

**4 × 4 Multianode, High Speed Response, High Collection Efficiency  
30 mm Square, Super Bialkali and Ultra Bialkali Photocathode  
12-stage, Head-on Type**

**FEATURES**

- High Quantum Efficiency
- Compact
- 4 × 4 Multianode
- Effective Area: 23 mm × 23 mm
- High Speed Response
- High Cathode Sensitivity  
Luminous 105  $\mu\text{A}/\text{lm}$  Typ. (-100/-103 Type)  
Luminous 135  $\mu\text{A}/\text{lm}$  Typ. (-200/-203 Type)
- Weight: Approx. 50 g

**APPLICATIONS**

- High Energy Physics
- Radiation Imaging

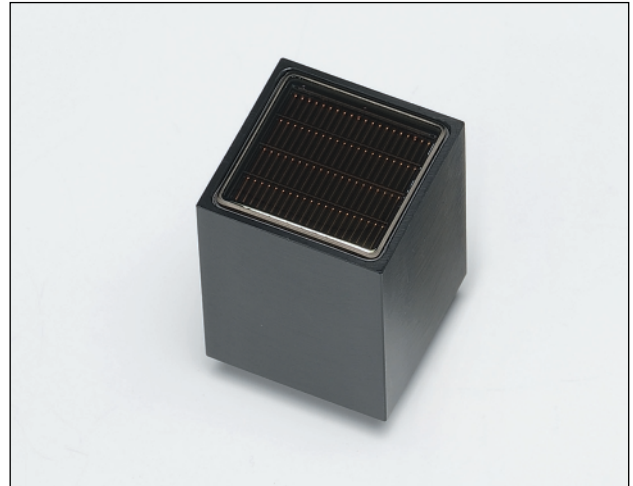
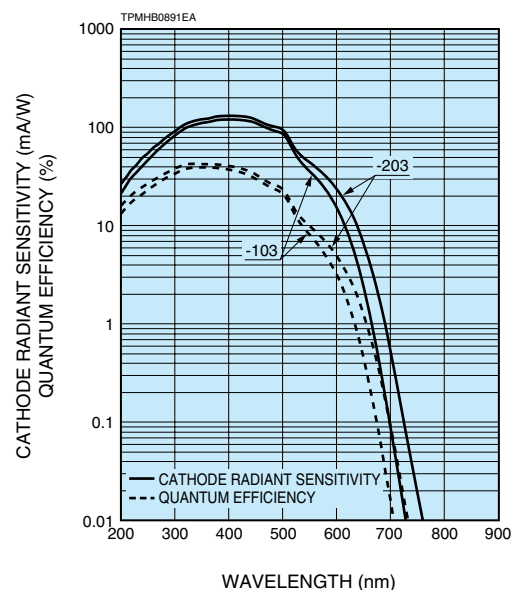
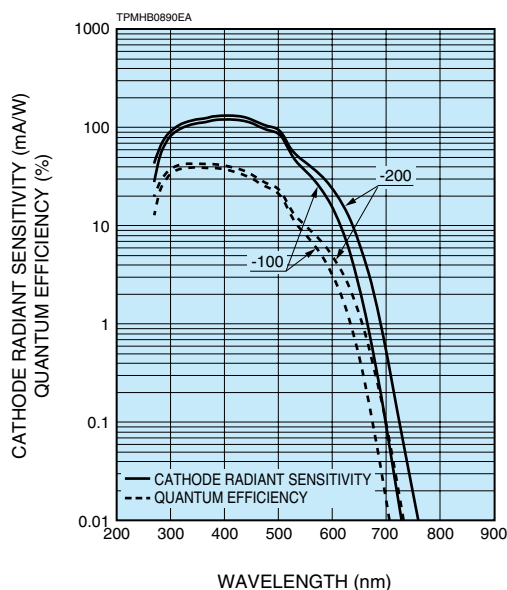


Figure 1: Typical Spectral Response



# MULTIANODE PHOTOMULTIPLIER TUBE ASSEMBLIES H12445 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.	Radiant Typ. (mA/W)
								Min. ( $\mu$ A/lm)	Typ. ( $\mu$ A/lm)		
H12445-100	300 to 650	400	SBA	K	MC/12	-1100	0.018	90	105	13.5	110
H12445-103	185 to 650	400	SBA	U	MC/12	-1100	0.018	90	105	13.5	110
H12445-200	300 to 650	400	UBA	K	MC/12	-1100	0.018	110	135	15.5	130
H12445-203	185 to 650	400	UBA	U	MC/12	-1100	0.018	110	135	15.5	130

**NOTE:** (A) SBA: Super Bialkali, UBA: Ultra Bialkali  
 (B) K: Borosilicate glass, U: UV glass  
 (C) MC: Metal channel

Figure 2: Typical Gain

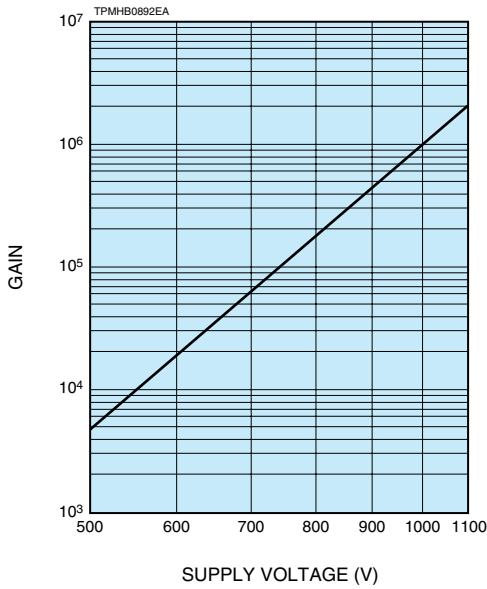


Figure 3: Time Response (Example)

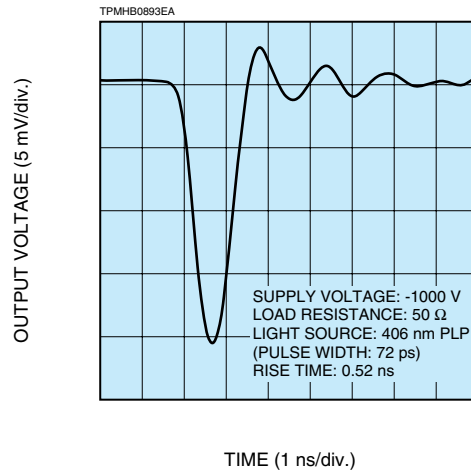
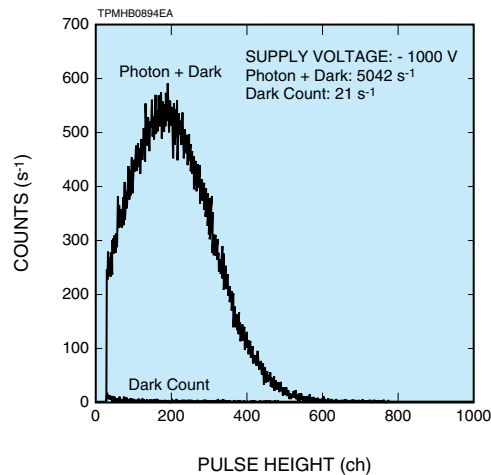


Figure 4: Single Photoelectron PHD per Channel (Example)



Anode to Cathode Supply Voltage (V)	Anode Characteristics								Pulse Linearity per Channel		Uniformity Between Each Anode		Type No.
	Luminous		Gain Typ.	Dark Current per Channel (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)	2 % Deviation (mA)	5 % Deviation (mA)	Typ.	Max.	
	-1000	25	105	$1.0 \times 10^6$	0.4	4	0.52	5.0	0.34	0.8	2	1: 2	
-1000	25	105	$1.0 \times 10^6$	1: 2								1: 3	H12445-103
-1000	25	135	$1.0 \times 10^6$	1: 2								1: 3	H12445-200
-1000	25	135	$1.0 \times 10^6$	1: 2								1: 3	H12445-203

### VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

Electrodes	K	Dy1	Dy2	Dy3	Dy4	Dy5	...	Dy9	Dy10	Dy11	Dy12	GR	P
Ratio		2.3	1.2	1	1	1	1...1	1	1	1	1	0.5	

Supply Voltage: -1000 V, K: Cathode, Dy: Dynode, GR: Guard Ring, P: Anode

Figure 5: Pulse Linearity with All Anodes Shorted (Example)

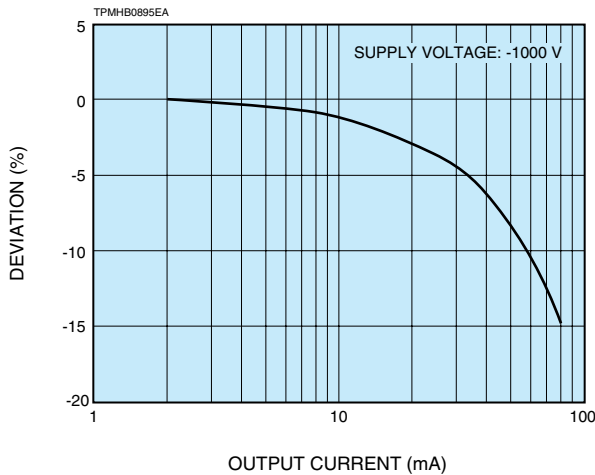
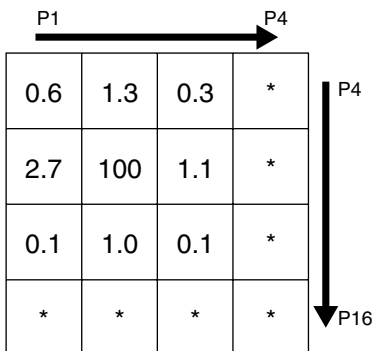


Figure 6: Anode Cross-talk (Example)



SUPPLY VOLTAGE: -1000 V  
 LIGHT SOURCE: TUNGSTEN LAMP with BLUE FILTER  
 (DC LIGHT)  
 APERTURE SIZE:  $\square$ 5.75 mm

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Figure 7: Dimensional Outline and Basing Diagram (Unit: mm)

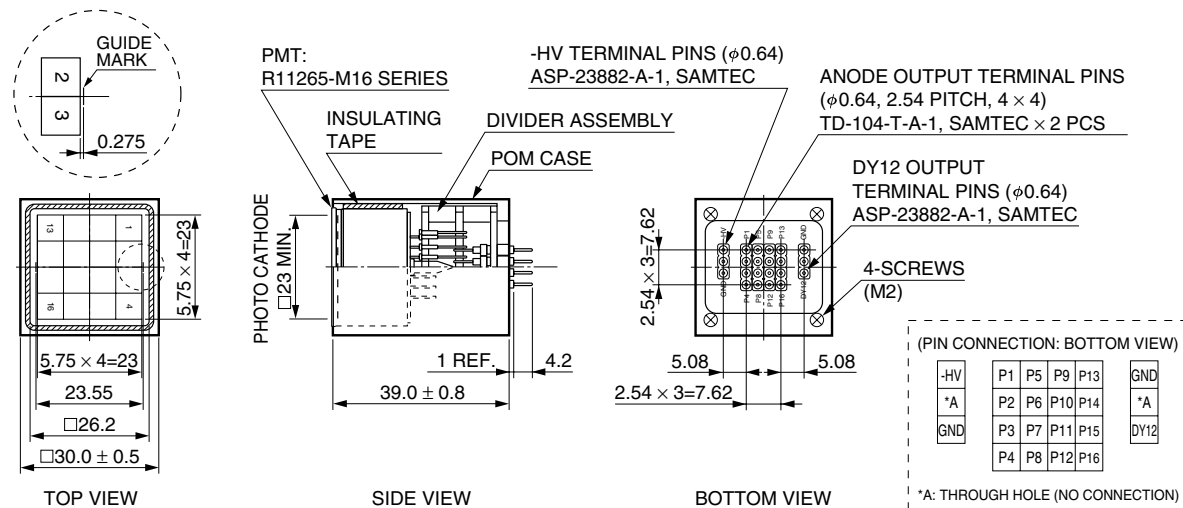
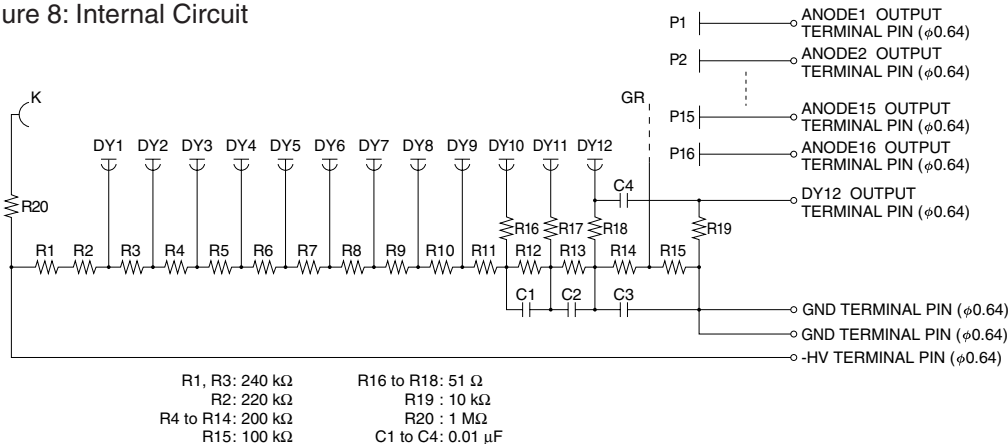


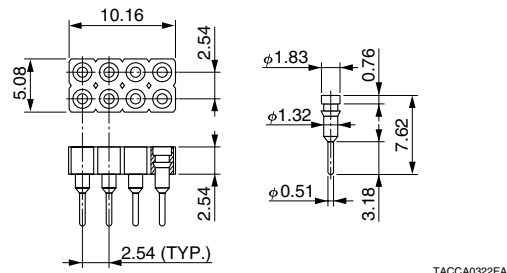
Figure 8: Internal Circuit



TPMH0591EA

Figure 9: Suitable Sockets (Unit: mm) Supplied

**SD-104-T-22 × 2 pcs**  
(for Anode Output Pins)



\* HAMAMATSU also provides C10940 series compact high voltage power supply module.

**⚠ 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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TPMH1345E02  
JUN. 2014 IP