7263
VIDICON

LOW-POWER (0.6-WATT) HEATER 600-LINE RESOLUTION

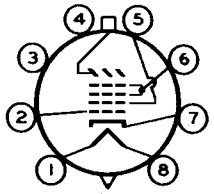
For use under severe shock and vibration, high humidity, and altitudes up to 50,000 feet in small, compact, transistorized TV cameras

DATA

General:

Heater, for Unipotential Cathode:		
Voltage	6.3 ± 10%	ac or dc volts
Current	0.095	amp
Direct Interelectrode Capacitance:♦		
Target to all other electrodes	4.6	μμf
Spectral Response		*See Curves*
Photoconductive Layer:		
Maximum useful diagonal of rectangular image (4 x 3 aspect ratio)		0.62"
Orientation of quality rectangle—Proper orientation is obtained when the horizontal scan is essentially parallel to the plane passing through the tube axis and short index pin.		
Focusing Method		Magnetic
Deflection Method		Magnetic
Overall Length		5.12" ± 0.06"
Greatest Diameter		1.125" ± 0.010"
Weight (Approx.)		2 oz
Operating Position		Any
Bulb		T8
Base Connector		Cinch 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 - Internal Connection—Do Not Use
Pin 4 - Same as Pin 3
Pin 5 - Grid No.2
Pin 6 - Grid No.4, Grid No.3



DIRECTION OF LIGHT: INTO FACE END OF TUBE

Pin 7 - Cathode
Pin 8 - Heater
Flange - Target
Short Index Pin - Same as Pin 3

Maximum Ratings, *Absolute-Maximum Values:*

For altitudes up to 50,000 feet and scanned area of 1/2" x 3/8"

GRID-No.3 & GRID-No.4 VOLTAGE	350 max.	volts
GRID-No.2 VOLTAGE	350 max.	volts
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

♦: See next page.

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DARK CURRENT	0.25 max.	μa
PEAK TARGET CURRENT	0.55 max.	μa
FACEPLATE:		
Illumination	1000 max.	ft-c
Temperature (Operating or storage)	60 max.	°C

Typical Operation:

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

Grid-No.4 (Decelerator) & Grid-No.3 (Beam-Focus-Electrode*) Voltage	250□ to 300	volts
Grid-No.2 (Accelerator) Voltage	300	volts
Grid-No.1 Voltage for picture cutoff●	-45 to -100	volts
Average "Gamma" of Transfer Characteristic for signal-output current between 0.02 μa and 0.2 μa	0.65	
Visual Equivalent Signal-to-Noise Ratio (Approx.)○	300:1	
Minimum Peak-to-Peak Blanking Voltage:		
When applied to grid No.1	75	volts
When applied to cathode	20	volts
Field Strength at Center of Focusing Coil (Approx.)	40	gausses
Field Strength of Adjustable Alignment Coil⊕	0 to 4	gausses

Maximum-Sensitivity Operation for Live-Scene Pickup

Faceplate Illumination (Highlight)	2	ft-c
Maximum Target Voltage required to produce dark current of 0.2 μa in any tube**	110	volts
Target Voltage†	60 to 100	volts
Dark Current▲	0.2	μa
Target Current (Highlight)■	0.4 to 0.5	μa
Signal-Output Current:#		
Peak	0.2 to 0.3	μa
Average	0.08 to 0.1	μa

Average-Sensitivity Operation for Live-Scene Pickup

Faceplate Illuminiation (Highlight)	15	ft-c
Maximum Target Voltage required to produce dark current of 0.02 μa in any tube**	60	volts
Target Voltage†	30 to 50	volts
Dark Current	0.02	μa
Target Current (Highlight)■	0.3 to 0.4	μa

♦, *, □, ●, ○, ⊕, **, †, ▲, ■, #: See next page.

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Signal-Output Current:#		
Peak	0.3 to 0.4	μa
Average	0.1 to 0.2	μa
Minimum-Lag Operation for Film Pickup		
Faceplate Illumination (Highlight)	100	ft-c
Maximum Target Voltage required to produce dark current of 0.004 μa in any tube**	30	volts
Target Voltage†	15 to 25	volts
Dark Current	0.004	μa
Target Current (Highlight)■	0.3 to 0.4	μa
Signal-Output Current:#		
Peak	0.3 to 0.4	μa
Average	0.1 to 0.2	μa

🌡 This capacitance, which effectively is the output impedance of the 7263, 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.

* 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 gausses.

□ 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.

● With no blanking voltage on grid No.1.

○ Measured with high-gain, low-noise, cascode-input-type amplifier having bandwidth of 5 Mc. 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 highlight video-signal current to rms noise current, multiplied by a factor of 3.

⊕ 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.

** The target voltage for each 7263 must be adjusted to that value which gives the desired operating dark current.

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

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

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

\# Defined as the component of the target current after the dark-current component has been subtracted.

SPECIAL PERFORMANCE DATA

In connection with the following tests, sample 7263's will maintain resolution as determined with a RETMA Resolution Chart, or equivalent, and will faithfully reproduce all resolution wedges and grey scales of the chart.

Vibration Tests:

These tests are performed under conditions for *Average-Sensitivity Operation for Live-Scene Pickup* on a sample lot

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of tubes from each production run. Tubes and their associated components§ are vibrated on apparatus providing dynamic conditions similar to those described in MIL-E-5272B♦, paragraph 4.7.1.

Resonance. Tubes and associated components§ are vibrated (per the method of MIL-E-5272B♦, paragraph 4.7.1.1) for 1 hour at +25° C, for 15 minutes at 0° C, and for 15 minutes at +55° C.

Cycling. Tubes and associated components§ are vibrated (per the method of MIL-E-5272B♦, paragraph 4.7.1.2 pertaining to specimen without vibration isolators) for 1 hour at +25° C, for 15 minutes at 0° C, and for 15 minutes at +55° C.

Temperature-Pressure (Altitude) Tests:

Tubes and associated components§ are subjected (per the method of MIL-E-5400# paragraph 3.2.20, 3.2.20.1, and 3.2.20.1.1) to the separate and combined effects of varying temperature 0° to +55° C and varying barometric pressure 30 to 3.4 inches of mercury. The pressures correspond to sea level and to an altitude of 50,000 feet, respectively.

Shock Tests:

These tests are performed with no voltages applied and on a sample lot of tubes from each production run. Tubes and their associated components§ are subjected in these tests (per MIL-E-5400#, paragraph 3.2.21.2.1) to 18 impact shocks of 15 g consisting of 3 shocks in opposite directions along each of three mutually perpendicular axes of the tube. Each shock impulse has a duration of 11 ± 1 milliseconds with a maximum impact acceleration occurring at approximately 5.5 milliseconds.

Temperature-Humidity Tests:

These tests are performed with no voltages applied to the 7263. The 7263 and associated components§ are subjected (per the method of MIL-E-5400#, paragraph 3.2.20.2B) to relative humidities up to and including 100 per cent at temperatures up to and including +50° C.

§ Tube socket such as Cinch No.54A18088 and RCA Assembly No.200SDU501, or equivalent, which consists of the deflecting coils. focusing coil, alignment coil, shield, and target connector.

♦ 5 June 1957, Procedure I of Military Specification.

1 January 1956.

OPERATING CONSIDERATIONS

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

Support for the 7263 should be provided such that, under vibration and shock, the tube will not be displaced with respect

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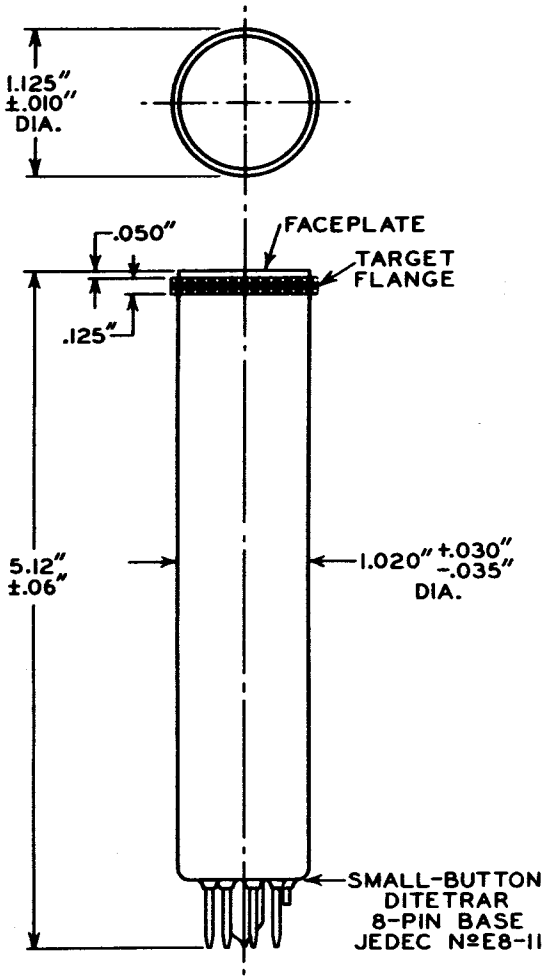
to the focusing, deflecting, and alignment fields. Suitable support is provided for the tube and its socket in the RCA Deflection Assembly 200SDU501, or equivalent. Orientation of the 7263 in its support should be such that the horizontal scan is essentially parallel to the plane passing through the tube axis and short index pin.



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RCA

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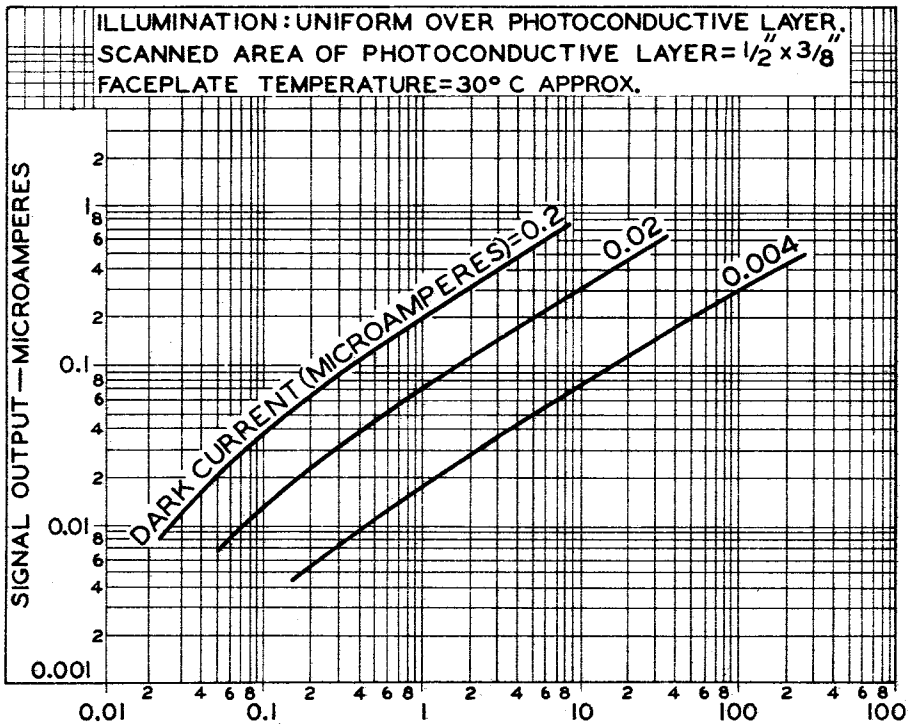
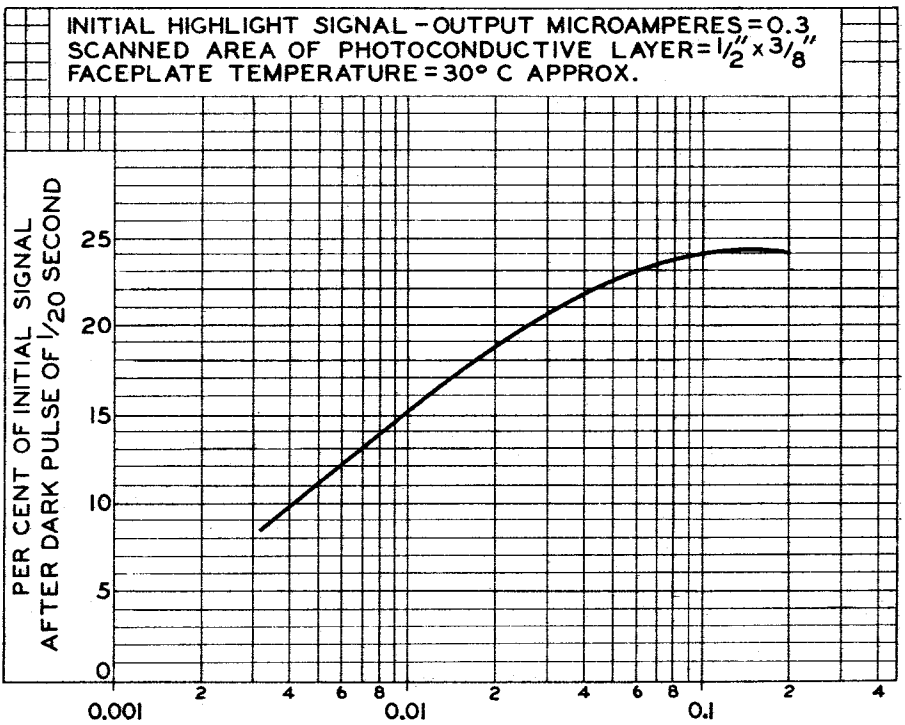
TYPICAL LIGHT-TRANSFER CHARACTERISTICS



92CS-9495

TYPICAL PERSISTENCE CHARACTERISTIC



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RCA

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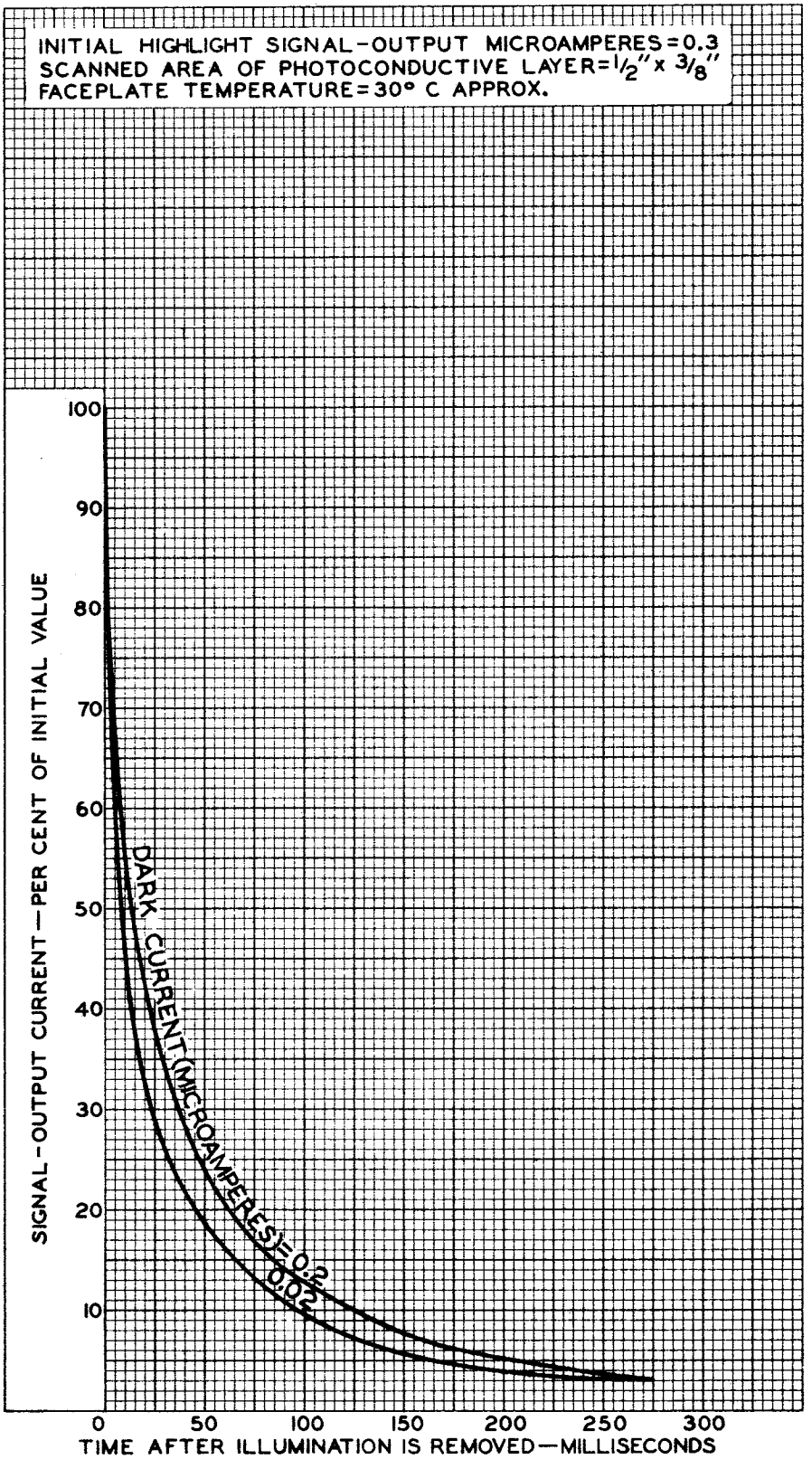
TYPICAL PERSISTENCE CHARACTERISTICS



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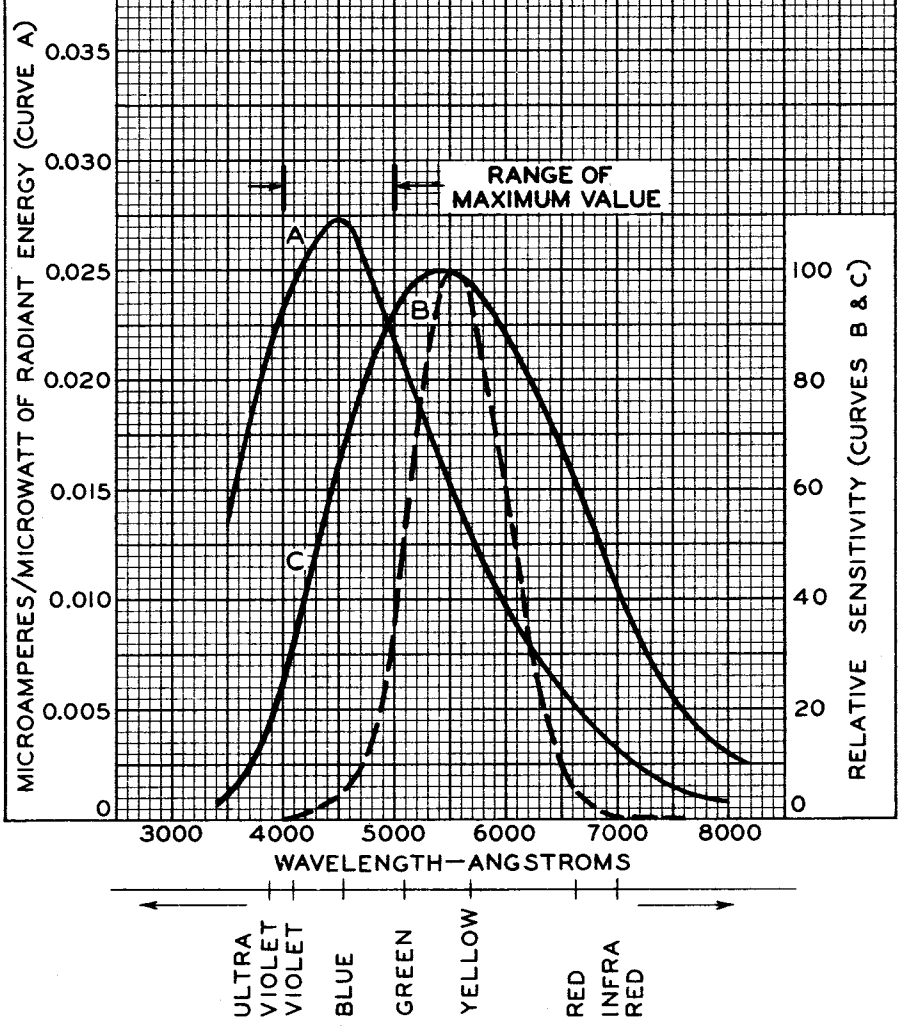
SPECTRAL–SENSITIVITY CHARACTERISTICS

CURVE A: FOR EQUAL VALUES OF SIGNAL–OUTPUT CURRENT AT ALL WAVELENGTHS.

SIGNAL–OUTPUT MICROAMPERES FROM SCANNED AREA OF $\frac{1}{2}$" x $\frac{3}{8}$" = 0.02
DARK CURRENT (MICROAMPERES) = 0.02

CURVE B: SPECTRAL CHARACTERISTIC OF AVERAGE HUMAN EYE.

CURVE C: FOR EQUAL VALUES OF SIGNAL–OUTPUT CURRENT WITH RADIANT FLUX FROM TUNGSTEN SOURCE AT 2870° K.



RCA

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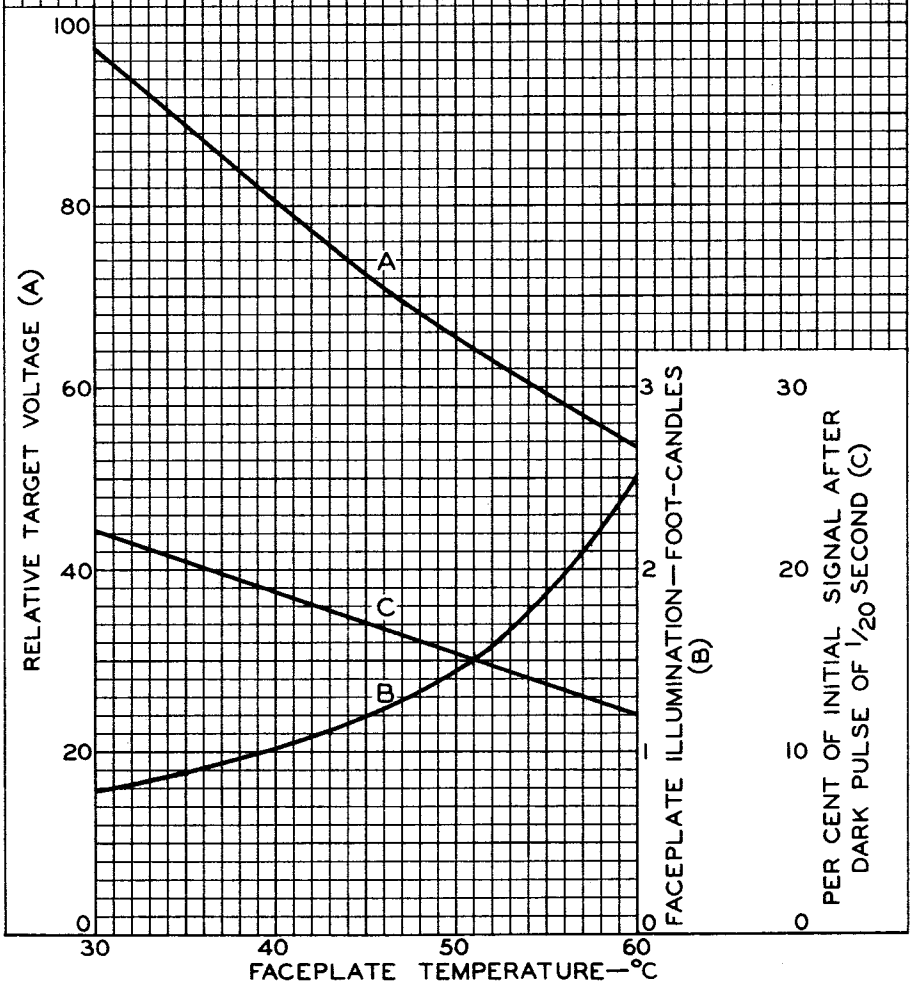
TYPICAL CHARACTERISTICS

HIGHLIGHT SIGNAL - OUTPUT MICROAMPERES = 0.2
DARK CURRENT (MICROAMPERES) = 0.2
SCANNED AREA OF PHOTOCONDUCTIVE LAYER = $1/2$" x $3/8$"
CURVE A: RELATIVE TARGET VOLTAGE REQUIRED TO MAINTAIN DARK CURRENT OF 0.2 μA.
CURVE B: 2870° K INCANDESCENT ILLUMINATION REQUIRED TO PRODUCE SIGNAL - OUTPUT CURRENT OF 0.2 μA.
CURVE C: PERSISTENCE (LAG) CHARACTERISTIC FOR AN INITIAL SIGNAL-OUTPUT CURRENT OF 0.2 μA.



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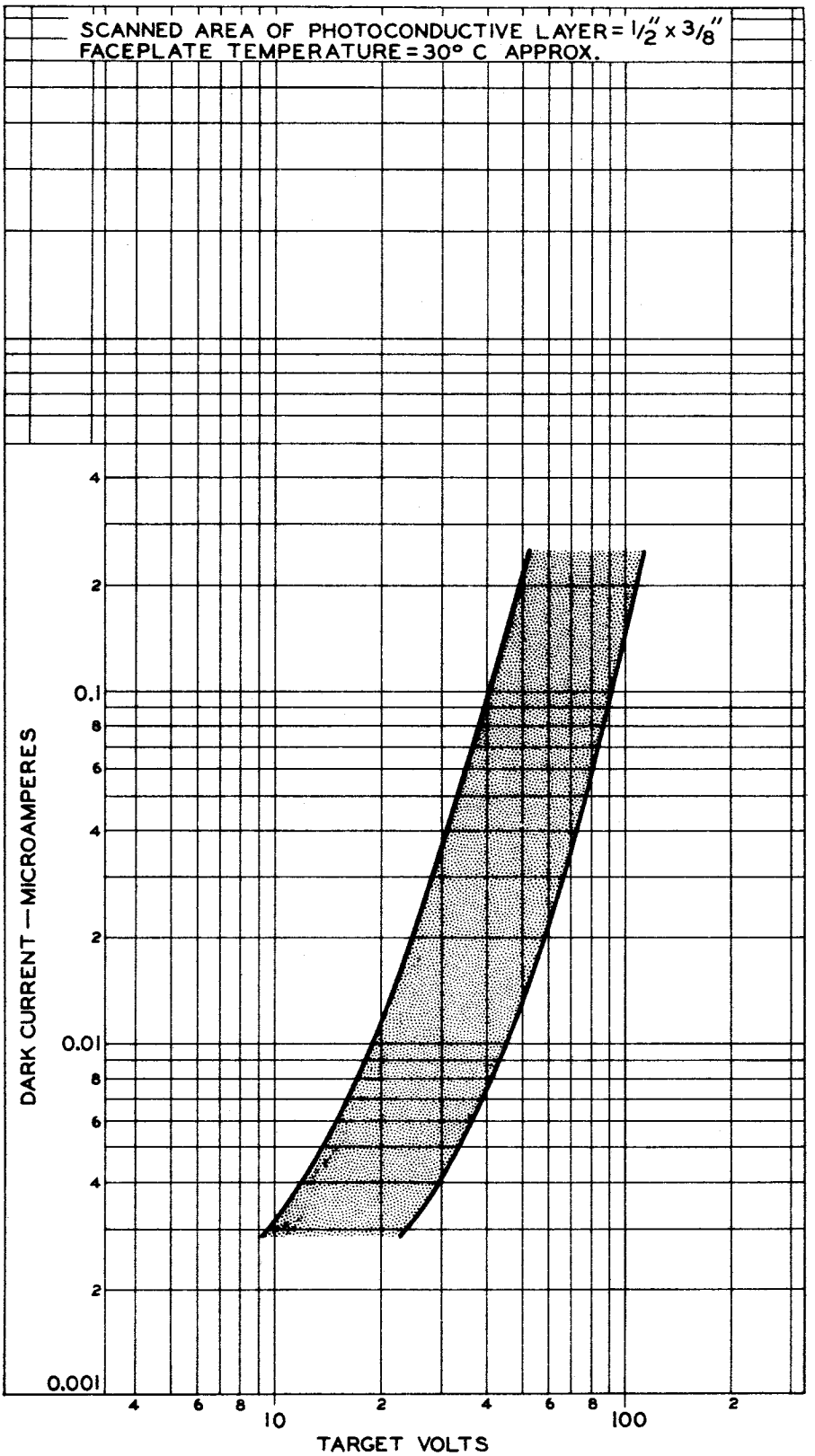
DARK-CURRENT RANGE



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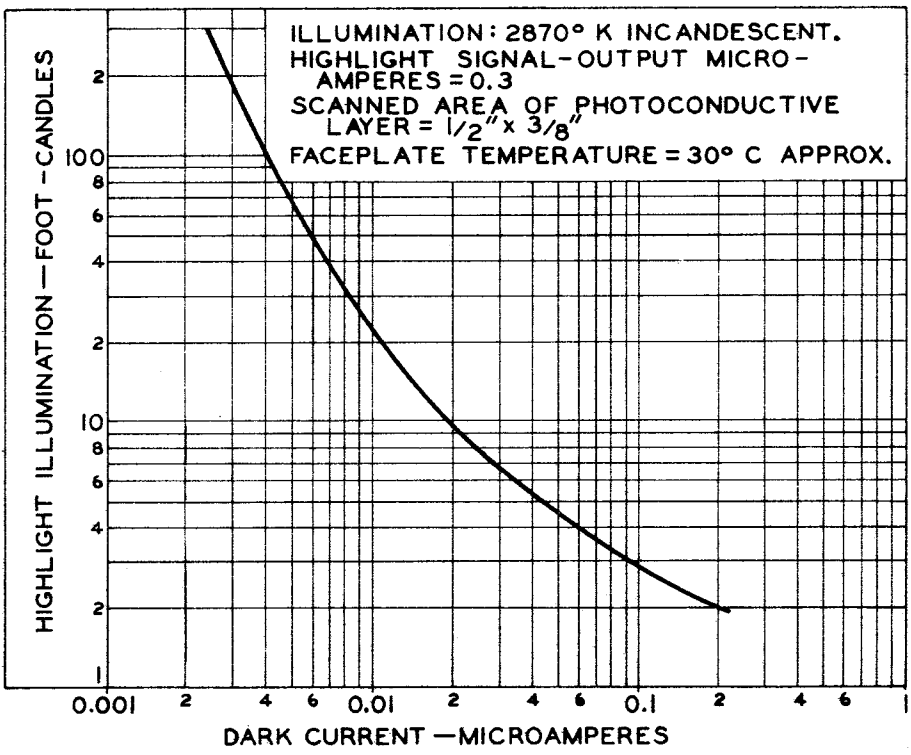
TYPICAL CHARACTERISTIC



92CS-9493