

## FEATURES

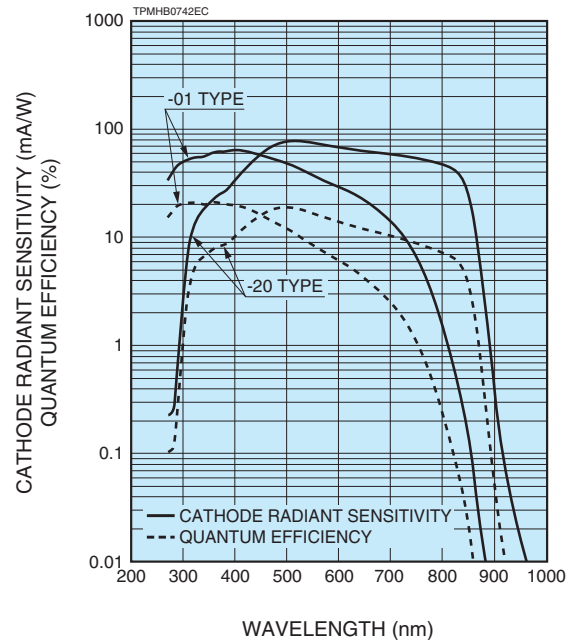
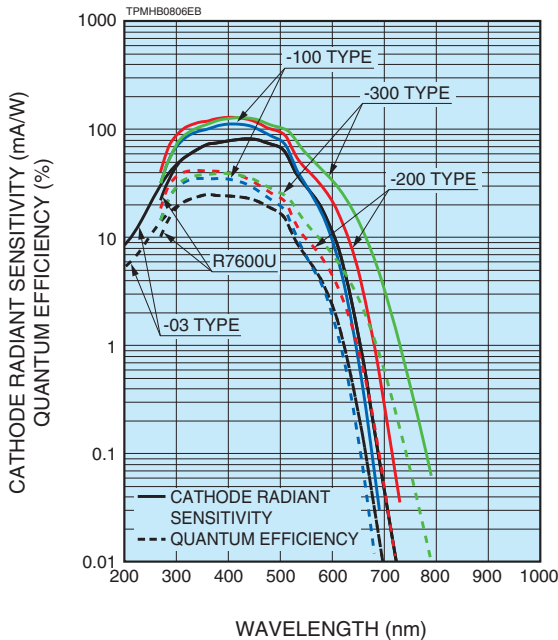
- Effective area: 18 mm × 18 mm
- High cathode sensitivity  
Luminous 200  $\mu\text{A}/\text{lm}$  Typ. (-01 type)  
Luminous 500  $\mu\text{A}/\text{lm}$  Typ. (-20 type)
- High speed response
- Wide dynamic range
- Compact
- Weight: Approx. 33 g

## APPLICATIONS

- High energy physics
- Flow cytometers (-01, -20 type)
- DNA sequencers (-01, -20 type)
- Pollution monitoring (NOx) (-01, -20 type)



Figure 1: Typical spectral response



# PHOTOMULTIPLIER TUBES R7600U 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)		Red/White ratio (R-68) Typ.	Radiant Typ. (mA/W)
								Min. (μA/lm)	Typ. (μA/lm)	Min.	Typ.		
R7600U	300 to 650	420	BA	K	MC/10	900	0.1	60	80	7.5	9.5	—	80
R7600U-01	300 to 850	400	MA	K	MC/10	900	0.1	150	200	—	—	0.2	65
R7600U-03	185 to 650	420	BA	U	MC/10	900	0.1	60	80	7.5	9.5	—	80
R7600U-20	300 to 920	530	ERMA	K	MC/10	900	0.1	350	500	—	—	0.4	78
R7600U-100	300 to 650	400	SBA	K	MC/10	900	0.1	90	105	12.5	13.5	—	110
R7600U-200	300 to 650	400	UBA	K	MC/10	900	0.1	110	135	14.0	15.5	—	130
R7600U-300	300 to 700	420	EGBA	K	MC/10	900	0.1	120	160	12.0	14.0	—	125

NOTE: (A) BA: Bialkali, MA: Multialkali, SBA: Super bialkali, UBA: Ultra bialkali, EGBA: Extended green bialkali, ERMA: Extended red multialkali  
 (B) K: Borosilicate glass, U: UV glass  
 (C) MC: Metal channel

Figure 2: Typical gain

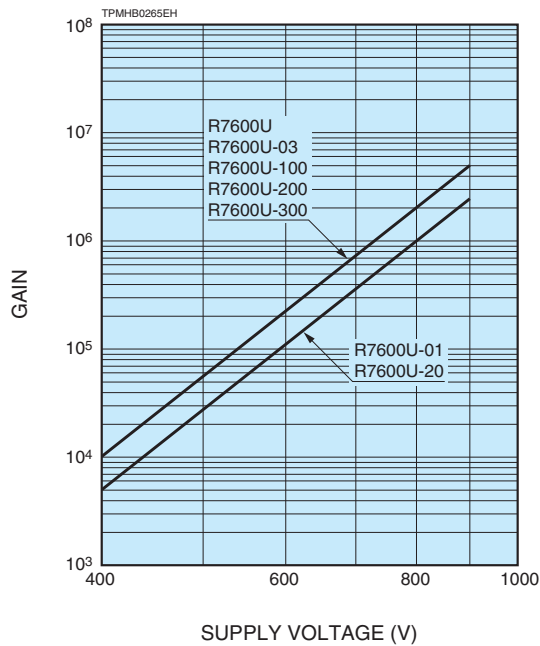


Figure 3: Time response (Example)

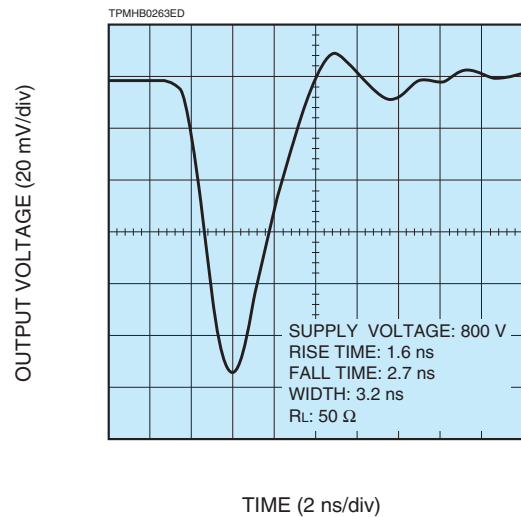
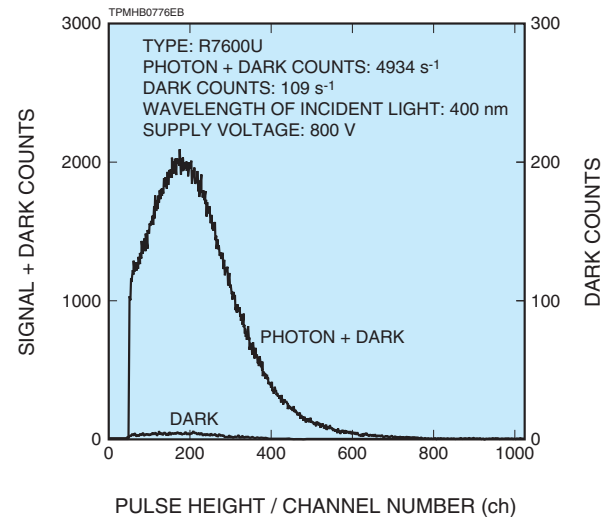


Figure 4: Single photon counting (Example)



Anode to cathode supply voltage (V)	Anode characteristics					Time response					Pulse linearity		Operating ambient temperature (°C)	Storage temperature (°C)	Type No.
	Luminous		Gain Typ.	Dark current (after 30 min)		Rise time Typ. (ns)	Transit time Typ. (ns)	T.T.S. Typ. (ns)	2 % deviation (mA)	5 % deviation (mA)					
	Min. (A/lm)	Typ. (A/lm)		Typ. (nA)	Max. (nA)										
800	40	160	$2.0 \times 10^6$	2	20	1.6 (1.7)	9.6 (9.7)	0.35 (0.36)	30 (100)	60 (220)	-30 to +50	-30 to +50	R7600U		
800	50	200	$1.0 \times 10^6$	10	50								R7600U-01		
800	40	160	$2.0 \times 10^6$	2	20								R7600U-03		
800	100	500	$1.0 \times 10^6$	20	50								R7600U-20		
800	40	210	$2.0 \times 10^6$	2	20								R7600U-100		
800	50	270	$2.0 \times 10^6$	2	20								R7600U-200		
800	80	320	$2.0 \times 10^6$	2	20								R7600U-300		

( ) : Measured with the special voltage distribution ratio (Tapered Divider) shown below.

### VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

Electrodes	K	Dy1	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	P
Normal divider type	1.5	1.5	1.5	1	1	1	1	1	1	1	1	1
Tapered divider type	2	2	2	1	1	1	1	1	2	3	2	

Supply voltage: 800 V, K: Cathode, Dy: Dynode, P: Anode

Figure 5: T.T.S. characteristic (Example)

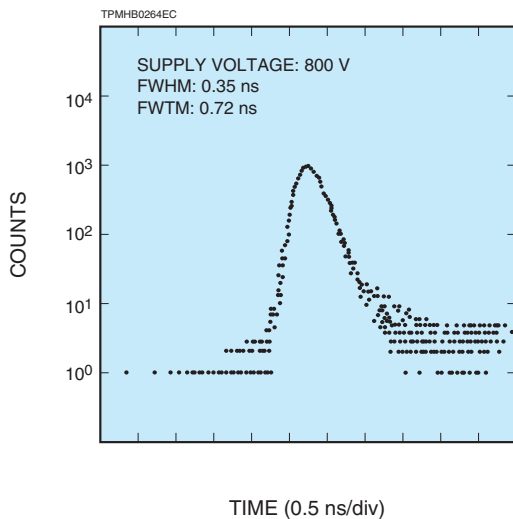


Figure 6: Effect of magnetic fields on anode output (Example)

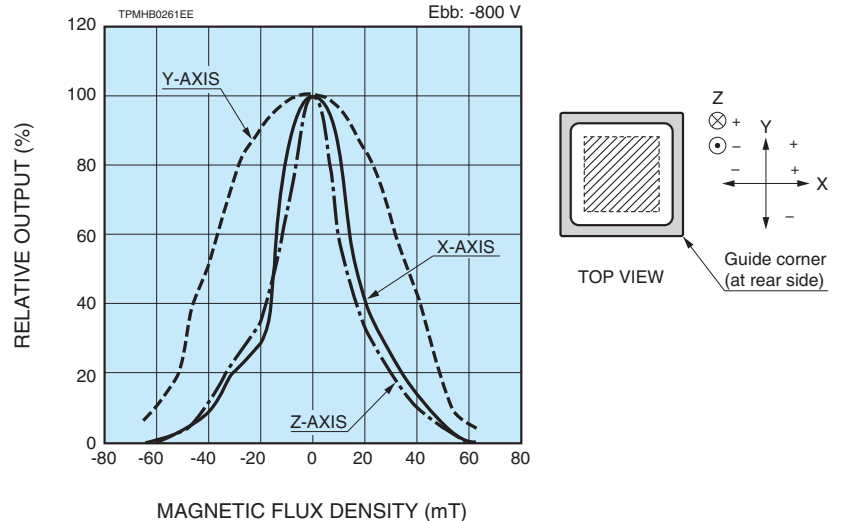
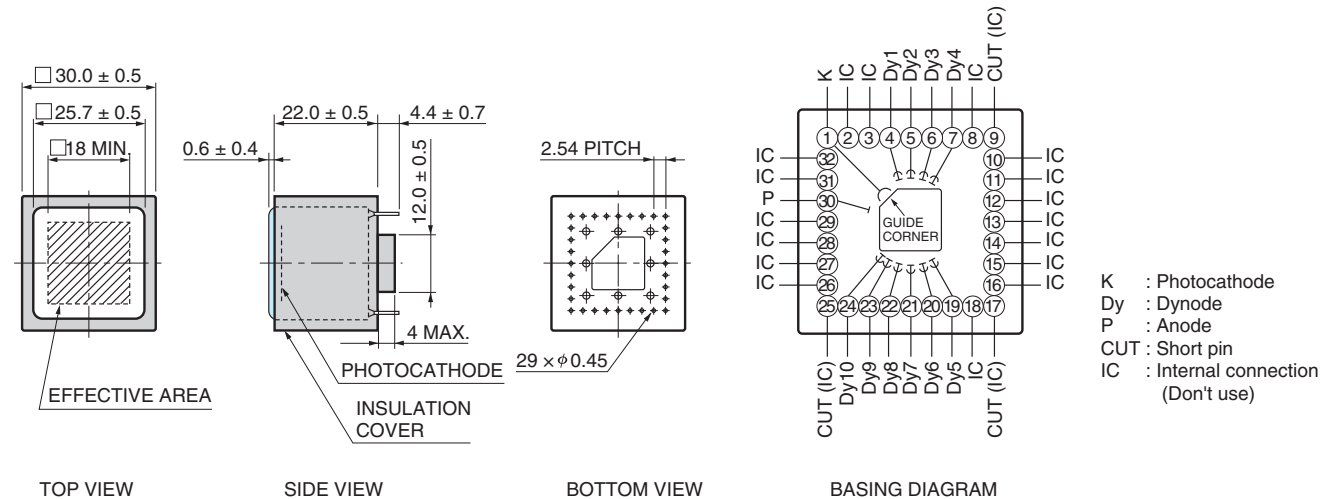


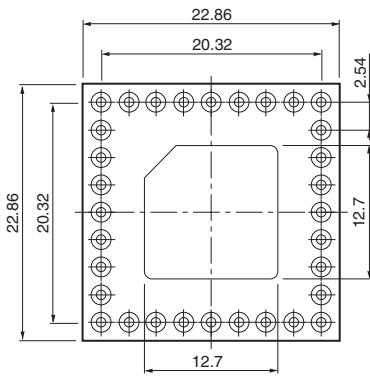
Figure 7: Dimensional outline and basing diagram (Unit: mm)



# PHOTOMULTIPLIER TUBES R7600U SERIES

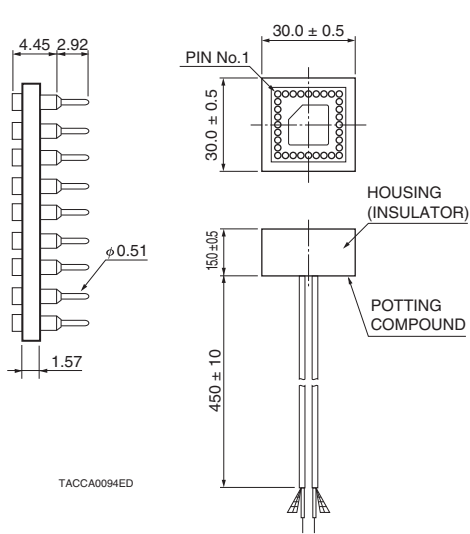
[ACCESSORIES] (Unit: mm) **SOLD SEPARATELY**

● **Socket E678-32B**

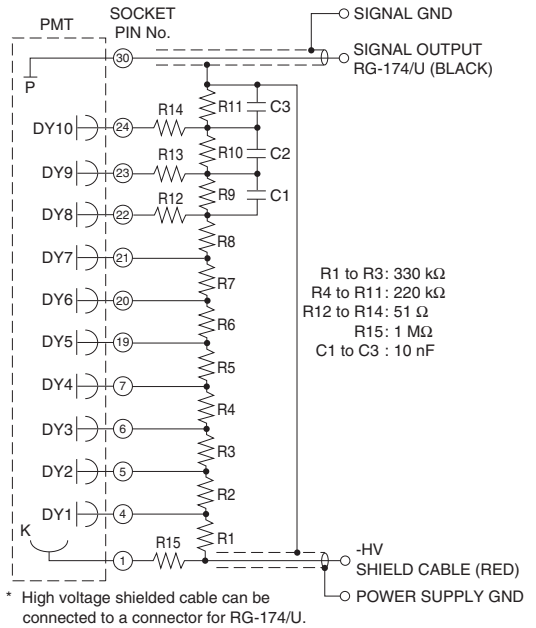


MATERIAL: Glass epoxy

● **D Type socket assembly E5996**



TACCA0094ED



TACCA0234EC

## RELATED PRODUCT

### PHOTOSENSOR MODULES H13543 SERIES

The H13543 series is a photosensor module containing a 25-mm (1") square metal package photomultiplier tube, and a high-voltage power supply circuit. Seven types of photomultiplier tubes are available as standard lineups to meet various needs for spectral response range.



**⚠ 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)

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

HAMAMATSU PHOTONICS K.K., Electron Tube Division

314-5, Shimokanzo, Iwata City, Shizuoka Pref., 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: [usa@hamamatsu.com](mailto:usa@hamamatsu.com)

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: [info@hamamatsu.de](mailto:info@hamamatsu.de)

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: [infos@hamamatsu.fr](mailto:infos@hamamatsu.fr)

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: [info@hamamatsu.co.uk](mailto:info@hamamatsu.co.uk)

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01 E-mail: [info@hamamatsu.se](mailto:info@hamamatsu.se)

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: [info@hamamatsu.it](mailto:info@hamamatsu.it)

China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R.China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: [hpc@hamamatsu.com.cn](mailto:hpc@hamamatsu.com.cn)

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No.158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081 E-mail: [info@hamamatsu.com.tw](mailto:info@hamamatsu.com.tw)

TPMH1317E06  
OCT. 2019 IP