



7224

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# PHOTOJUNCTION CELL

GERMANIUM P-N ALLOY JUNCTION, SIDE-ON TYPE  
HAVING S-14 RESPONSE

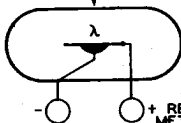
*For sound pickup-from-film, computer,  
punched-tape, and punched-card applications*

## DATA

### General:

Spectral Response. . . . .	S-14
Wavelength of Maximum Response . . . . .	15000 angstroms
Sensitive Area:	
Shape. . . . .	Circular
Diameter (Minimum) . . . . .	0.045"
Length (Excluding flexible leads). . . . .	0.46" ± 0.04"
Seated Length to Center of	
Sensitive Area . . . . .	0.330" ± 0.050"
Maximum Diameter . . . . .	0.300"
Envelope . . . . .	Glass with Metal Collar
Envelope Seals . . . . .	Hermetic
Operating Position . . . . .	.Any
Weight (Approx.) . . . . .	1 gram
Leads, Flexible. . . . .	2
Minimum length . . . . .	1.25"
Diameter and polarity. . . . .	See Dimensional Outline

DIRECTION OF  
INCIDENT RADIATION:  
TOWARD RED DOT ON  
METAL COLLAR



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

### Maximum Ratings, Absolute Values:

POLARIZING VOLTAGE . . . . .	50 max.	volts
POWER DISSIPATION. . . . .	0.03 max.	watt
AMBIENT-TEMPERATURE RANGE		
(During operation) . . . . .	-40 to +50	°C
STORAGE-TEMPERATURE RANGE. . . . .	-65 to +75	°C

### Characteristics:

*Under conditions with polarizing voltage of 45 volts  
and ambient temperature of 25° C*

*Min. Median Max.*

### Sensitivity:

Radiant, at 15000 angstroms. . . . .	-	0.52	-	$\mu\text{a}/\mu\text{w}$
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	Min.	Median	Max.	
Luminous#. . . . .	-	14	-	ma/lumen
Illumination#† . . . . .	0.5	0.7	-	μa/ft-c
Dark Current . . . . .	-	-	35	μa
Photocurrent:				
Rise . . . . .				. See Curve
Decay. . . . .				. See Curve

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

† The value of illumination incident on the sensitive area is 73 footcandles.

## OPERATING CONSIDERATIONS

The *flexible leads* of the 7224 are usually soldered to the circuit elements. Soldering of the leads may be made close to the glass stem provided care is taken to conduct excessive heat away from the lead seals. Otherwise, the heat of the soldering operation will crack the glass seals of the leads 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 metal-collar-to-envelope seal. *Do not solder or braze directly to the metal collar of the cell.*

The cell must be *polarized* by connecting the positive voltage to the lead indexed by the red dot on the metal collar.

The use of an optical system to *focus the incident radiation* onto the sensitive area of the cell is suggested, especially when the incident-radiation level is low. For high values of incident radiation, the entire side of the cell may be irradiated, but only that radiation intercepted by the sensitive area is effective in producing photocurrent.

*Exposure of the 7224 to intense radiation*, such as focused sunlight, should be avoided under all conditions including the condition when no voltage is applied to the cell. Permanent damage to the cell may result if it is exposed to radiant energy so intense as to cause excessive heating of the cell.

With no radiation on the sensitive area of the cell, some *dark current* will flow across the junction. This current can be reduced, as shown in the accompanying curve, by operation of the cell at reduced ambient temperature.

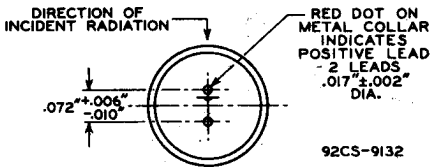
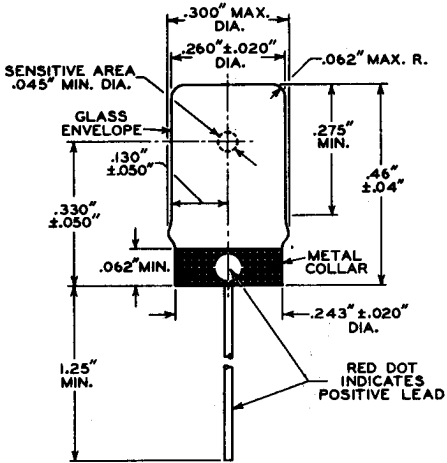
**SPECTRAL-SENSITIVITY CHARACTERISTIC**  
of Photojunction Cell having S-14 Response  
is shown at the front of this Section



7224

7224

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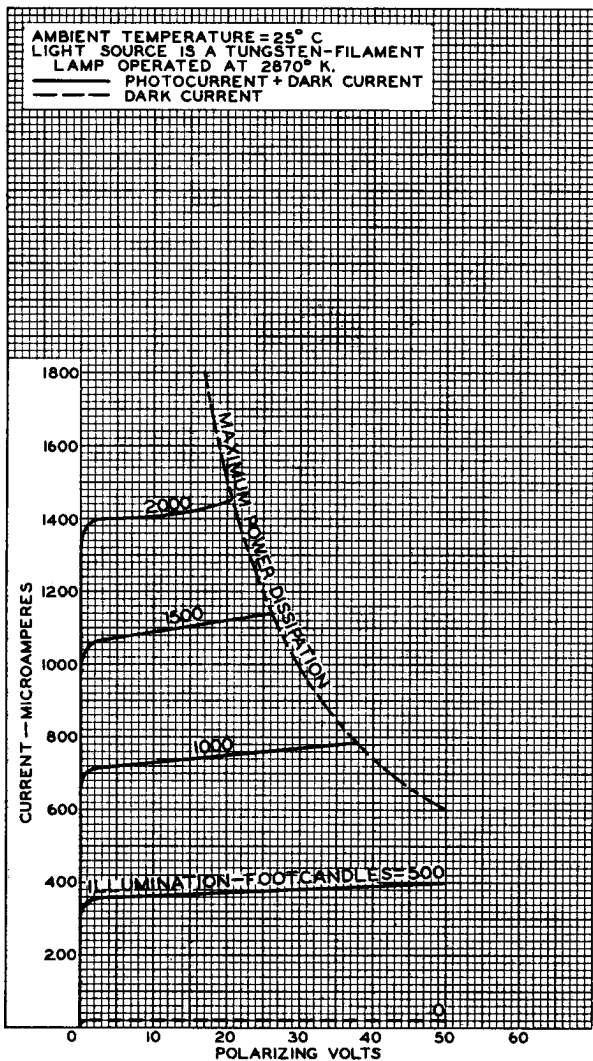


7224



7224

## AVERAGE CHARACTERISTICS

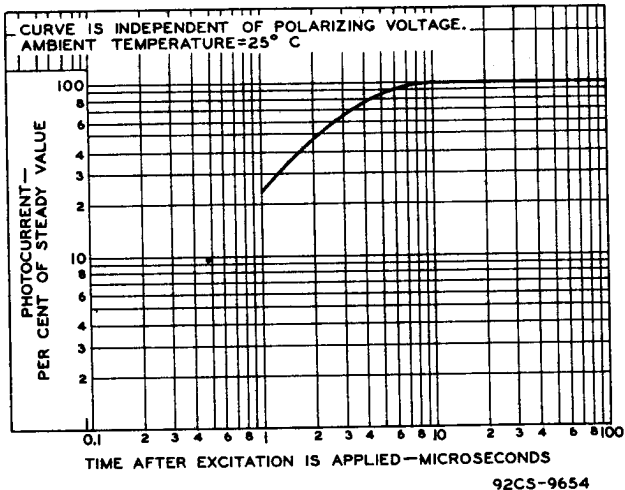




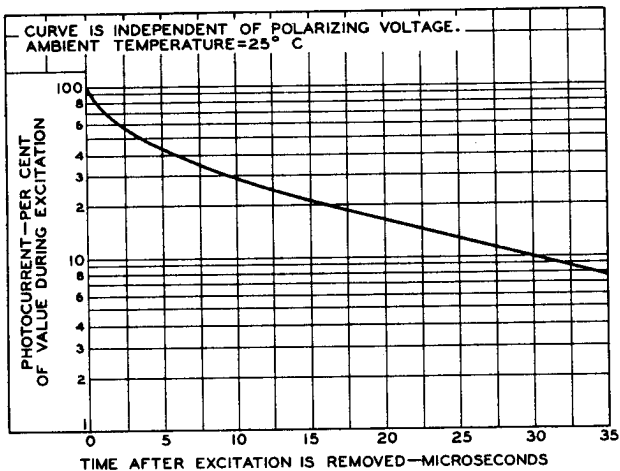
7224

7224

### TYPICAL RISE CHARACTERISTIC



### TYPICAL DECAY CHARACTERISTIC

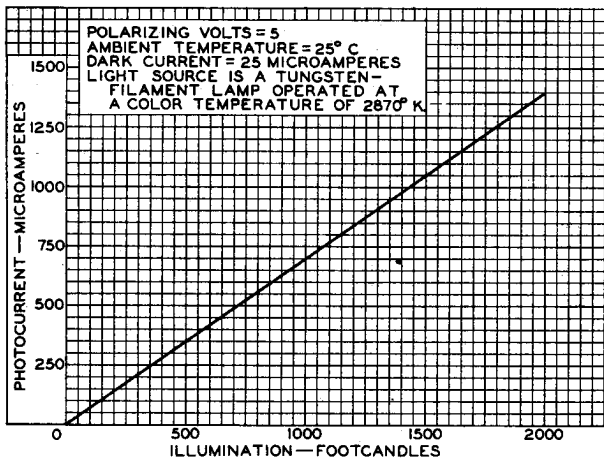


7224



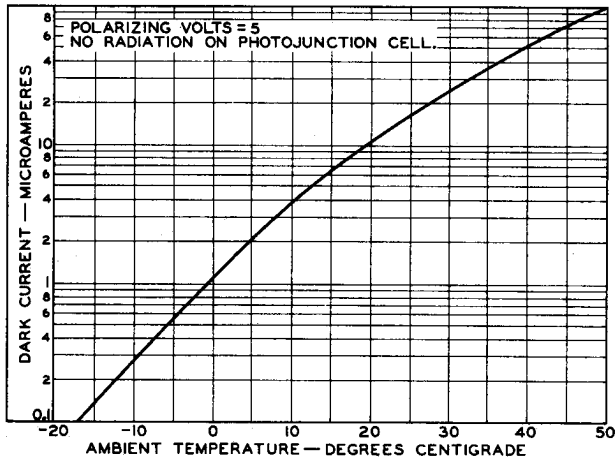
7224

### TYPICAL CHARACTERISTIC



92CS-9675

### TYPICAL DARK-CURRENT CHARACTERISTIC



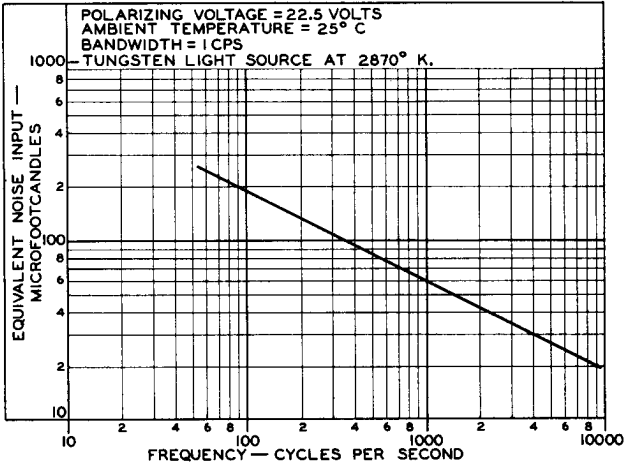
92CS-9676



7224

7224

### EQUIVALENT-NOISE-INPUT CHARACTERISTIC



92CS-9678