Description

The 23GWP4 is a 23\" - 110° direct view rectangular Cathode Ray Tube employing banded implosion protection. The tube incorporates internal shielding, an aluminized screen, non ion trap gun and is designed to operate with electrostatic focus and magnetic deflection.

This is a "HiGm" tube designed to operate in cathode drive service under low G2 voltage conditions. The tube base is short and provides straight through leads oriented by an indexing lug.

Electrical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focusing Method</td>
<td>Electrostatic</td>
</tr>
<tr>
<td>Deflection Method</td>
<td>Magnetic</td>
</tr>
<tr>
<td>Deflection Angles (approximate)</td>
<td></td>
</tr>
<tr>
<td>Horizontal</td>
<td>99 Degrees</td>
</tr>
<tr>
<td>Vertical</td>
<td>82 Degrees</td>
</tr>
<tr>
<td>Diagonal</td>
<td>110 Degrees</td>
</tr>
<tr>
<td>Direct Interelectrode Capacitances</td>
<td></td>
</tr>
<tr>
<td>Cathode to All (approximate)</td>
<td>4 uuf</td>
</tr>
<tr>
<td>Grid #1 to All (approximate)</td>
<td>5 uuf</td>
</tr>
<tr>
<td>External Coating Capacitance (Note 1)</td>
<td>2000 Min. uuf 2500 Max. uuf</td>
</tr>
<tr>
<td>Resistance between external conductive coating and implosion protection hardware</td>
<td>.50 Megohms Min.</td>
</tr>
<tr>
<td>Heater Current at 6.3 Volts</td>
<td>450 ±5% ma</td>
</tr>
<tr>
<td>Heater Warm-up Time (Note 2)</td>
<td>11 Seconds</td>
</tr>
<tr>
<td>Electron Gun</td>
<td></td>
</tr>
<tr>
<td>Ion Trap.</td>
<td>none</td>
</tr>
<tr>
<td>Focus Lens.</td>
<td>Unipotential</td>
</tr>
</tbody>
</table>

Optical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphor Number</td>
<td>Aluminized P4</td>
</tr>
<tr>
<td>Light Transmission at Center (approximate)</td>
<td>42 Percent</td>
</tr>
<tr>
<td>Antireflection Treatment</td>
<td>none</td>
</tr>
</tbody>
</table>

from JEDEC release #4865, Nov. 30, 1964
Mechanical Data

Overall Length ........................................... 14.375 ± 0.406 Inches
Neck Length .................................................. 4.625 ± 0.250 Inches

Greatest Dimensions of Tube
   Diagonal .................................................... 23.640 Inches
   Width ....................................................... 21.255 Inches
   Height ....................................................... 16.750 Inches

Minimum Useful Screen Dimensions (Projected)
   Diagonal .................................................... 22.312 Inches
   Horizontal Axis ........................................... 19.250 Inches
   Vertical Axis .............................................. 15.125 Inches
   Area ........................................................ 282 Sq. Inches

Implosion Protection ........................................ Banded Tube
Bulb .......................................................... J187K1
Bulb Contact ............................................... J1-21
Base .......................................................... B7-208
Basing ......................................................... 8HR
Bulb Contact Aligns with Pin #8 ± 30°

Minimum and Maximum Ratings (Design Maximum System)

Unless otherwise specified, voltage values are positive and measured with respect to cathode.

Anode Voltage (Note 3) ..................................... (22,000 Max. Volts DC
                                          (11,000 Min. Volts DC

Grid No. 4 (Focusing Electrode) Voltage
   Positive Value ........................................... +1250 Max. Volts DC
   Negative Value ........................................... -400 Min. Volts DC

Grid No. 2 Voltage .......................................... (80 Max. Volts DC
                                          (40 Min. Volts DC

Grid No. 1 Voltage
   Maximum Negative Value .................................... 154 Max. Volts DC
   Maximum Negative Peak Value ................................ 220 Max. Volts
   Maximum Positive Value .................................... 0 Max. Volts DC
   Maximum Positive Peak Value ................................ 2 Max. Volts

Heater Voltage ............................................... (6.9 Max. Volts
                                          (5.7 Min. Volts

Maximum Heater-Cathode Voltage
   Heater Negative with Respect to Cathode
      During Warm-up Period not to exceed
         15 seconds ........................................... 450 Max. Volts
   After Equipment Warm-up Period .......................... 300 Max. Volts
   Heater Positive with Respect to Cathode ............... 300 Max. Volts
Typical Operating Conditions

Cathode Drive Service

Unless otherwise specified, all voltage values are positive with respect to Grid No. 1.

Anode Voltage ........................................... 18,000 Volts DC
Grid No. 4 Voltage for Focus (Notes 4 & 5) ........... 150 Volts DC
Grid No. 2 Voltage ....................................... 50 Volts DC
Cathode Voltage (Note 6) ................................. +33 to +45 Volts DC

Maximum Circuit Values

Grid No. 1 Circuit Resistance ......................... 1.5 Max. Megohms

Notes

1. Measured with implosion protection hardware connected to external coating.

2. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

3. Anode, Grid No. 3 and Grid No. 5 are connected together within the tube and are referred to herein as anode.

4. With the combined Grid No. 1 bias voltage and video-signal voltage adjusted to give an anode current of 200 microamperes on a 15" by 19" pattern from RCA 2F21 monoscope or equivalent.

5. Individual tubes will have satisfactory focus at some value between -50 and +350 volts.

6. For visual extinction of the focused raster. For cutoff of undeflected focus spot, the absolute value of the bias between cathode and grid will increase by about 4 volts.
MECHANICAL NOTES

1. The reference line is determined by reference line gauge JEDEC #126.
2. The area around the button is covered with an insulating coating.
3. Socket for this base should not be rigidly mounted; it should have flexible leads and be allowed to move freely. The design of the socket should be such that the circuit wiring cannot impress lateral strains through the socket contacts on the base pins. Bottom circumference of the base wafer will fall within a circle concentric with bulb axis and having a diameter of 1 3/4".

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at anode voltages higher than 16,000 volts.

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