

# HAMAMATSU

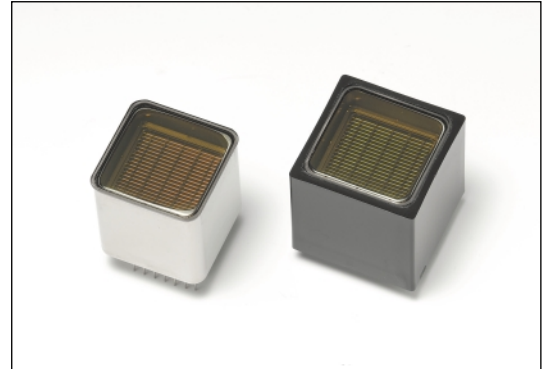
## POSITION SENSITIVE PHOTOMULTIPLIER TUBES R8900-00-C12, R8900U-00-C12

### FEATURES

- 6 (X) + 6 (Y) Cross Plate Anode
- High Spatial Resolution
- Wide Effective Area

### APPLICATIONS

- Animal PET (Positron Emission Tomography)
- Compact Gamma Camera
- Scintillation Mammography



Left: R8900-00-C12, Right: R8900U-00-C12

### GENERAL

Parameter		Description / Value	Unit
Spectral Response		300 to 650	nm
Wavelength of Maximum Response		420	nm
Photocathode	Material	Bialkali	—
	Minimum Effective Area	23.5 × 23.5	mm
Window	Material	Borosilicate glass	—
	Thickness	0.8	mm
Dynode	Structure	Metal channel dynode	—
	Number of Stages	11	—
Anode		6 (X) + 6 (Y) Cross plate anode	—
Weight		Approx. 28 (U Type: Approx. 38)	g
Suitable Socket		E678-32B (sold separately)	—
Operating Ambient Temperature		-80 to +50 (U Type: -30 to +50)	°C
Storage Temperature		-80 to +50 (U Type: -30 to +50)	°C

### MAXIMUM RATINGS (Absolute Maximum Values)

Parameter		Value	Unit
Supply Voltage	Between Anode and Cathode	1000	V
Average Anode Current in Total		0.1	mA

### CHARACTERISTICS (at 25 °C)

Parameter		Min.	Typ.	Max.	Unit
Cathode Sensitivity	Luminous (2856 K)	50	85	—	μA/lm
	Quantum Efficiency at 420 nm	—	25	—	%
	Blue Sensitivity Index (CS 5-58)	7.5	10	—	—
Anode Sensitivity	Luminous (2856 K)	15	60	—	A/lm
Gain		—	0.7 × 10 <sup>6</sup>	—	—
Anode Dark Current in Total of Anodes (after 30 min storage in darkness)		—	2	10	nA
Time Response	Anode Pulse Rise Time	—	2.2	—	ns
	Electron Transit Time	—	11.9	—	ns
	Transit Time Spread (FWHM)	—	0.75	—	ns

**NOTE:** Anode characteristics are measured with the voltage distribution ratio shown below.

### VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

Electrodes	K	G	Dy1	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	Dy11	P
Ratio	0.5	1.5	2	1	1	1	1	1	1	1	1	1	1	0.5

Supply Voltage: 800 V, K: Cathode, G: Grid, Dy: Dynode, P: Anode

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# POSITION SENSITIVE PHOTOMULTIPLIER TUBES

## R8900-00-C12, R8900U-00-C12

Figure 1: Typical Spectral Response

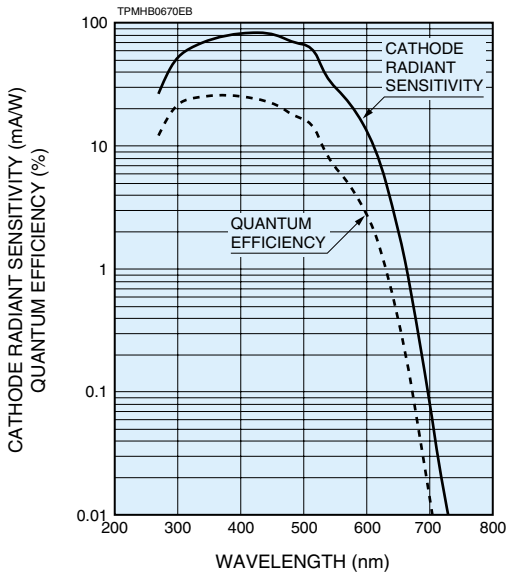


Figure 2: Typical Gain and Anode Dark Current

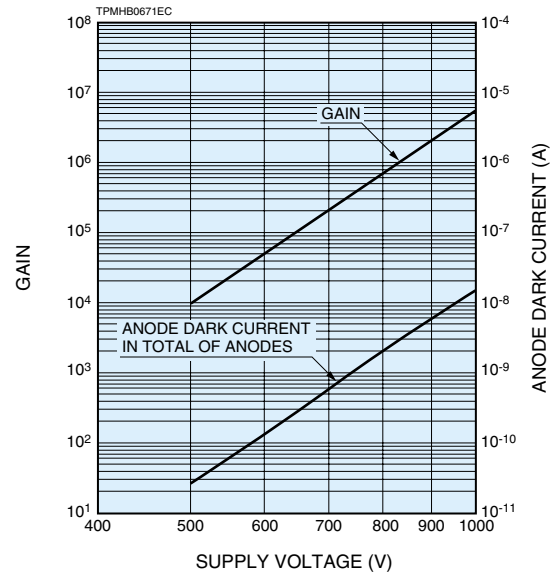
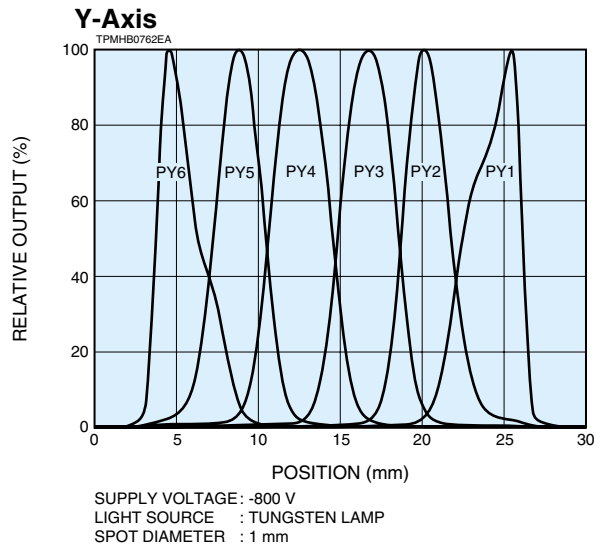
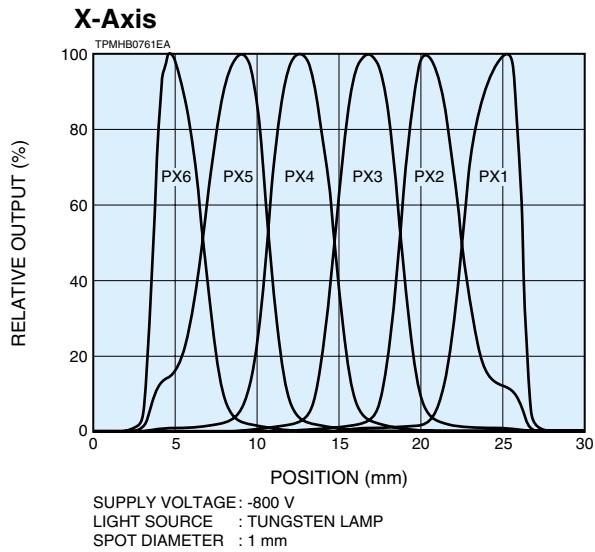


Figure 3: Spatial Resolution



\* Output of each anode under a light spot scanning at a center.

Figure 4: Position Response Using PX/PY Anodes

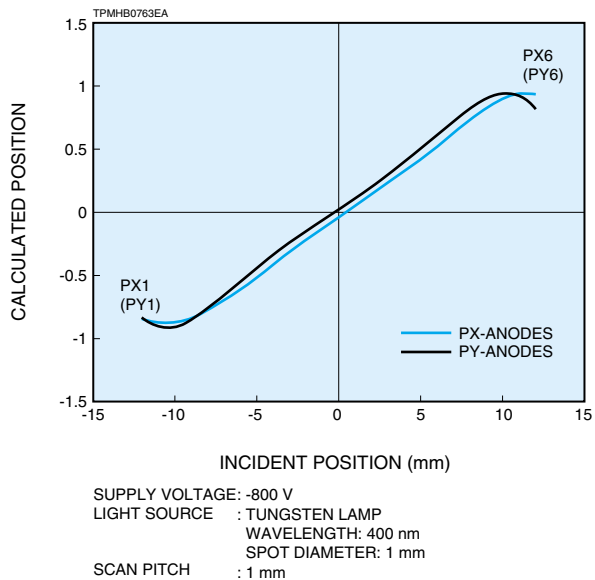
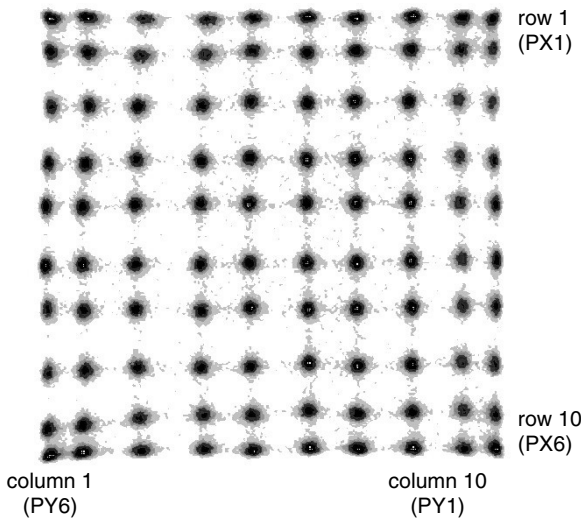


Figure 5: Positioning Histogram Example



Positioning histogram of a 10 × 10 array of 2 mm × 2 mm × 20 mm BGO elements for 511 keV  $\gamma$ -rays.

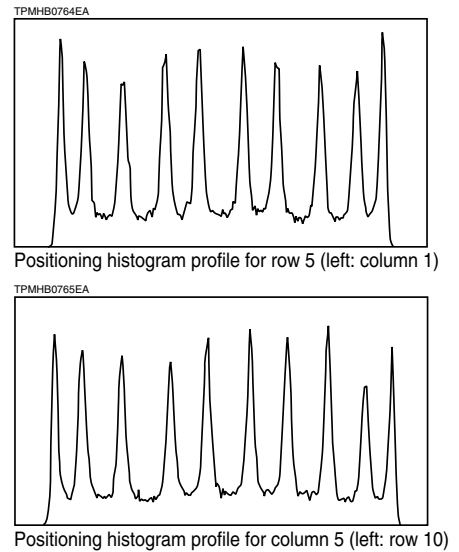


Figure 6: R8900-00-C12 Dimensional Outline and Basing Diagram (Unit: mm)

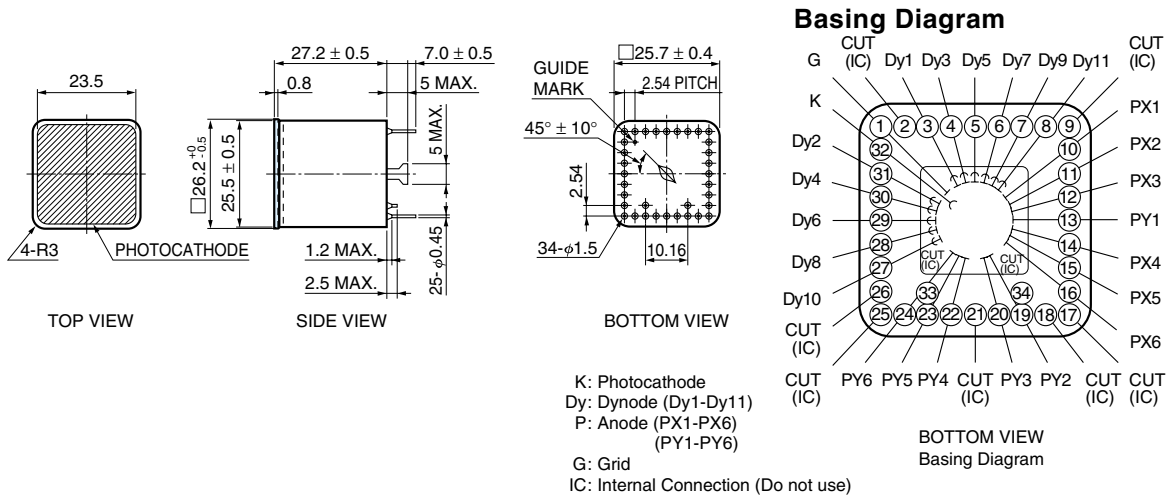
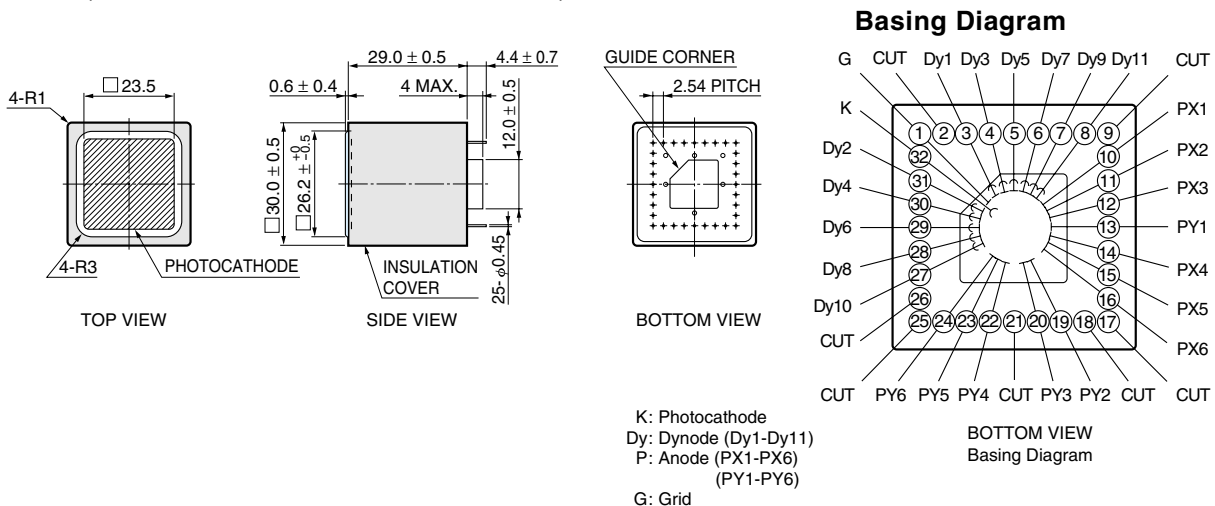


Figure 7: R8900U-00-C12 Dimensional Outline and Basing Diagram (Unit: mm)  
(R8900-00-C12 with an Insulation Cover)

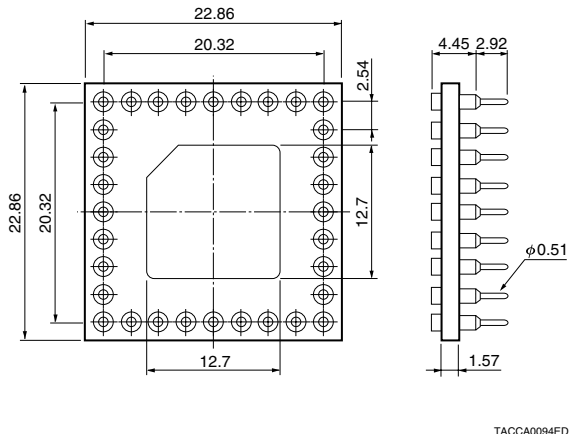


# POSITION SENSITIVE PHOTOMULTIPLIER TUBES

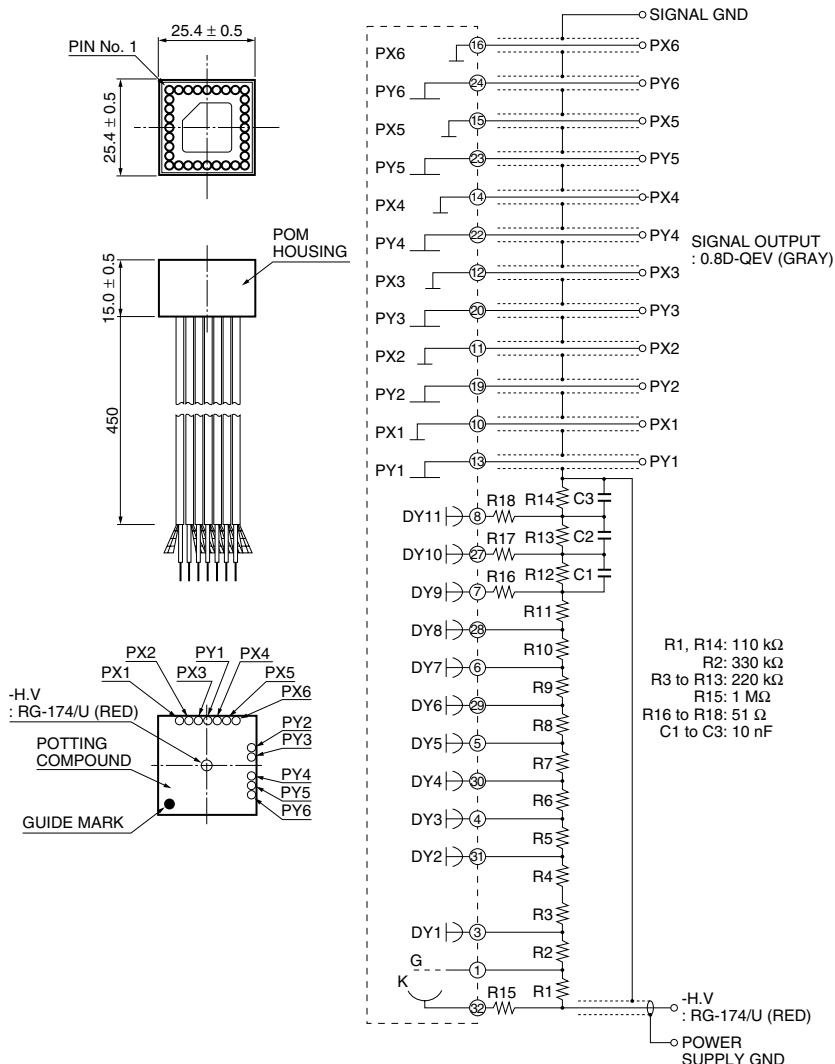
## R8900-00-C12, R8900U-00-C12

[ACCESSORIES] (Unit: mm)

● **Socket E678-32B** **SOLD SEPARATELY**



● **D Type Socket Assembly E7514** **SOLD SEPARATELY**



In case of using PMT with E7514, PMT must be operated within 0 °C to 50 °C  
(Storage temperature for E7514 only: -15 °C to +60 °C)

TACCA0236E

### ⚠ WARNING ~ High Voltage ~

The product is operated at high voltage potential. Further, the metal housing of the product is connected to the photocathode (potential) so that it becomes a high voltage potential when the product is operated at a negative high voltage (anode grounded). Accordingly, extreme safety care must be taken for the electrical shock hazard to the operator or the damage to the other instruments.

\* PATENT: USA: 5410211 and other(9), GBR: 551767 and other(9), DEU: 69209809 and other(9), FRA: 551767 and other(9), JPN: 3078905 and other(9)

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