

HAMAMATSU

MULTIANODE PHOTOMULTIPLIER TUBE R5900U-M4/R7600U-M4

**2 × 2 Multianode, High Speed Response, Low Cross-talk, 30 mm Square
Bialkali and Multialkali Photocathode, 10-stage, Head-on Type**

FEATURES

- 2 × 2 Multianode, Anode Size: 9 mm × 9 mm / Anode
- Effective Area: 18 mm × 18 mm
- High Speed Response
- Low Cross-talk: 2 % Typ.
- High Cathode Sensitivity
 - Luminous 200 $\mu\text{A}/\text{lm}$ Typ. (-01 Type)
 - Luminous 500 $\mu\text{A}/\text{lm}$ Typ. (-20 Type)

APPLICATIONS

- High Energy Physics
- Scintillation Counting
- Flow Cytometer (-01, -20 Type)
- DNA Sequencer (-01, -20 Type)

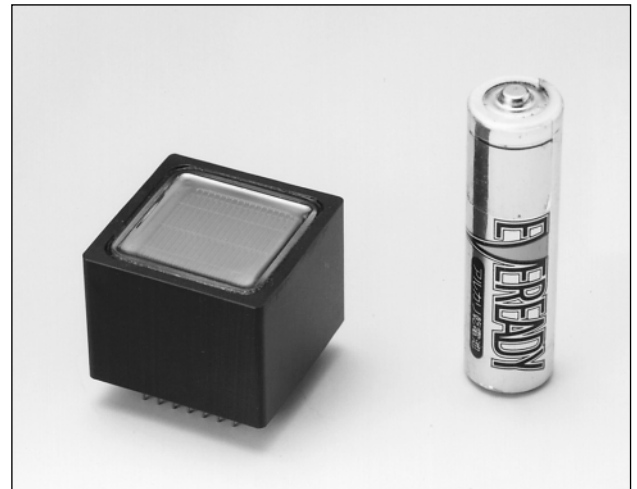
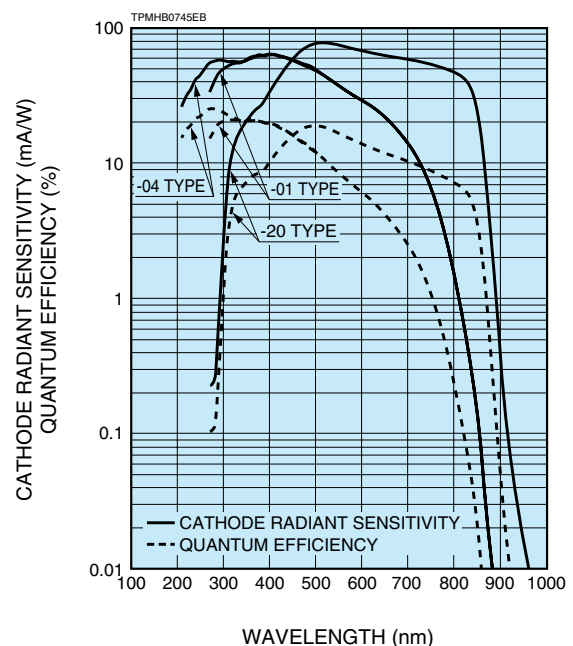
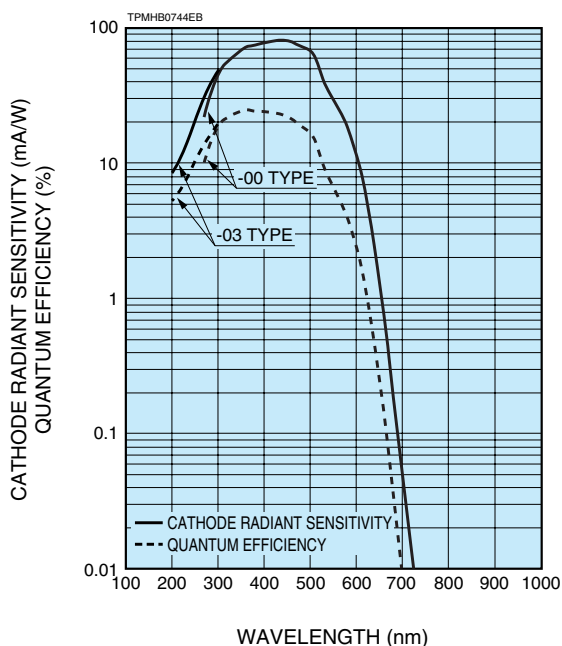


Figure 1: Typical Spectral Response



MULTIANODE PHOTOMULTIPLIER TUBE

R5900U-M4/R7600U-M4

Type No.	Spectral Response		Photo-cathode Material	Window Material	Dynode Structure / Stages	Maximum Ratings ^④		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 Typ. (mA/W)
								Min. (μA/lm)	Typ. (μA/lm)			
R7600U-00-M4	300 to 650	420	BA	K	MC/10	900	0.1	60	80	9.5	—	80
R5900U-01-M4	300 to 880	420	MA	K	MC/10	900	0.1	150	200	—	0.25	65
R7600U-03-M4	185 to 650	420	BA	U	MC/10	900	0.1	60	80	9.5	—	80
R5900U-04-M4	185 to 880	420	MA	U	MC/10	900	0.1	150	200	—	0.25	65
R5900U-20-M4	300 to 920	530	MA	K	MC/10	900	0.1	350	500	—	0.4	78

NOTE: ① BA: Bialkali, MA: Multialkali
 ② K: Borosilicate glass, U: UV glass
 ③ MC: Metal channel
 ④ The maximum operating temperature range is -30 °C to +50 °C.

Figure 2: Typical Gain

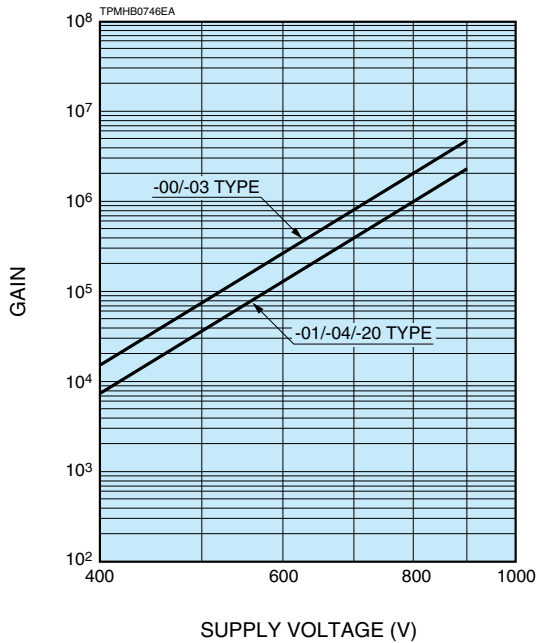


Figure 3: Time Response (Example)

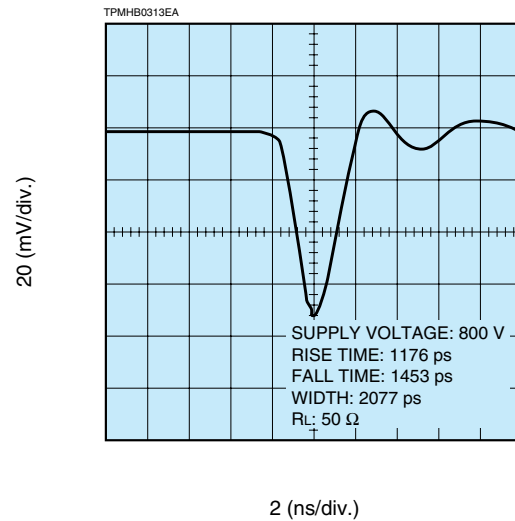


Figure 4: TTS Characteristic (Example)

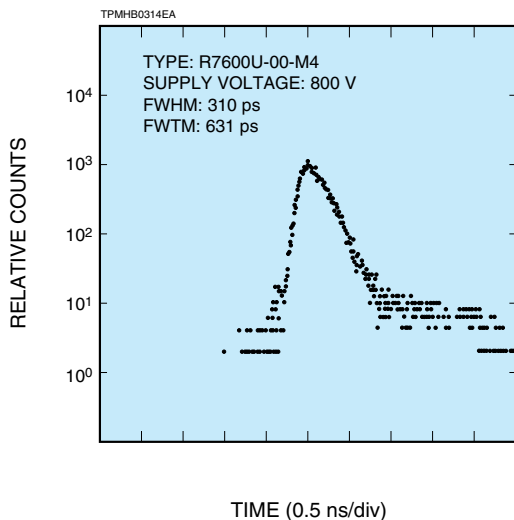
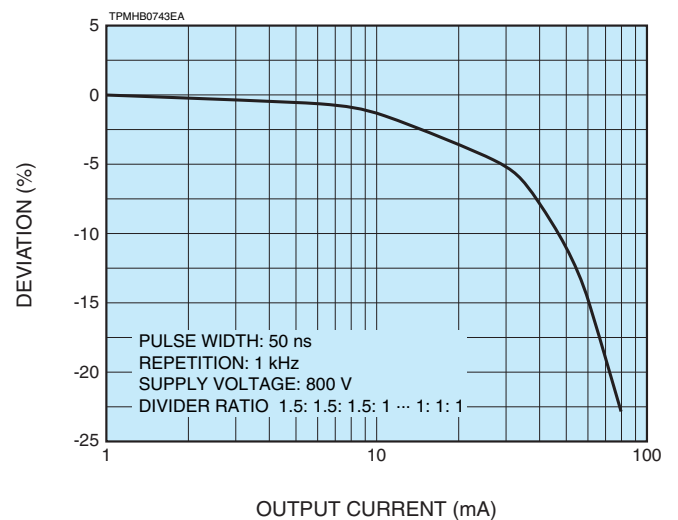


Figure 5: Pulse Linearity (Example)



Anode to Cathode Supply Voltage (V)	Anode Characteristics								Pulse Linearity per Channel		Cross-talk (%)	Uniformity Between Each Anode		Type No.
	Luminous		Gain Typ.	Dark Current per Channel (After 30 min)		Time Response			2 % Deviation (mA)	5 % Deviation (mA)		Typ.	Max.	
	Min. (A/m)	Typ. (A/m)		Typ. (nA)	Max. (nA)	Rise Time Typ. (ns)	Transit Time Typ. (ns)	TTS Typ. (ns)						
800	25	140	1.8×10^6	0.5	5							1: 1.5		R7600U-00-M4
800	50	200	1.0×10^6	2.5	12.5							1: 2		R5900U-01-M4
800	25	140	1.8×10^6	0.5	5	1.2	9.5	0.32	10	30	2	1: 1.5	1: 3	R7600U-03-M4
800	50	200	1.0×10^6	2.5	12.5							1: 2		R5900U-04-M4
800	100	500	1.0×10^6	2.5	12.5							1: 2		R5900U-20-M4

VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

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

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

Figure 6: Anode Uniformity (Example)

82	95
97	100

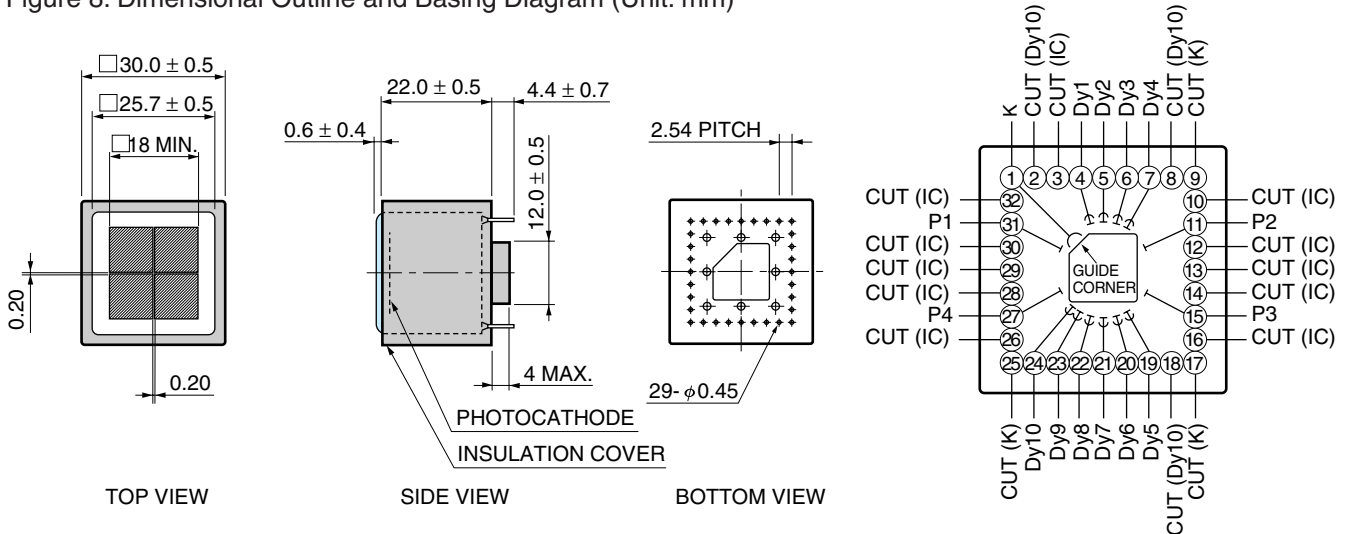
Supply Voltage: -800 V
Light Source: Lamp (uniform DC light)
Full Illumination

Figure 7: Anode Cross-talk (Example)

0.1	0.9
1.3	100

Supply Voltage: -800 V
Light Source: Lamp (uniform DC light)
Spot Illumination: 9 mm × 9 mm

Figure 8: Dimensional Outline and Basing Diagram (Unit: mm)



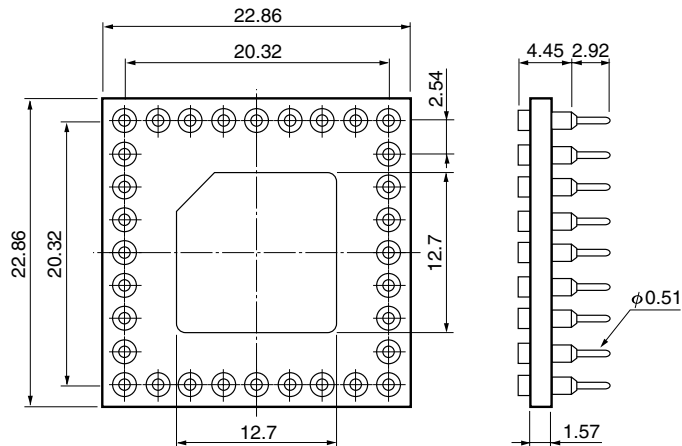
K : Photocathode
Dy : Dynode
P : Anode
CUT : Short Pin
IC : Internal Connection (Don't Use)

Basing Diagram

MULTIANODE PHOTOMULTIPLIER TUBE R5900U-M4/R7600U-M4

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

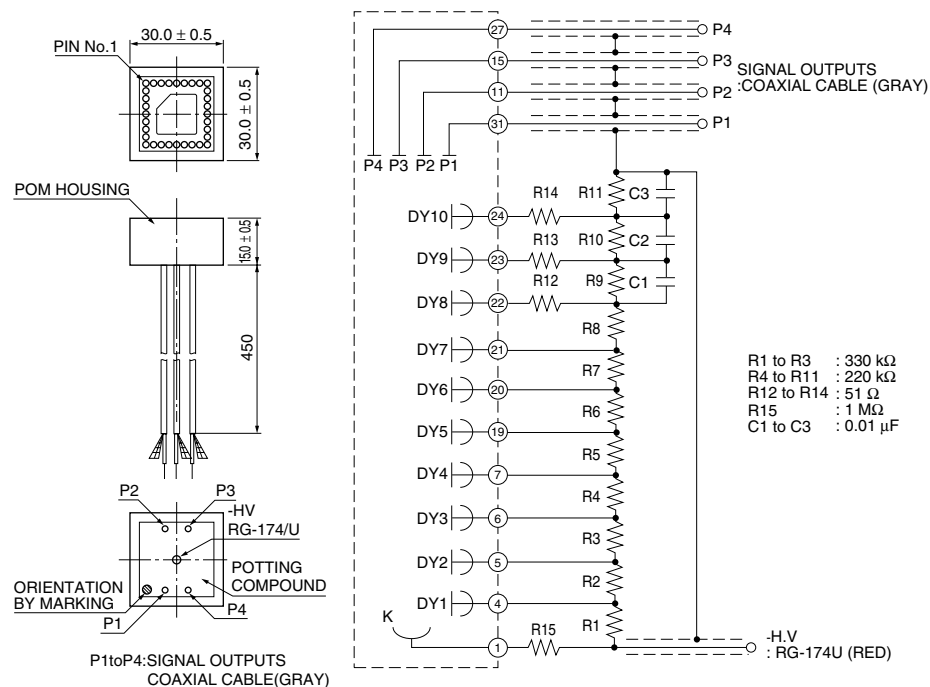
● Socket Assembly E678-32B



MATERIAL: GLASS EPOXY

TACCA0094ED

● D Type Socket Assembly E7083



* For a stable operation, all of anodes should be connected to ground potential through load resistors such as 100 k ohm or so, even if they are not used.

TACCA0266EA

⚠ 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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