 |                  |
|---------------------------------------------|-----------------|------------------|
| PARAMETER                                   | PUBLISHED VALUE | CONDITION / NOTE |
| Heater Voltage                              | 6.3 V           | —                |
| Heater Current                              | 600 mA          | —                |
| Cathode To All Other Electrodes Capacitance | 5 pF            | Approximate      |

| OTHER                 |                 |                  |
|-----------------------|-----------------|------------------|
| PARAMETER             | PUBLISHED VALUE | CONDITION / NOTE |
| Maximum Anode Voltage | 17600 V         | —                |
| Maximum Grid2 Voltage | 550 V           | —                |
| Typical Anode Voltage | 14000 V         | —                |