7735A

Vidicon

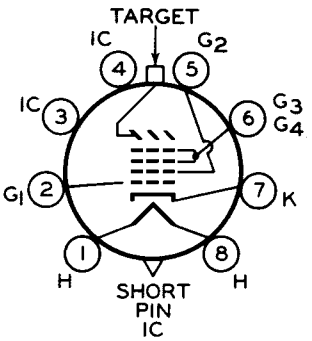
MAGNETIC FOCUS — 1" - DIAMETER — MAGNETIC DEFLECTION

For Live-Scene Pickup with Color or Black-and White TV Cameras in Industrial Closed-Circuit Systems. The 7735A is Unilaterally Interchangeable with Type 7735.

GENERAL

Heater, for Unipotential Cathode	
Voltage (AC or DC)	6.3 ± 10% V
Current at 6.3 volts	0.6 A
Direct Interelectrode Capacitance[a]	
Target to all other electrodes	4.6 pF
Spectral Response	See Accompanying Curve
Photoconductive Layer	0.62 in
Maximum useful diagonal of rectangular image (4 x 3 aspect ratio)[b]	
Focusing Method	Magnetic
Deflection Method	Magnetic
Overall Length	6.25 ± 0.25 in
Greatest Diameter	1.125 ± 0.010 in
Operating Position	Any
Weight (Approx.)	2 oz
Bulb	T8
Focusing Coil — Cleveland Electronics[c,d]	No. VF-115-5, or equivalent ←
Deflecting Yoke — Cleveland Electronics[c,d]	No. VY-111-3, or equivalent ←
Alignment Coil — Cleveland Electronics[c,d]	No. VA-118, or equivalent ←
Socket — Cinch[e]	No. 54A18088, or equivalent
Base	Small-Button Ditetrar 8-Pin, (JEDEC No. E8-11)
Basing Designation for BOTTOM VIEW	8HM

Pin 1 – Heater
Pin 2 – Grid No. 1
Pin 3 – Do Not Use
Pin 4 – Do Not Use
Pin 5 – Grid No. 2
Pin 6 – Grids No. 3 and No. 4
Pin 7 – Cathode
Pin 8 – Heater
Flange – Target
Short Pin – Do Not Use



DIRECTION OF LIGHT:
INTO FACE END OF TUBE

MAXIMUM RATINGS, ABSOLUTE-MAXIMUM VALUES

For scanned area of 1/2" x 3/8"

Grid-No. 3 & Grid-No. 4 Voltage	750 V
Grid-No. 2 Voltage	750 V

← Indicates a change.

Grid-No.1 Voltage		
Negative bias value	300	V
Positive bias value	0	V
Peak Heater-Cathode Voltage		
Heater negative with respect to cathode	125	V
Heater positive with respect to cathode	10	V
Target Voltage	100	V
Dark Current	0.25	μA
Peak Target Current[f]	0.55	μA
Faceplate		
Illumination	1000	fc
Temperature	71	°C

TYPICAL OPERATION

For scanned area of 1/2" x 3/8"
Faceplate temperature of 30° to 35°C

Grid-No.4 (Decelerator) & Grid-No.3 (Beam-Focus Electrode[g]) Voltage	250[h] to 300	V
Grid-No.2 (Accelerator) Voltage	300	V
Grid-No.1 Voltage for Picture Cutoff[j]	-45 to -100	V
Average "Gamma" of Transfer Characteristic	0.65	
→ Signal-output current between 0.02 μa & 0.2 μa		
Visual Equivalent Signal-to-Noise Ratio (Approx.)[k]	300:1	
→ **Lag**[m]		
Maximum value	20	%
Typical value	15	%
Minimum Peak-to-Peak Blanking Voltage		
When applied to grid No.1	75	V
When applied to cathode	20	V
Field Strength at Center of Focusing Coil (Approx.)	40	G
Field Strength of Adjustable Alignment Coil[n]	0 to 4	G
Maximum-sensitivity operation—0.1 footcandle on faceplate		
Faceplate Illumination (Highlight)	0.1	fc
→ **Target Voltage**[p,q]	35 to 70	V
Dark Current[r]	0.2	μA
Signal-Output Current[s]		
Typical	0.14	μA
Intermediate-sensitivity operation—0.5 footcandle on footplate		
Faceplate Illumination (Highlight)	0.5	fc
Target Voltage[p,q]	30 to 60	V
Dark Current[r]	0.1	μA
Signal-Output Current[s]		
Typical	0.27	μA
Average-sensitivity operation—1 footcandle on faceplate		
Faceplate Illumination (Highlight)	1	fc
Target Voltage[p,q]	20 to 40	V
Dark Current[r]	0.02	μA
Signal-Output Current[s]		
Typical	0.2	μA
Minimum	0.15	μA

→ Indicates a change.

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[a] This capacitance, which effectively is the output impedance of the 7735A, is increased when the tube is mounted in the deflecting-yoke and focusing-coil assembly. The resistive component of the output impedance is in the order of 100 megohms.

[b] Orientation of quality rectangle—Proper orientation is obtained when the horizontal scan is essentially parallel to the straight sides of the masked portions of the faceplate. The straight sides are parallel to the plane passing through the tube axis and short index pin. The masking is for orientation only and does not define the proper scanned area of the photoconductive layer.

[c] Made by Cleveland Electronics Inc., 1974 East 61st St., Cleveland, Ohio.

[d] These components are chosen to provide tube operation with minimum beam-landing error.

[e] Made by Cinch Manufacturing Corporation, 1026 S. Homan Ave., Chicago 24, Illinois.

[f] Video amplifiers must be designed properly to handle target currents of this magnitude to avoid amplifier overload or picture distortion.

[g] Beam focus is obtained by combined effect of grid-No.3 voltage which should be adjustable over indicated range, and a focusing coil having an average field strength of 40 gauss.

[h] Definition, focus uniformity, and picture quality decrease with decreasing grid-No.4 and grid-No.3 voltage. In general, grid No.4 and grid No.3 should be operated above 250 volts.

[j] With no blanking voltage on grid No.1.

[k] Measured with high-gain, low-noise, cascode-input-type amplifier having bandwidth of 5 Mc and a peak signal-output current of 0.35 microampere. Because the noise in such a system is predominately of the high-frequency type, the visual equivalent signal-to-noise ratio is taken as the ratio of the highlight video-signal current to rms noise current, multiplied by a factor of 3.

[m] Defined as the per cent of initial value of signal-output current 1/20 second after illumination is removed. Values shown are for initial signal-output current of 0.2 microampere and a dark current of 0.02 microampere.

[n] The alignment coil should be located on the tube so that its center is at a distance of 3-11/16 inches from the face of the tube, and be positioned so that its axis is coincident with the axis of the tube, the deflecting yoke, and the focusing coil.

[p] The target voltage for each 7735A must be adjusted to the value which gives the desired operating dark current.

[q] Indicated range for each type of service serves only to illustrate the operating target-voltage range normally encountered.

[r] The deflecting circuits must provide extremely linear scanning for good black-level reproduction. Dark-current signal is proportional to the scanning velocity. Any change is scanning velocity produces a black-level error in direct proportion to the change in scanning velocity.

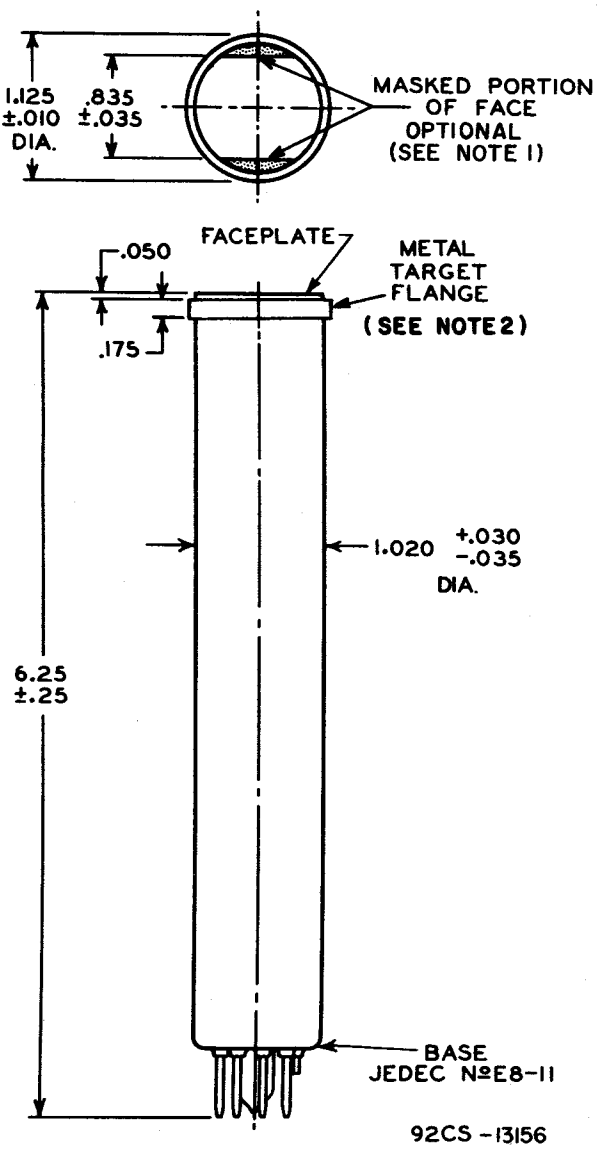
[s] Defined as the component of the highlight target current after the dark-current component has been subtracted.

OPERATING CONSIDERATIONS

The *target connection* is made by a suitable spring contact bearing against the edge of the metal ring at the face end of the tube. This spring contact may conveniently be provided as part of the focusing-coil design.

The *deflecting yoke and focusing coil* used with the 7735A are designed to cause the scanning beam to land perpendicularly to the target at all points of the scanned area with minimum beam-landing error and resultant superior uniformity of sensitivity and focus over the scanned area. The recommended location of these components is shown in *Recommended Location and Length of Deflecting, Focusing, and Alignment Components.*

→ DIMENSIONAL OUTLINE



DIMENSIONS IN INCHES

Note 1: Straight sides of masked portions are parallel to the plane passing through tube axis and short pin.

Note 2: Target contact flange in the form of a metal ring encircling the tube and having the indicated diameter may be located along the tube axis in any part of or all of the space between the dashed lines.

→ Indicates a change.

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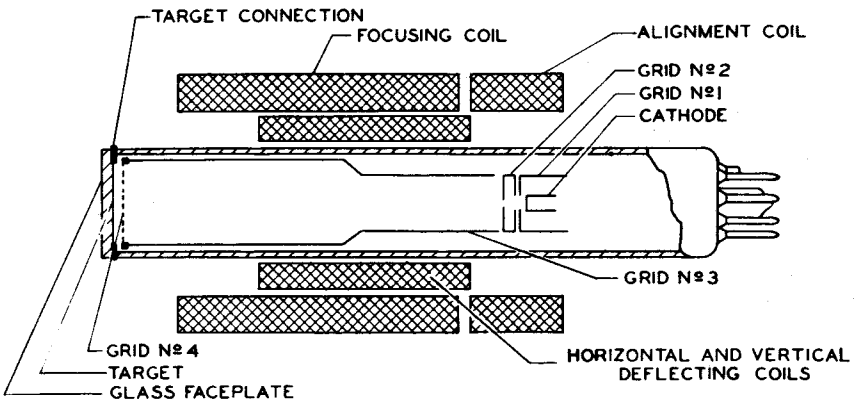
SCHEMATIC ARRANGEMENT



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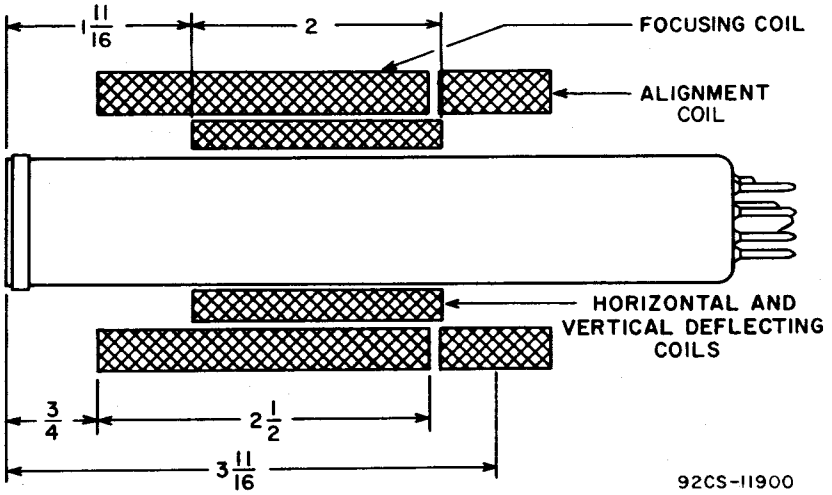
RECOMMENDED LOCATION AND LENGTH OF DEFLECTING, FOCUSING, AND ALIGNMENT COMPONENTS

To obtain minimum beam-landing error



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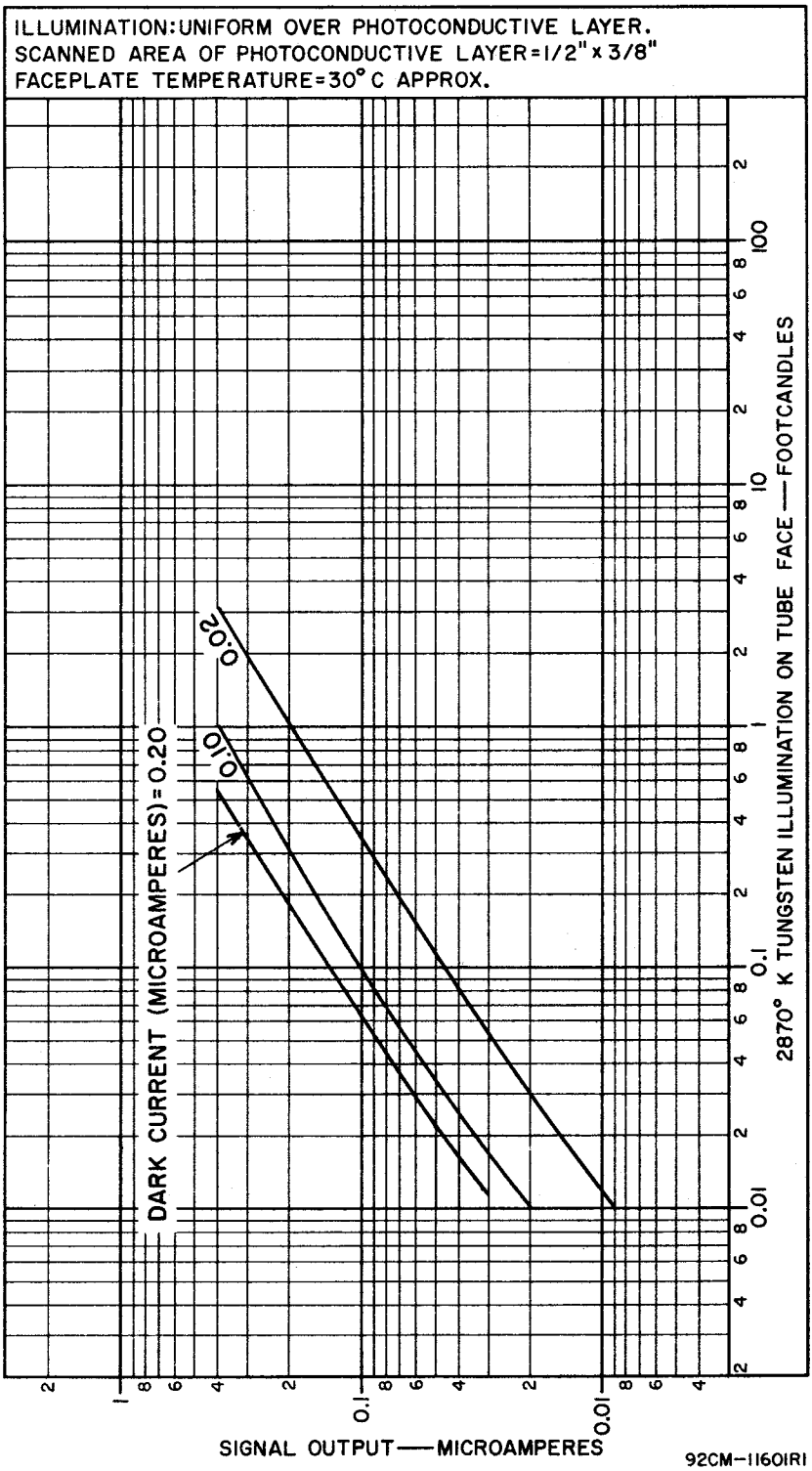
DIMENSIONS IN INCHES

Typical Light Transfer Characteristics



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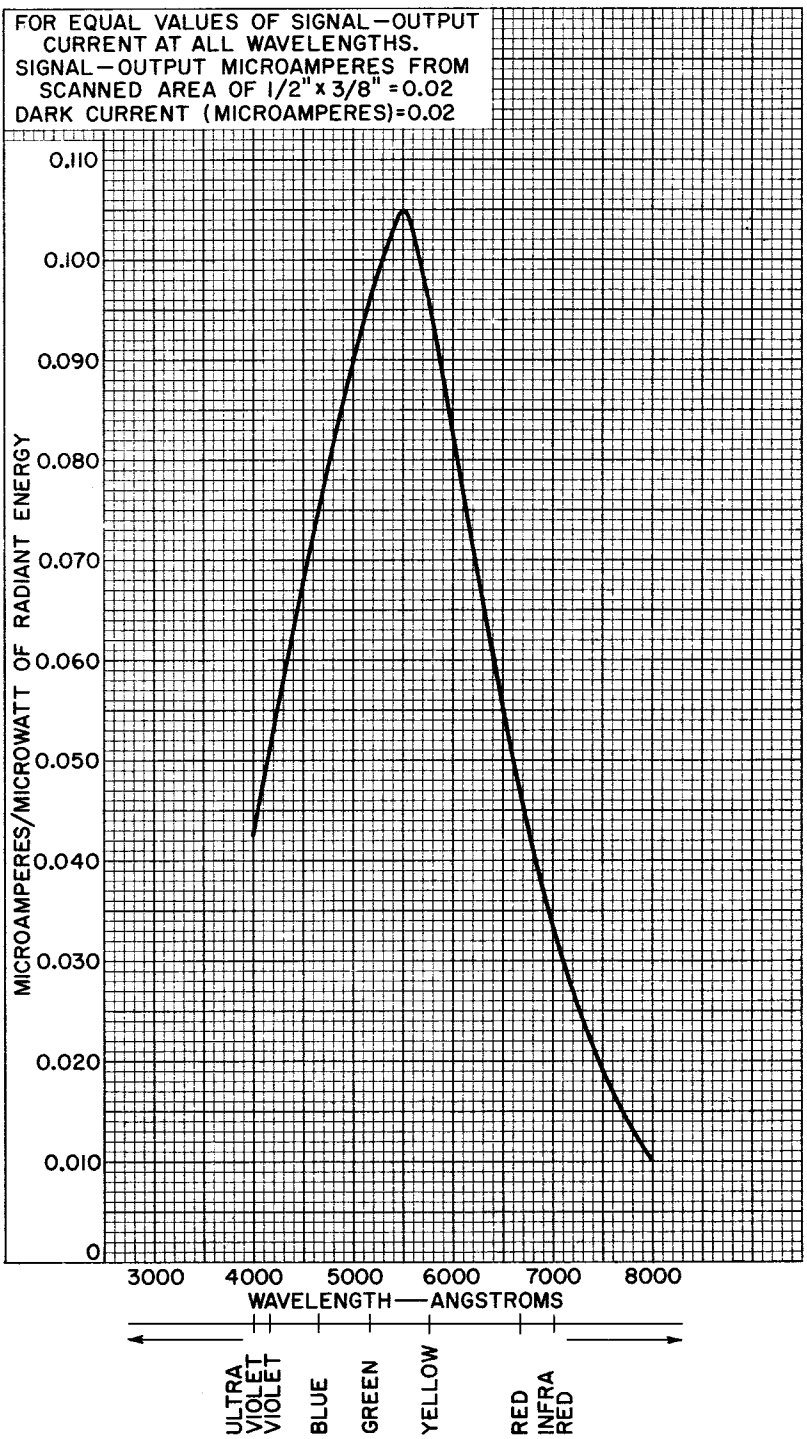
Typical Spectral Sensitivity Characteristic



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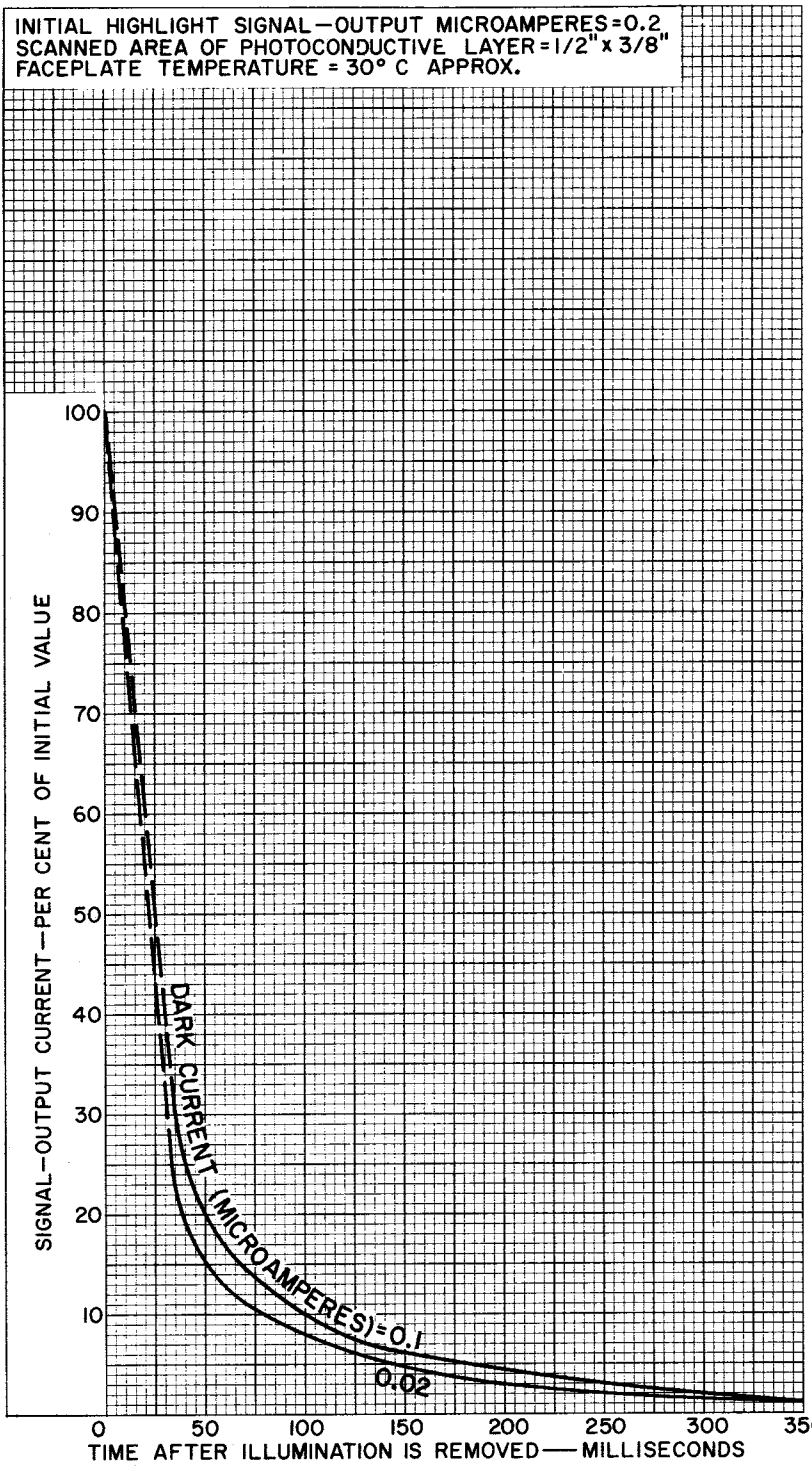
Typical Persistence Characteristics



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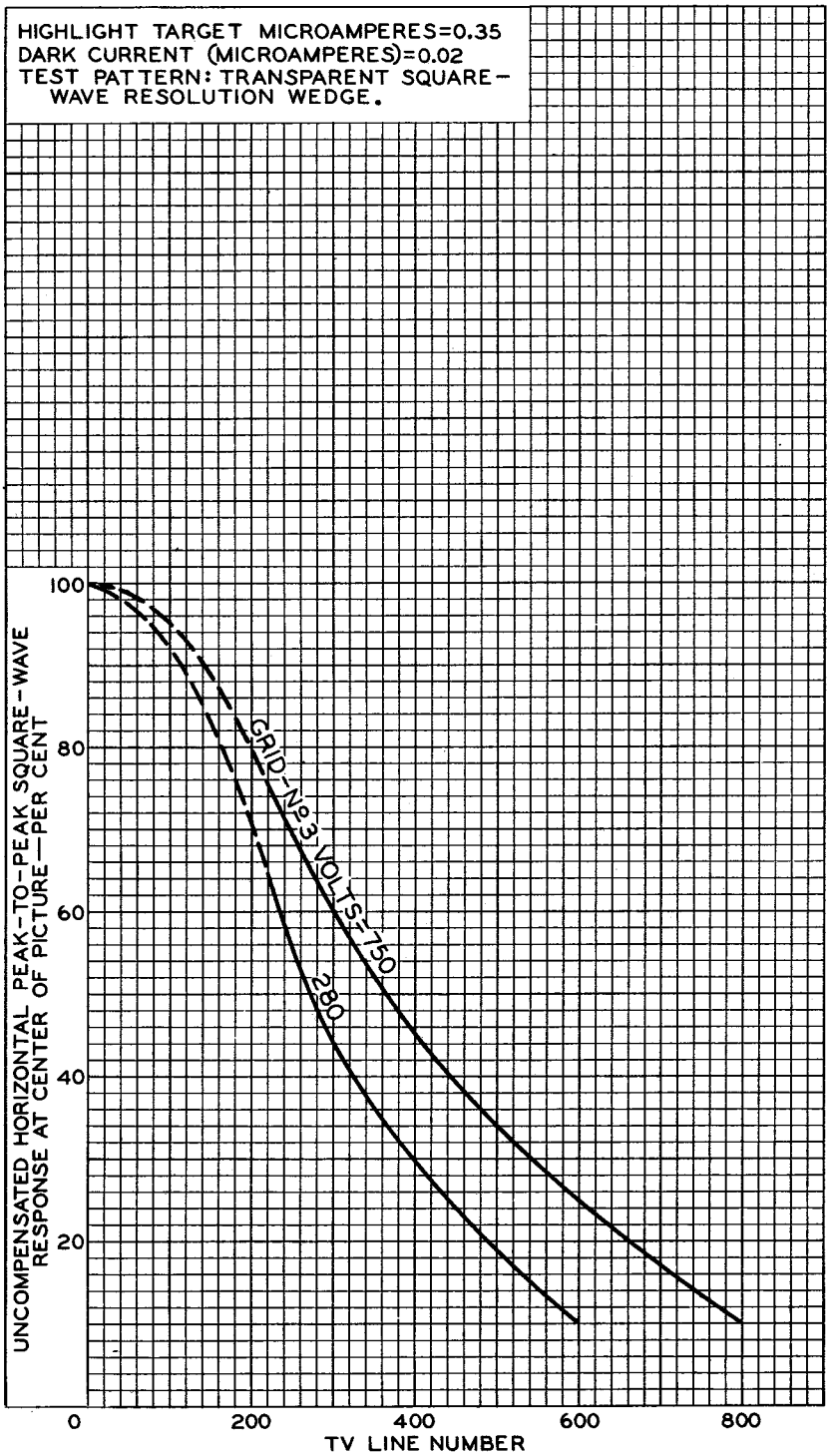
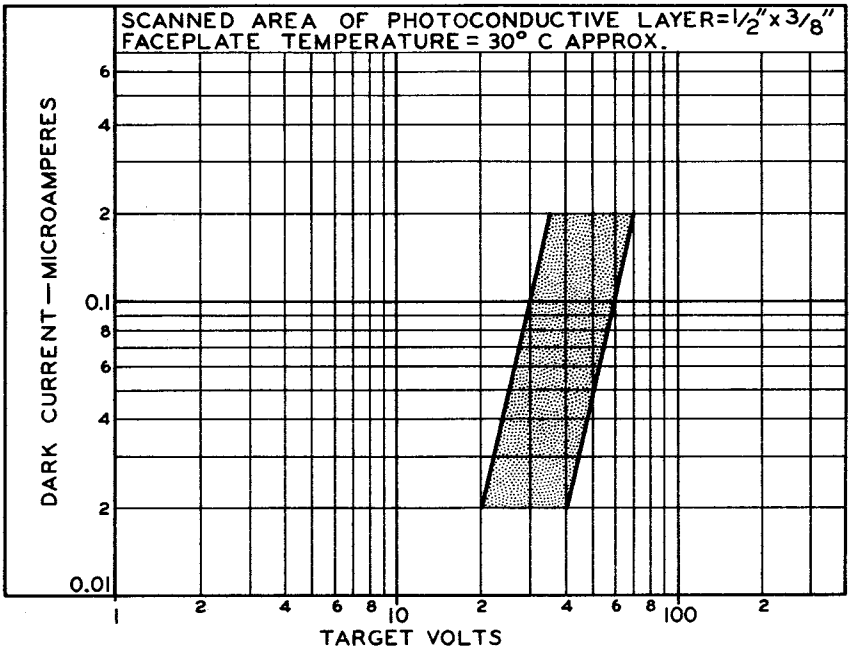
Curves Showing Uncompensated Horizontal Square-Wave Response



Dark Current Range



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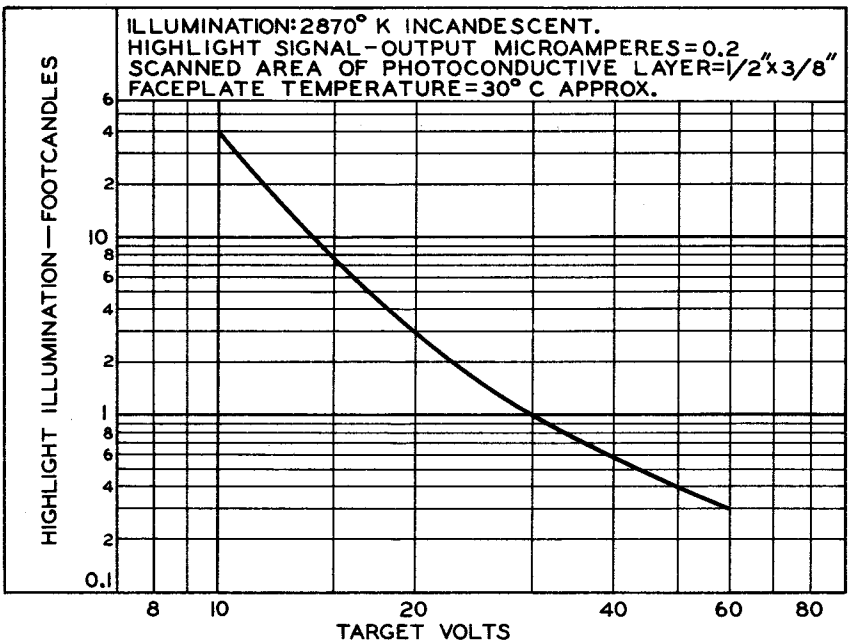
Typical Characteristic



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