

# Photomultiplier Tube

9-STAGE, SIDE-ON TYPE HAVING S-4 RESPONSE

For AC-Operated Control Applications Such  
as Automobile-Headlight Control

## GENERAL

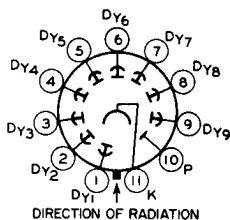
Spectral Response. . . . .	S-4
Wavelength of Maximum Response . . . . .	4000 ± 500 angstroms
Cathode, Opaque. . . . .	Cs-Sb ←
Minimum projected length <sup>a</sup> . . . . .	0.93 in
Minimum projected width. . . . .	0.31 in
Window . . . . .	Lime Glass, (Corning <sup>b</sup> No.0080), or equivalent ←
Dynode Material. . . . .	Cs-Sb
Direct Interelectrode Capacitances (Approx.)	
Anode to dynode No.9 . . . . .	4.2 pF
Anode to all other electrodes. . . . .	5.5 pF
Maximum Overall Length . . . . .	3.12 in
Maximum Seated Length. . . . .	2.69 in
Length . . . . .	1.56 ± 0.09 in
From base seat to center of useful cathode area	
Maximum Diameter . . . . .	1.31 in
Operating Position . . . . .	Any
Weight (Approx.) . . . . .	1.6 oz
Envelope . . . . .	JEDEC T9
Base . . . . .	Small-Shell Neosubmagnal 11-Pin (JEDEC No. B11-104), Non-hygroscopic
Socket. . . . .	Amphenol <sup>c</sup> No.78S11T, or equivalent ←
Magnetic Shield . . . . .	Millen <sup>d</sup> No.80801B, or equivalent ←

## ABSOLUTE-MAXIMUM RATINGS

Peak AC Supply Voltage		
Between anode and cathode. . . . .	1400	V ←
Between dynode No.9 and anode. . . . .	250	V ←
Between consecutive dynodes . . . . .	250	V ←
Between dynode No.1 and cathode. . . . .	250	V ←
Average Anode Current <sup>e</sup> . . . . .	0.1	mA
Ambient-Temperature. . . . .	75	°C

## TERMINAL DIAGRAM (Bottom View)

- Pin 1 - Dynode No.1
- Pin 2 - Dynode No.2
- Pin 3 - Dynode No.3
- Pin 4 - Dynode No.4
- Pin 5 - Dynode No.5
- Pin 6 - Dynode No.6
- Pin 7 - Dynode No.7
- Pin 8 - Dynode No.8
- Pin 9 - Dynode No.9
- Pin 10 - Anode
- Pin 11 - Photocathode



← Indicates a change.



## CHARACTERISTICS RANGE VALUES

Under conditions with dc supply voltage (E) across a voltage divider providing 1/10 of E between cathode and dynode No. 1; 1/10 of E for each succeeding dynode stage; and 1/10 of E between dynode No. 9 and anode

With E = 1000 V dc

	Min	Typ	Max	
<b>Sensitivity</b>				
→ Radiant, at 4000 angstroms	-	$3.4 \times 10^4$	-	A/W
Luminous, at 0 c/s <sup>f</sup> . . .	-	35	-	A/lm
<b>Dark Current to Any Electrode</b>	-	-	$7.5 \times 10^{-7}$	A
At 25°C				

→ With E = Adjustable 60 c/s ac Voltage

	Min	Typ	Max	
<b>Anode-to-Cathode Voltage<sup>g</sup></b> . . . . .	525	750	990	V
RMS values				
<b>Anode Dark Current<sup>h</sup></b> . . . . .	-	-	$1 \times 10^{-7}$	A
At 25°C				

<sup>a</sup> On plane perpendicular to the indicated direction of incident light and passing through the major axis of the tube.

<sup>b</sup> Made by Corning Glass Works, Corning, New York.

<sup>c</sup> Made by Amphenol Electronics Corporation, 1830 South 54th Avenue, Chicago 54, Illinois.

<sup>d</sup> Made by James Millen Manufacturing Company, 150 Exchange Street, Malden 48, Massachusetts.

<sup>e</sup> Averaged over any interval of 30 seconds maximum.

<sup>f</sup> Under the following conditions: The light source is a tungsten-filament lamp having a lime-glass envelope. It is operated at a color temperature of 2870°K and a light input of 10 microlumens is used.

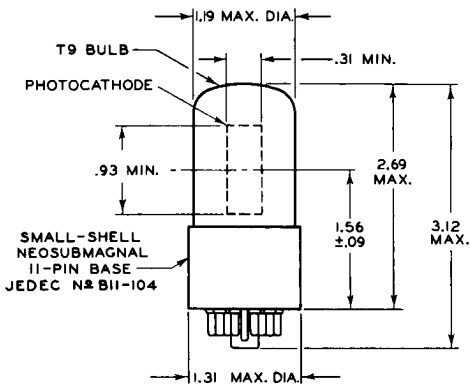
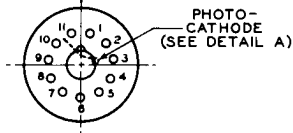
<sup>g</sup> Under the following conditions: Light incident on the cathode is transmitted through a filter (Corning C.S. No. 2-62, Glass Code No. 2418 which has an effective transmission of luminous flux of 5%—Manufactured by the Corning Glass Works, Corning, New York) from a tungsten-filament lamp operated at a color temperature of 2870°K. The value of light flux incident on the filter is 10 microlumens. Supply voltage (E) is adjusted to give an anode current of 8 microamperes.

<sup>h</sup> For conditions same as (g) except no radiant flux on photocathode.

→ Indicates a change.



## DIMENSIONAL OUTLINE

DIRECTION  
OF LIGHT

92CS-8028RI

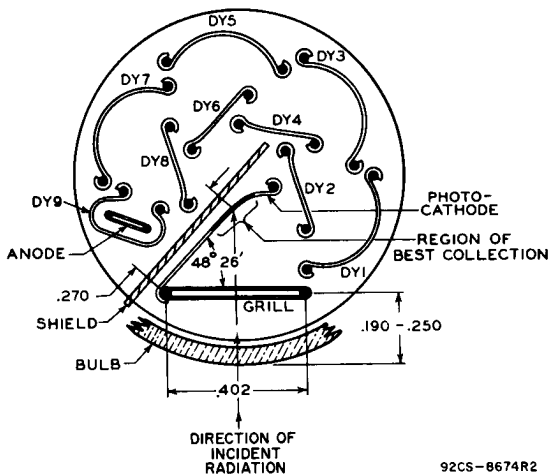
Center line of bulb will not deviate more than  $2^\circ$  in any direction from the perpendicular erected at the center of bottom of the base.

**Note:** The maximum angular variation between the planes through pins 1 and 11 and the plane of the grill will not exceed  $6^\circ$ .

DIMENSIONS IN INCHES

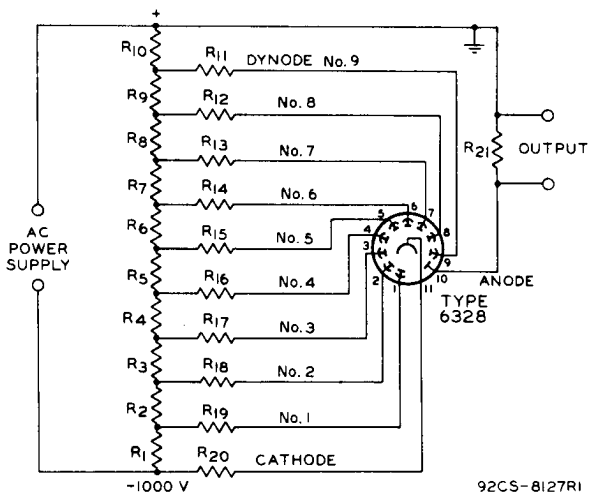


DETAIL A



92CS-8674R2

RECOMMENDED VOLTAGE-DIVIDER NETWORK FOR USE  
WITH TYPE 6328 IN HEADLIGHT-CONTROL SERVICE



R1 R2 R3 R4 R5

R6 R7 R8 R9 R10: 1 megohm, 1/2 watt

R11: 2 megohms, 1/2 watt

R12: 5.1 megohms, 1/2 watt

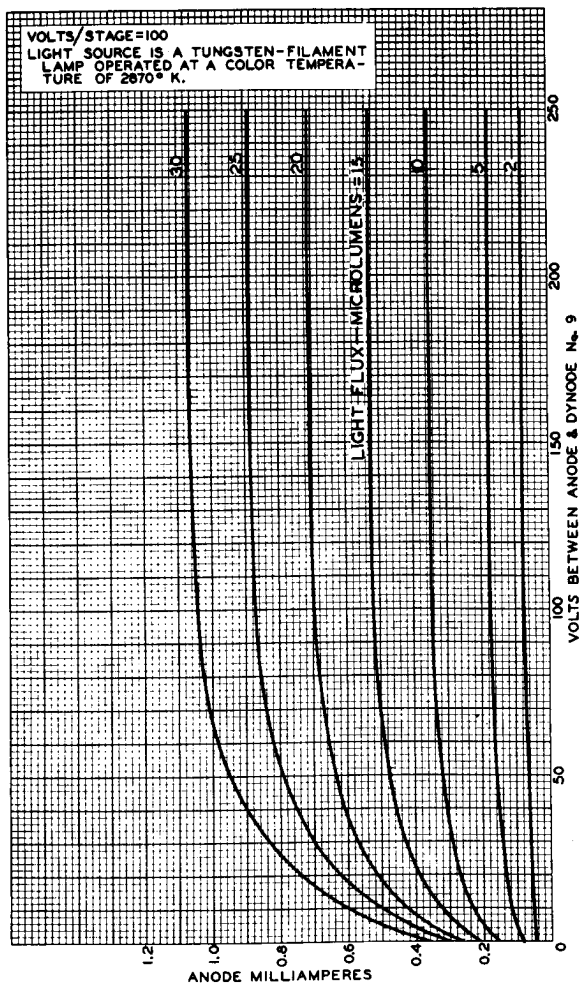
R13 R14 R15 R16

R17 R18 R19 R20: 8.2 megohms, 1/2 watt

R21: 820,000 ohms, 1/2 watt



# Typical Anode Characteristics

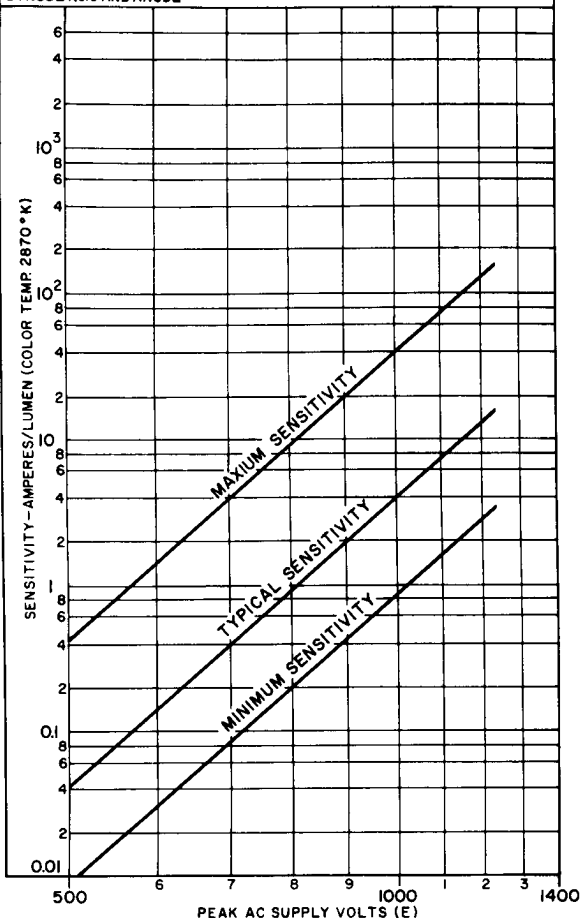


92CM-8029R2



## Sensitivity Characteristics

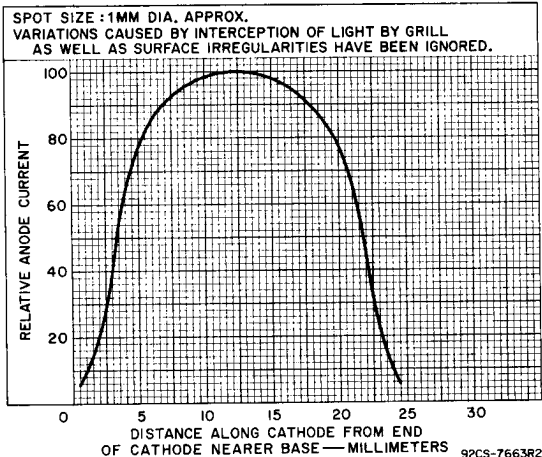
AC SINE-WAVE SUPPLY VOLTAGE (E) ACROSS VOLTAGE DIVIDER PROVIDING 1/10 OF E BETWEEN CATHODE AND DYNODE No. 1; 1/10 OF E FOR EACH SUCCEEDING DYNODE STAGE; AND 1/10 OF E BETWEEN DYNODE No. 9 AND ANODE



92CM-957IRIT



## Variation in Photocathode Sensitivity Along Its Length



## Variation in Photocathode Sensitivity Across Its Projected Width in Plane of Grill

