7412

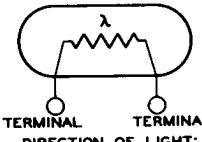
PHOTOCONDUCTIVE CELL

CADMIUM-SULFIDE, HEAD-ON TYPE

DATA

General:

Spectral Response	S-15
Wavelength of Maximum Response	5800 ± 500 angstroms
Sensitive Surface:	
Shape	Rectangular
Length (Minimum)	0.20 in.
Width (Minimum)	0.02 in.
Area (Minimum)	0.004 sq. in.
Maximum Length (Excluding flexible leads)	1.35"
Diameter	0.29" ± 0.01"
Leads, Flexible	2
Minimum length	1.4"
Diameter	0.018" ± 0.005"
Operating Position	Any
Weight (Approx.)	0.06 oz



λ indicates that the primary characteristic of the element within the envelope symbol is designed to vary under the influence of light.

Maximum Ratings, *Absolute-Maximum Values:*

VOLTAGE BETWEEN TERMINALS (DC or Peak AC)	200 max.	volts
PHOTOCURRENT	1000 max.	μa
POWER DISSIPATION	50 max.	mw
AMBIENT TEMPERATURE	60 max.	°C

Characteristics:

With dc voltage of 12 volts between terminals and an ambient temperature of 25° C

	Min.	*Median*	*Max.*	
Sensitivity:				
Radiant♦, at 5800 angstroms	–	1580	–	μa/μw
Luminous*#	–	4.5	–	amp/lumen
Illumination*#	100	300	800	μa/fc
Photocurrent▲	–	–	0.1	μa
Rise				*See Curves*
Decay				*See Curves*

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♦ For conditions where the incident power is 2×10^{-9} watt.

* For conditions where the light source is a tungsten-filament lamp operated at a color temperature of 2870° K.

Incident illumination on the sensitive surface is 0.01 footcandle.

▲ Measured approximately 20 seconds after removal of incident-illumination level of 0.01 footcandle.

OPERATING CONSIDERATIONS

The *flexible leads* of the 7412 are usually soldered to the circuit elements. Soldering of the leads may be made close to the seals provided care is taken to conduct excessive heat away from the seals. Otherwise, the heat of soldering will break the seals and damage the cell.

A *clamp* around the glass envelope may be used to hold the cell in position. However, care must be taken in clamping to avoid cracking the glass envelope or introducing strains in the envelope which could lead to eventual breakage.

The *voltage between terminals* of the 7412 may be applied without regard to polarity.

The *angle of view* of the 7412 may be narrowed by the use of a hood of the desired length placed in front of the cell.

If the source of radiation is some distance from the cell, the use of a lens system may be desirable to utilize more effectively the available radiation. *However, the radiation should not be focused onto such a small area that localized overheating of the sensitive surface may result with consequent adverse affects on its characteristics.* Exposure of the 7412 to radiation (even without voltage applied) so intense as to cause excessive heating of the cell may permanently damage it.

For a given illumination, the output current will have its highest value when the incident illumination is normal (angle of incidence is 90°) to the face of the cell. For smaller angles of incidence, the output current decreases. The decrease depends upon several factors including the angle of incidence of the illumination, the amount of illumination, and the area of sensitive surface illuminated.

SPECTRAL-SENSITIVITY CHARACTERISTIC of Photoconductive Cell having S-15 Response is shown at the front of this Section

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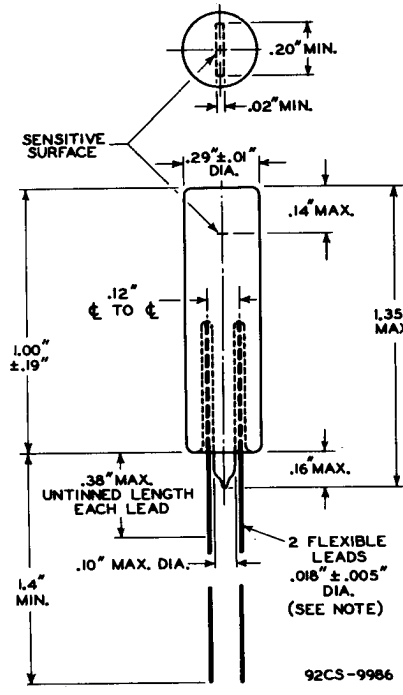

NOTE: THE SPECIFIED LEAD DIAMETER IS MAINTAINED ONLY WITHIN THE UNTINNED LENGTH.

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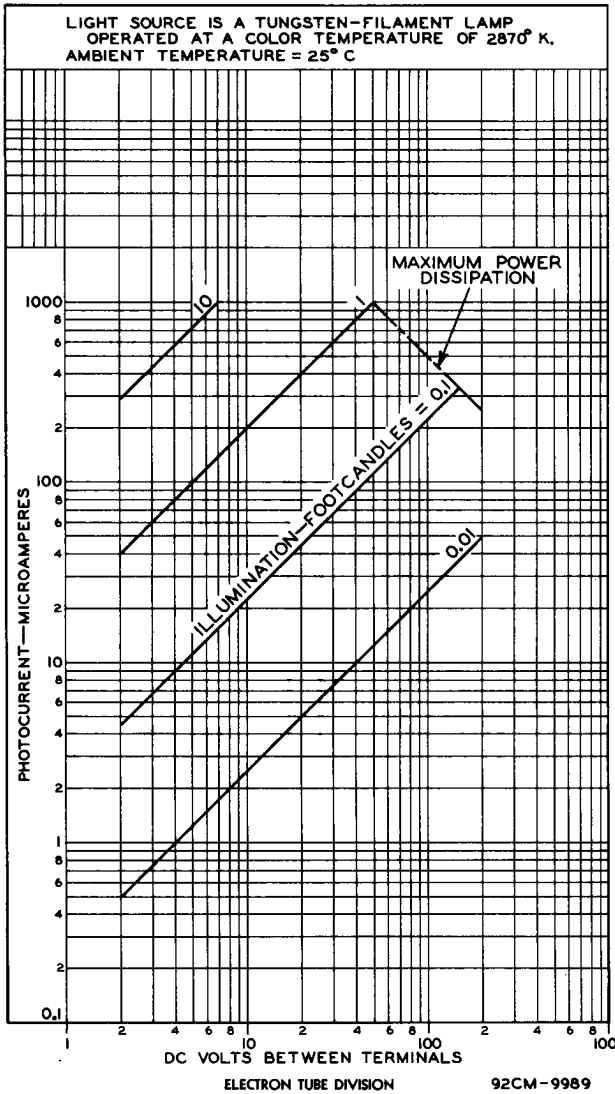
AVERAGE CHARACTERISTICS



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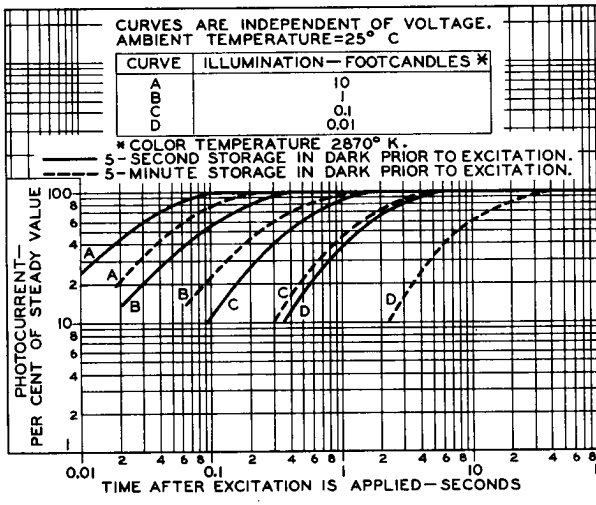
TYPICAL RISE CHARACTERISTICS



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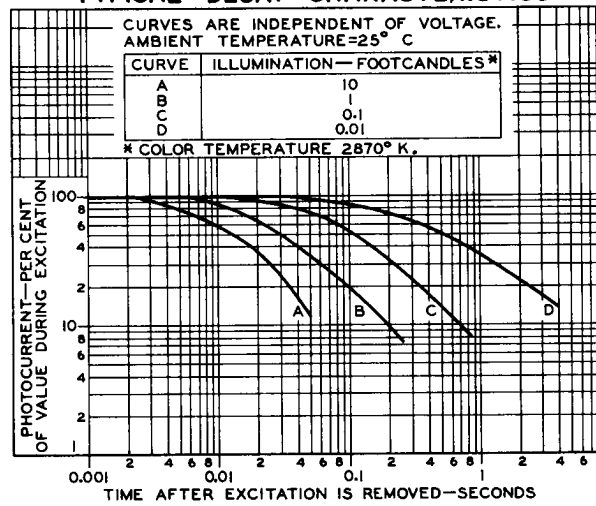
TYPICAL DECAY CHARACTERISTICS



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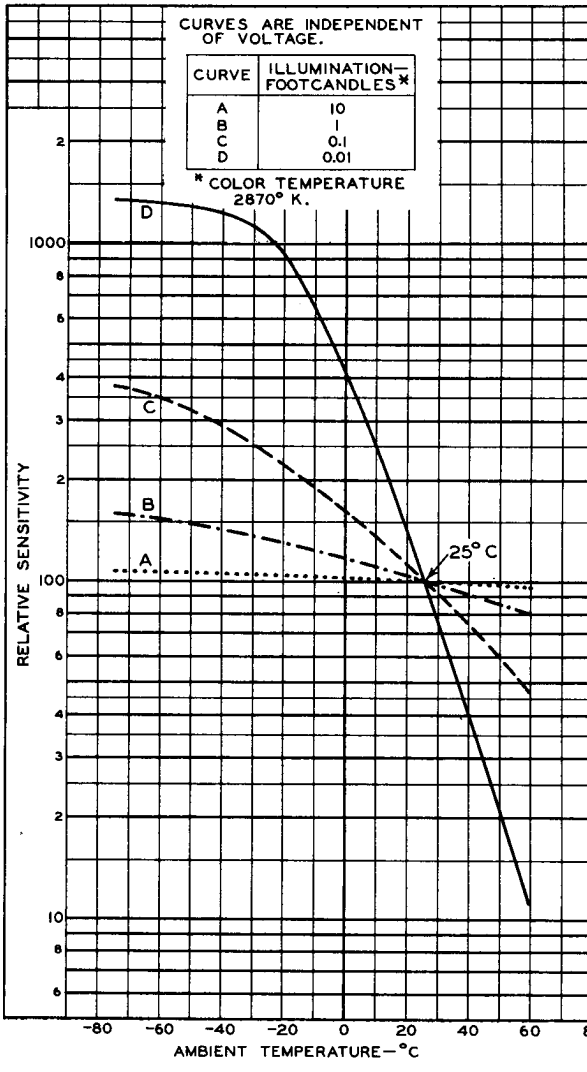
TYPICAL CHARACTERISTICS



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RESPONSE CHARACTERISTICS