

**Compact size (16 mm diameter, 12 mm seated length)  
High gain, Fast time response**

**FEATURES**

- Compact and light weight
- Metal package (TO-8 Type)
- High cathode sensitivity
- High gain .....  $2 \times 10^6$  (Typ.)

**APPLICATIONS**

- Spectroscopy
- Biotechnology
- Radiation measurement
- Bacteria monitor

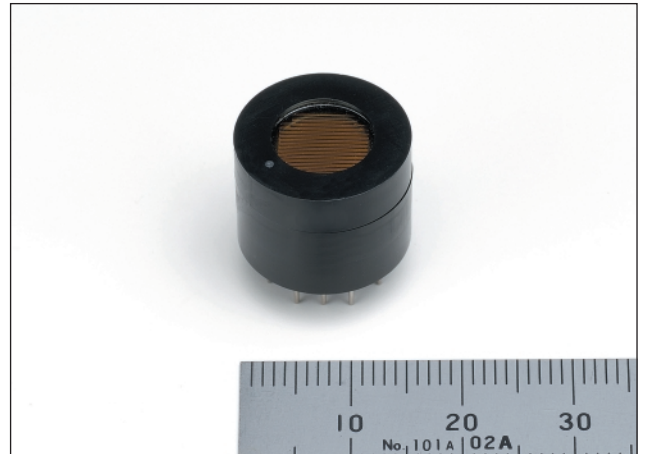
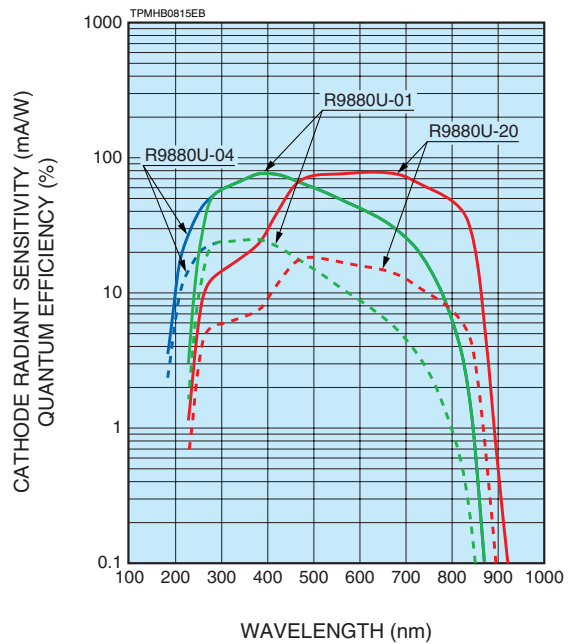
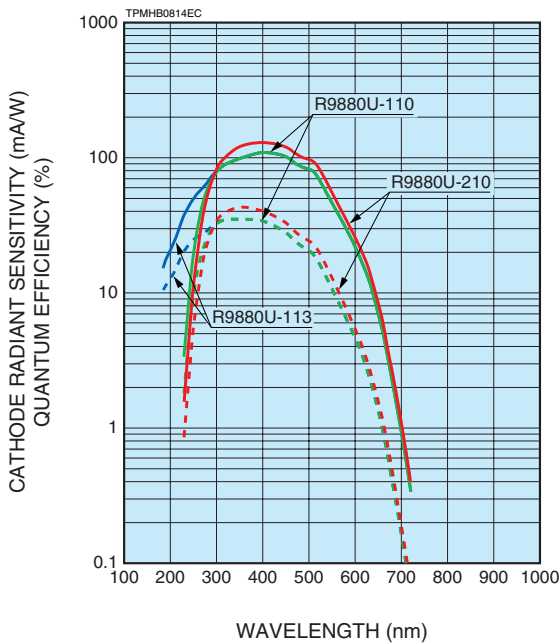


Figure 1: Typical Spectral Response



# PHOTOMULTIPLIER TUBE R9880U SERIES

Type No.	Spectral response		Photo-cathode material <sup>(A)</sup>	Window material <sup>(B)</sup>	Dynode structure / stages <sup>(C)</sup>	Maximum ratings		Cathode characteristics				
	Range (nm)	Peak wavelength (nm)				Supply voltage between anode and cathode (V)	Average anode output current in total (mA)	Luminous		Blue sensitivity index (CS 5-58) Typ.	Red/white ratio (R-68) Typ.	Radiant <sup>(D)</sup>
								Min. ( $\mu\text{A/lm}$ )	Typ. ( $\mu\text{A/lm}$ )			
R9880U-01	230 to 870	400	MA	K	MC/10	1100	0.1	100	200	—	0.2	77
R9880U-04	185 to 870	400	MA	U				100	200	—	0.2	77
R9880U-20	230 to 920	630	MA	K				350	500	—	0.45	78
R9880U-110	230 to 700	400	SBA	K				80	105	13.5	—	110
R9880U-113	185 to 700	400	SBA	U				80	105	13.5	—	110
R9880U-210	230 to 700	400	UBA	K				100	135	15.5	—	130

**NOTE:** (A) MA: Multialkali, SBA: Super bialkali, UBA: Ultra bialkali  
 (B) K: Borosilicate glass, U: UV glass  
 (C) MC: Metal channel  
 (D) Measured at peak wavelength

Figure 2: Typical gain

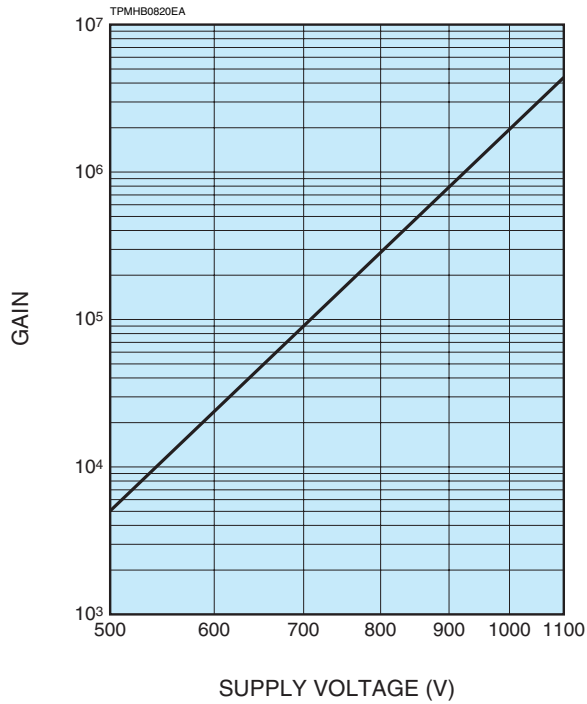
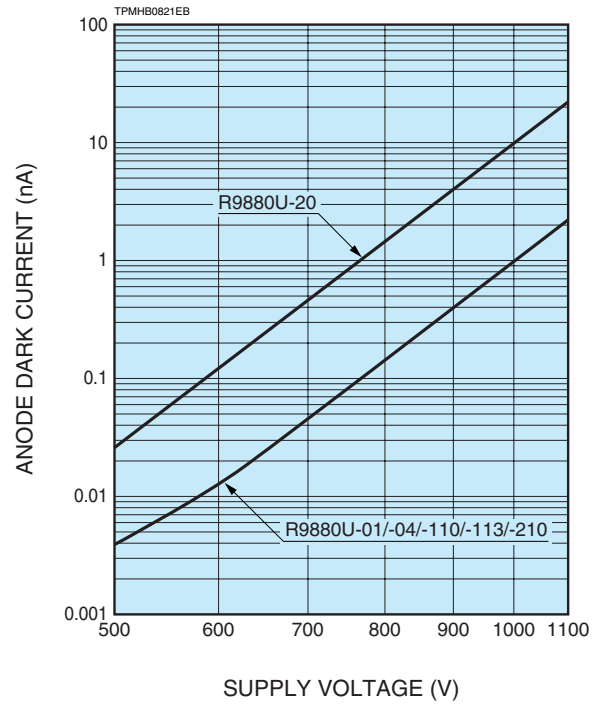


Figure 3: Anode dark current (v.s. Supply voltage)



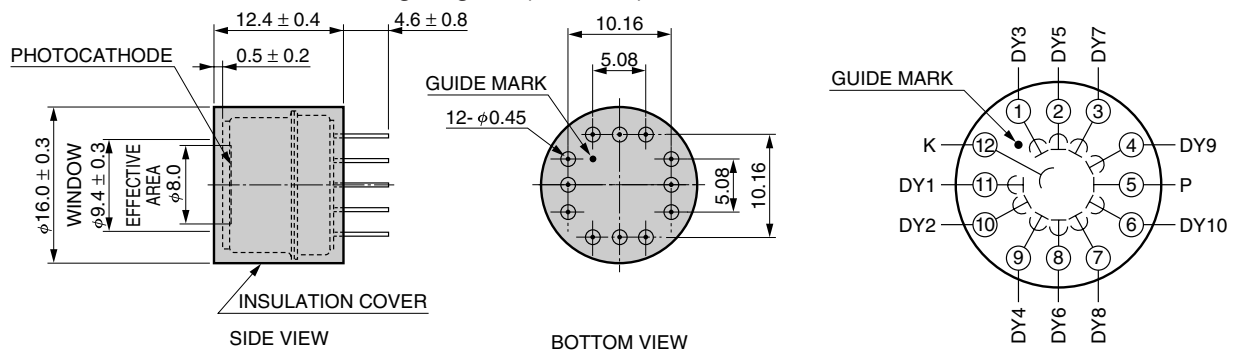
Anode to cathode supply voltage (V)	Anode characteristics								Operating ambient temperature (°C)	Storage temperature (°C)	Type No.
	Luminous		Gain Typ.	Dark current (After 30 min)		Time response					
	Min. (A/lm)	Typ. (A/lm)		Typ. (nA)	Max. (nA)	Rise time Typ. (ns)	Transit time Typ. (ns)	TTS Typ. (ns)			
1000	100	400	2.0 × 10 <sup>6</sup>	1	10	0.57	2.7	0.2	-30 to +50	-30 to +50	R9880U-01
	100	400		1	10						R9880U-04
	350	1000		10	100						R9880U-20
	80	210		1	10						R9880U-110
	80	210		1	10						R9880U-113
	100	270		1	10						R9880U-210

### VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

Electrodes	K	Dy1	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	P
Distribution ratio	1	1	1	1	1	1	1	1	1	1	1	0.5

Supply voltage: 1000 V, K: Cathode, Dy: Dynode, P: Anode

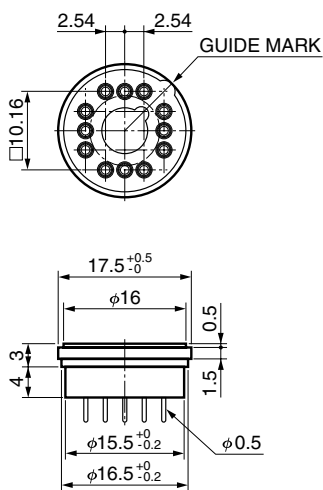
Figure 4: Dimensional outline and basing diagram (Unit: mm)



TPMHA0539EC

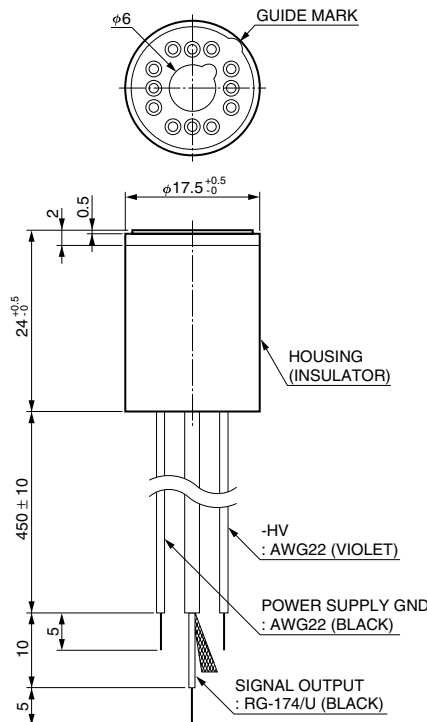
### [ACCESSORIES] (Unit: mm) SOLD SEPARATELY

● **Socket E678-12-01**



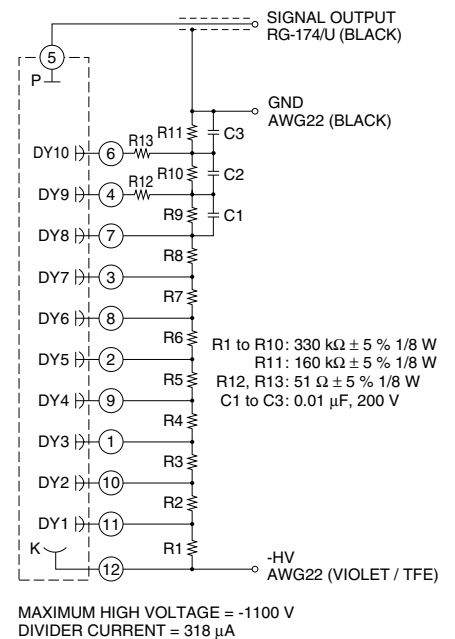
TACCA0304EA

● **D Type socket assembly E10679-02**



\* SHV / BNC connector type (E10679-03) and pin type (E10679-51) are also available.

TACCA0299EC



TACCO0165EA

# PHOTOMULTIPLIER TUBE R9880U SERIES

## WARNING: HIGH VOLTAGE



The metal package photomultiplier tubes are operated by applying a high voltage. Use extreme caution to avoid electrical shock and damage to the peripheral equipment and be sure to provide adequate safety measures as needed. As safety measures, an insulation cover is fitted to the metal package which is electrically connected to the photocathode. When operated with the cathode at a high voltage (anode ground scheme), the metal package will be at this same high voltage level. Removing the insulation cover is extremely dangerous, so never attempt to remove it from the package.

## RELATED PRODUCTS

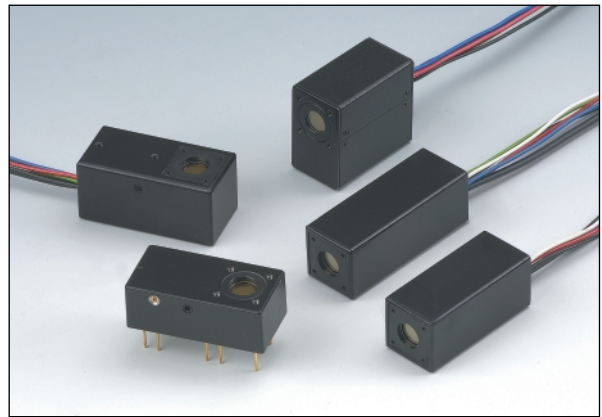
### PHOTOSENSOR MODULES H10720/H10721/H10722/H10723 SERIES PHOTON COUNTING HEAD H10682 SERIES

The H10720/H10721/H10722/H10723 series are new photo-sensor modules containing a metal package photomultiplier tube and a high-voltage power supply circuit. These photo-sensor modules operate from a low voltage supply (+5 V: H10720/H10721 series,  $\pm 5$  V: H10722/H10723 series) and offer features such as high sensitivity, wide dynamic range, and fast response.

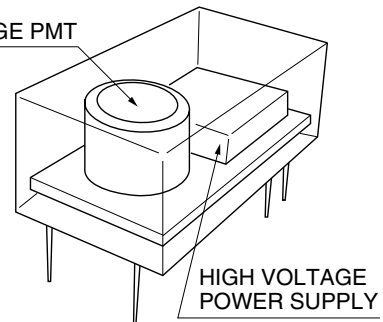
The H10720/H10721 series is a current output type module, and the H10722/H10723 series is also a current output type module but also contains a low-noise amplifier circuit.

The H10682 series is a photon counting head that includes a metal package photomultiplier tube, a high-voltage power supply circuit, and a photon counting circuit. Photon counting measurement can be made by just inputting +5 V.

When used with an optical fiber adapter E5776 (sold separately), light can be directly guided to the photosensitive surface through an optical fiber.



METAL PACKAGE PMT



H10720

TPMH0093EB

## FEATURES

- Compact and light weight
- Easy to use
- Low power consumption
- Low voltage drive
- High sensitivity
- Wide dynamic range

H10720 Series: SIZE 25(W) × 18(H) × 50(D) mm WEIGHT: 45 g  
H10721 Series: SIZE 22(W) × 22(H) × 50(D) mm WEIGHT: 80 g  
H10722 Series: SIZE 22(W) × 22(H) × 60(D) mm WEIGHT: 100 g  
H10723 Series: SIZE 25(W) × 24(H) × 51(D) mm WEIGHT: 90 g  
H10682 Series: SIZE 22(W) × 36(H) × 40(D) mm WEIGHT: 47 g

**HAMAMATSU PHOTONICS K.K.** [www.hamamatsu.com](http://www.hamamatsu.com)

**HAMAMATSU PHOTONICS K.K., Electron Tube Division**

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