RCA-1850-A is a television camera tube recommended particularly for pickup from motion-picture film or slides. It requires a steady highlight illumination of 4 to 6 foot-candles on the mosaic for slides and an average value of pulsed highlight illumination of 10 to 20 foot-candles for motion-picture film.

The photosensitive mosaic of the 1850-A is characterized by a spectral response having good sensitivity over the entire visible spectrum. Maximum sensitivity occurs in the blue region as shown by the spectral-response curve in Fig.1.

The 1850-A has a very high ratio of signal to noise but relatively low sensitivity. In applications where higher sensitivity is desired, as in outdoor and studio live pickups, the use of an image orthicon is recommended.

**DATA**

**General:**

Heater, for Unipotential Cathode:
- Voltage (AC or DC) .................. 6.3 ± 10% volts
- Current .................. 0.6 ampere

Direct Interelectrode Capacitances (Approx.):
- Grid No. 1 to All Other Electrodes .................. 6.5 μμf
- Signal Electrode to Grid No. 4 (With external shield) .................. 10 μμf

Mosaic, Photosensitive:
- Response ........................................ See Fig.1
- Useful Size of Rectangular Image
  (4 x 3 Aspect Ratio) .................. 5.75" max. diagonal
- Focusing Method .................. Electrostatic
- Deflection Method .................. Magnetic
- Deflection Angle (Approx.) .................. 55°
- Max. Width of Mounted Tube .................. 8-1/8"
- Height of Mounted Tube .................. 10-3/16" ± 3/4"
- Depth of Mounted Tube .................. 12-13/16" ± 3/4"
- Caps (Two) .................. Medium (JETEC No.C1-5)
- Base .................. Long Medium-Shell Small 6-Pin
- Mounting Position ................. Mosaic in vertical plane
- Minimum Deflacting-Coil Inside Diameter .................. 1-1/2"
- Maximum Deflacting-Coil Length .................. 2-1/4"

**Maximum Ratings, Absolute Values:**

- AVERAGE MOSAIC ILLUMINATION* .................. 50 max. ft-c
- OPERATING TEMPERATURE OF BULB AT LARGE END OF TUBE .................. 40 max. °C
- SIGNAL-ELECTRODE VOLTAGE .................. 1200 max. volts
- GRID-No. 4 (COLLECTOR) VOLTAGE .................. 1200 max. volts
- GRID-No. 3 VOLTAGE .................. 450 max. volts
- GRID-No. 2 VOLTAGE .................. 1200 max. volts
Maximum Ratings, Absolute Values (Cont'd):

GRID-No.1 VOLTAGE:
  Negative bias value. .................. 125 max. volts
  Positive bias value. .................. 0 max. volts
PEAK HEATER-CATHODE VOLTAGE:
  Heater negative with respect to cathode. 125 max. volts
  Heater positive with respect to cathode. 10 max. volts
GRID-No.4 CURRENT. .................. 0.5 max. \mu amp

Typical Operation and Characteristics:
Signal-Electrode Voltage .................. 1000 volts
Grid-No.4 Voltage. .................. 1000 volts
Grid-No.3 Voltage (Beam Focus)—
  24% to 36% of Grid-No.4 Voltage. .... 240 to 360 volts
Grid-No.2 Voltage. .................. 1000 volts
Max. Grid-No.1 Voltage for Pattern Cutoff—
  7% of Grid-No.4 Voltage. ........ -70 volts
Grid-No.4 Current (With no illumination on mosaic)*. 0.1 to 0.2 \mu amp
External Load Resistance .................. 0.1 megohm
Illumination on Mosaic:
  Steady Highlight Value for Slides. .... 4 to 6 ft-c
  Average Pulsed Highlight Value for Motion—
    Picture Film .................. 10 to 20 ft-c
Ratio of Peak-to-Peak Highlight Video-Signal
  Current to RMS Noise Current (Approx.) .... 100
Minimum Peak-to-Peak Blanking Voltage. .......... 20 volts
Deflecting-Coil Current (Approx.):**
  Horizontal (Peak to peak). .......... 600 ma
  Vertical (Peak to peak). .......... 140 ma

Maximum Circuit Values:
Grid-No.1-Circuit Resistance .................. 1.0 max. megohm

* Averaged over any interval of 1 sec. max.
* Allowance should be made for leakage currents.
** For RCA Deflecting Yoke Type No.201D76.
Fig. 1 - Spectral Sensitivity Characteristic of Type 1850-A Mosaic. Curve is taken for Equal Values of Radiant Flux at All Wavelengths.

Fig. 2 - Typical Signal-Output Characteristic of Type 1850-A Under Continuous Illumination.

SOCKET CONNECTIONS

Bottom View

PIN 1 - HEATER
PIN 2 - GRID NO. 2
PIN 3 - GRID NO. 3
PIN 4 - GRID NO. 1
PIN 5 - CATHODE

PIN 6 - HEATER
CAPS [SEE OUTLINE DRAWING]
SJ - SIGNAL ELECTRODE
G4 - GRID NO. 4 (COLLECTOR)

DIRECTION OF LIGHT IS NORMAL TO MOSAIC
NOTE 1: VARIATION OF TIP CENTER FROM PLANE BB' IS 1/2".

NOTE 2: MAXIMUM ROTATION OF LINE THROUGH PINS 2 AND 5 ABOUT IDEAL GUN AXIS IS ± 10°, MEASURED FROM PLANE BB'.

NOTE 3: DEVIATION OF PLANE OF MOSAIC FROM PLANE PERPENDICULAR TO THE BULB AXIS AA' IS 2.5° MAX. ROTATION OF MOSAIC ABOUT THE BULB AXIS AA' WITH RESPECT TO A LINE OF INTERSECTION FORMED BY MOSAIC PLANE AND PLANE BB' IS 2.5° MAX.

* BB' IS THE PLANE THROUGH THE BULB AXIS AA' AND THE IDEAL GUN AXIS.

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