

## FEATURES

- For low temperature operation  
down to -110 °C: R8520-406  
down to -186 °C: R8520-506
- Low radioactivity 26 mm (1 Inch) square
- High UV sensitivity by synthetic silica window

## APPLICATIONS

- High energy physics
- Astrophysics
- Academic research



## SPECIFICATIONS

### GENERAL

Parameter	Description / Value	Unit
Spectral response	160 to 650	nm
Wavelength of maximum response	420	nm
Window material	Silica glass	—
Photocathode	Material	Bialkali
	Minimum effective area	20.5 × 20.5
Dynode	Structure	Metal channel
	Number of stages	10
Operating ambient temperature	-110 to +50 (R8520-406), -186 to +50 (R8520-506)	°C
Storage temperature	-110 to +50 (R8520-406), -186 to +50 (R8520-506)	°C
Weight	22.9	g

### MAXIMUM RATINGS (Absolute maximum values)

Parameter	Value	Unit
Supply voltage	Between anode and cathode	900
	Between anode and last dynode	150
Average anode current	0.1	mA

### CHARACTERISTICS (at 25 °C)

Parameter	R8520-406			R8520-506			Unit	
	Min.	Typ.	Max.	Min.	Typ.	Max.		
Cathode sensitivity	Luminous (2856 K)	80	100	—	80	100	—	μA/lm
	Blue sensitivity index	—	11.0	—	—	9.5	—	—
	Radiant at 420 nm	—	90	—	—	90	—	mA/W
	Quantum efficiency at 175 nm	—	30	—	—	3	—	%
	Quantum efficiency at 420 nm	—	25	—	—	25	—	%
Anode sensitivity	Luminous (2856 K)	40	100	—	40	100	—	A/lm
	Gain	—	1 × 10 <sup>6</sup>	—	—	1 × 10 <sup>6</sup>	—	—
Anode dark current (After 30 min storage in darkness)	—	2	20	—	2	20	—	nA
Time response	Anode pulse rise time	—	1.8	—	—	1.8	—	ns
	Electron transit time	—	12.4	—	—	12.4	—	ns
	Transit time spread (FWHM)	—	0.8	—	—	0.8	—	ns
Pulse linearity (2 % deviation)	—	30	—	—	30	—	—	mA

**NOTE:** Anode characteristics are measured with a voltage distribution ratio and supply voltage shown below.

### VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

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

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

# PHOTOMULTIPLIER TUBE R8520-406/R8520-506

Figure 1: Typical spectral response

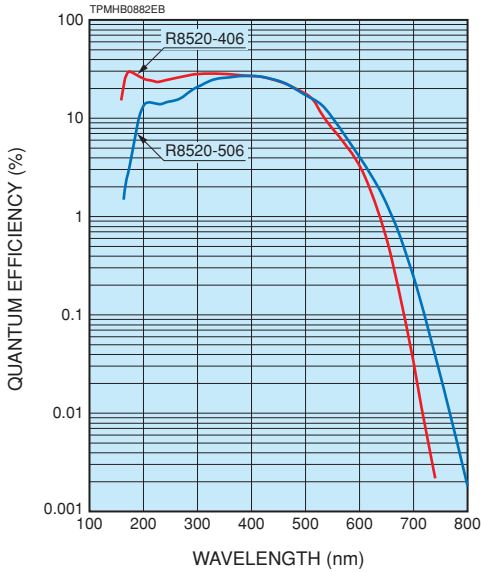


Figure 2: Typical gain

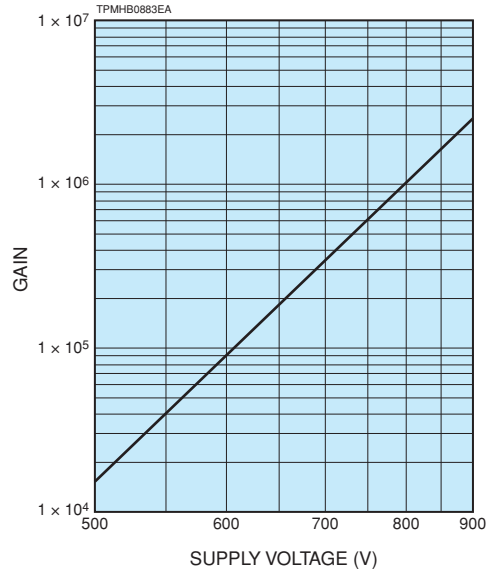
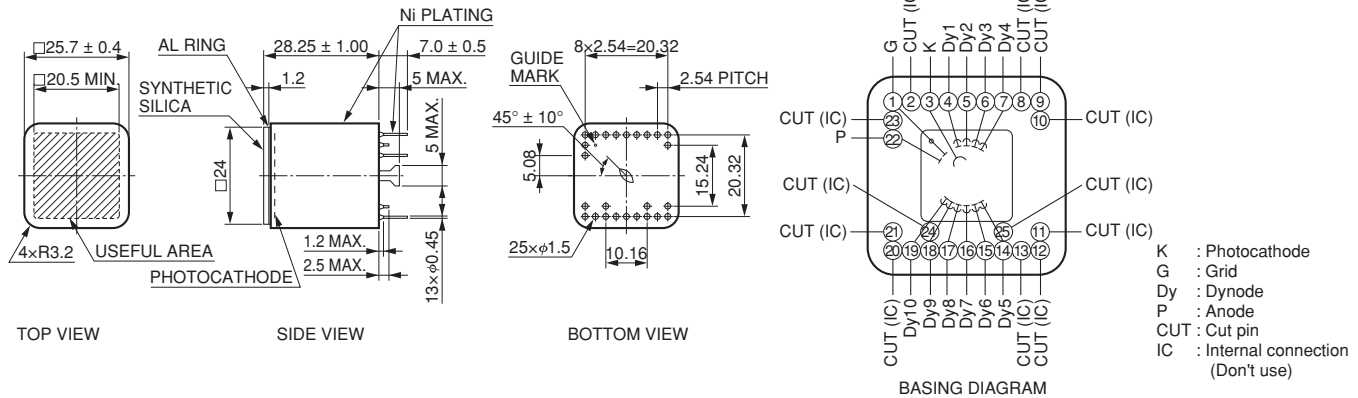
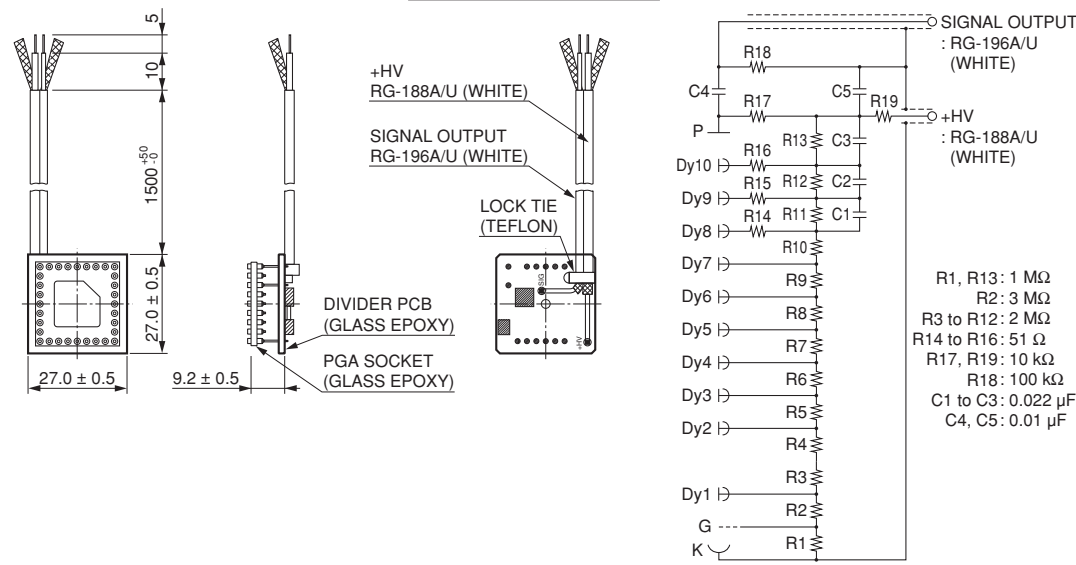


Figure 3: Dimensional outline (Unit: mm)



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

●D type socket assembly E13416 **SOLD SEPARATELY**



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

**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

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

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: info@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

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

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20044 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: 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)10-6586-8006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No.158, Section 2, 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