

HAMAMATSU

PRELIMINARY DATA
SEPT. 2000

MULTIANODE PHOTOMULTIPLIER TUBE ASSEMBLY H7546

FEATURES

- 8 × 8 Multianode
- Newly Developed "Metal Channel Dynode"
- High Speed Response
- Low Cross-talk

GENERAL

| Parameter | | Description/Value | Unit |
|--------------------------------|------------------------|----------------------|-----------------|
| Spectral Response | | 300 to 650 | nm |
| Wavelength of Maximum Response | | 420 | nm |
| Photocathode | Material | Bialkali | — |
| | Minimum Effective Area | 18.1 × 18.1 | mm ² |
| Window Material | | Borosilicate | — |
| Dynode | Structure | Metal Channel Dynode | — |
| | Number of Stages | 12 | — |
| Anode Size | | 2 × 2 | mm ² |
| Weight | | Approx. 65 | g |
| Suitable Socket | | SD-108-T-22 | — |

MAXIMUM RATINGS (Absolute Maximum Values)

| Parameter | Description/Value | Unit |
|--|-------------------|------|
| Supply Voltage Between Anode and Cathode | 1000 | Vdc |
| Average Anode Current in total (at 800V) | 0.018 | mA |

CHARACTERISTICS (at 25 °C)

| Parameter | Value | | | Unit | |
|--|----------------------------------|-----------------------|------|------|-------|
| | Min. | Tye. | Max. | | |
| Cathode Sensitivity | Luminous (2856 K) | 40 | 70 | — | μA/lm |
| | Blue Sensitivity Index (CS 5-58) | — | 8 | — | — |
| Quantum Efficiency at 390 nm | — | 20 | — | — | % |
| Anode Sensitivity | Luminous (2856 K) | 7 | 21 | — | A/lm |
| Gain | — | 3.0 × 10 ⁵ | — | — | — |
| Anode Dark Current per Channel (after 30 min. storage in darkness) | — | 0.2 | 1 | — | nA |
| Time Response (per Channel) | Anode Pulse Rise Time | — | 1.5 | — | ns |
| | Transit Time Spread (FWHM) | — | 0.3 | — | ns |
| Pulse Linearity per Channel (±5 % Deviation) | — | 0.6 | — | — | mA |
| Cross-talk (with 1 mm Optical Fiber) | — | 2 | — | — | % |
| Uniformity Among All Anodes | — | 1: 3 | 1: 5 | — | — |

NOTE: Anode characteristics are measured with the voltage distribution ratio shown below.

VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

| Electrodes | K | Dy1 | Dy2 | Dy3 | Dy4 | Dy5 | ... | Dy9 | Dy10 | Dy11 | Dy12 | P |
|------------|---|-----|-----|-----|-----|-----|-------|-----|------|------|------|---|
| Ratio | 3 | 2 | 2 | 1 | 1 | 1 | ... 1 | 1 | 1 | 2 | 5 | |

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

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Figure 1: Typical Spectral Response

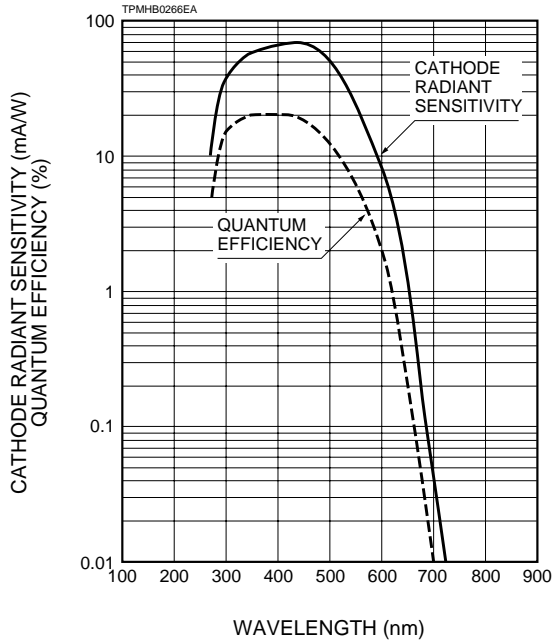


Figure 2: Typical Gain and Dark Current

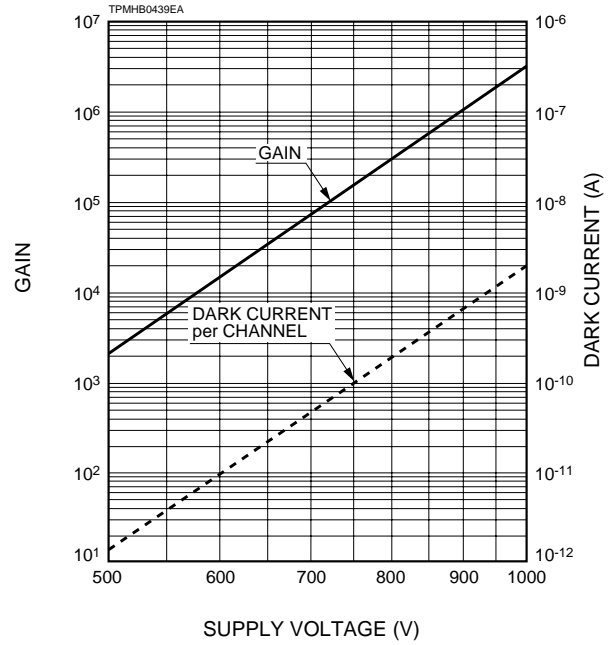


Figure 3: Typical Time Response

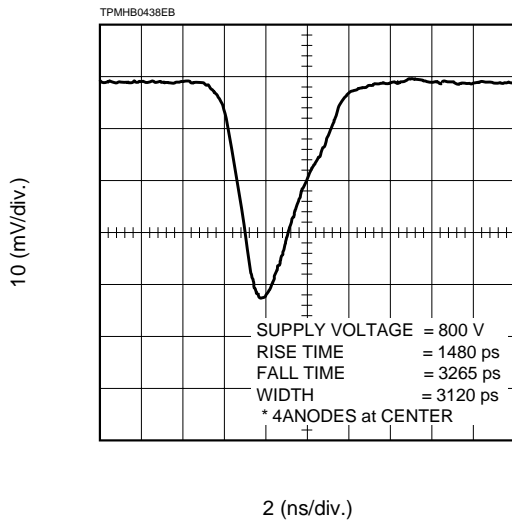


Figure 4: Typical Single Photoelectron PHD per Channel

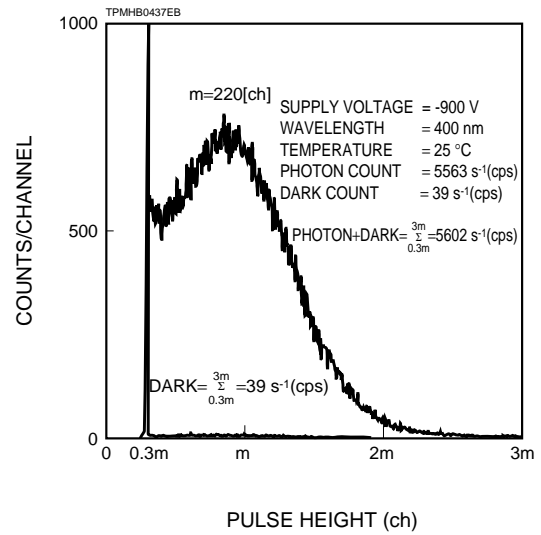
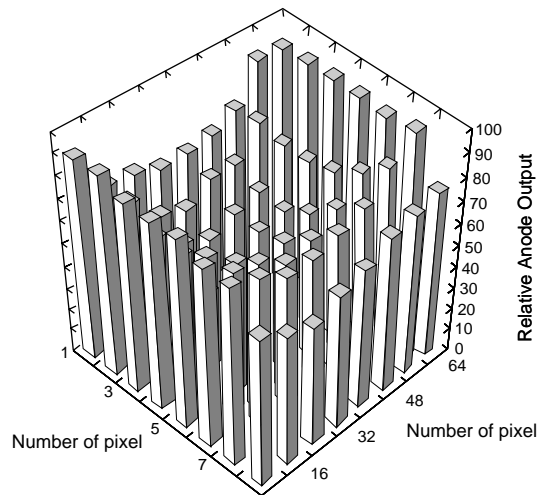


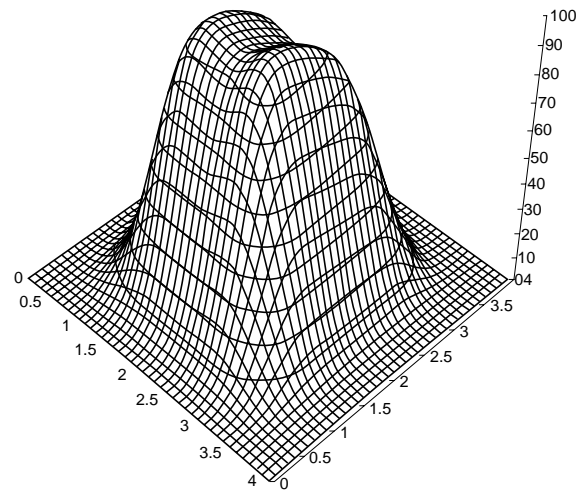
Figure 5: Typical Anode Uniformity



Each pole corresponds to each pixel of 64 anodes.
 APPLIED VOLTAGE = 800 V
 LIGHT SOURCE = W LAMP (DC LIGHT)
 (Full Illumination on Photocathode.)

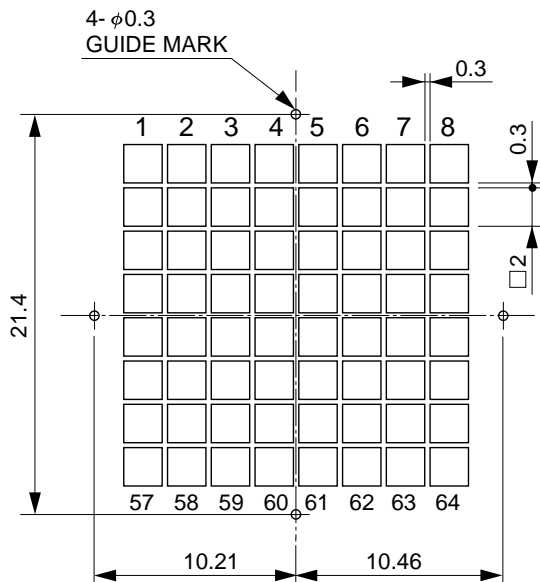
TPMHB0472EB

Figure 6: Anode Uniformity of One Pixel



TPMHB0587EA

Figure 7: Anode Matrix and Guide Mark



Anode Pattern

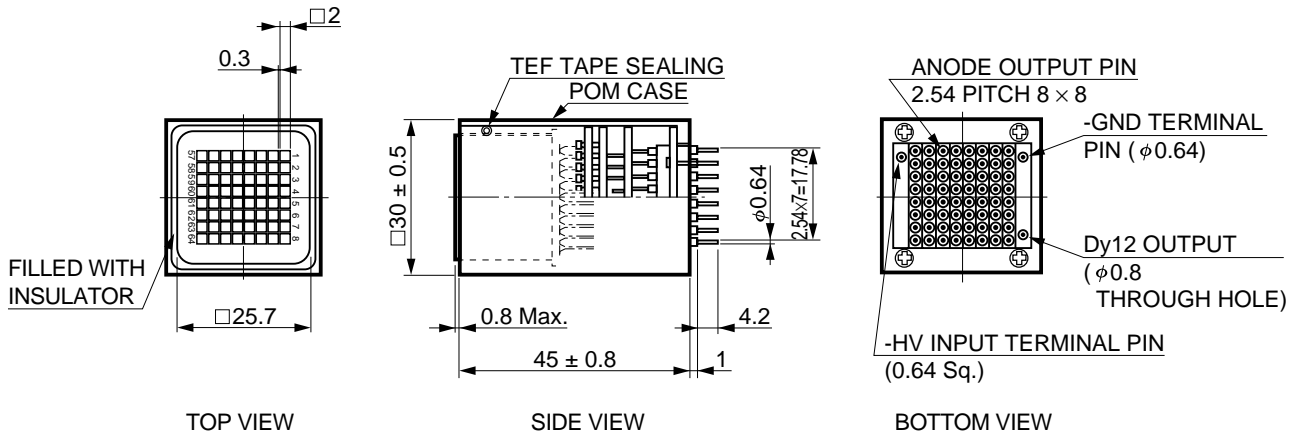
TPMHA0404ED

GUIDEMARK

The guide marks are holes of 0.3 mm in diameter on the electrode plate. They can be seen from top of the H7546 through its photocathode. They can be used for positioning when scintillating or optical fibers are coupled to the H7546.

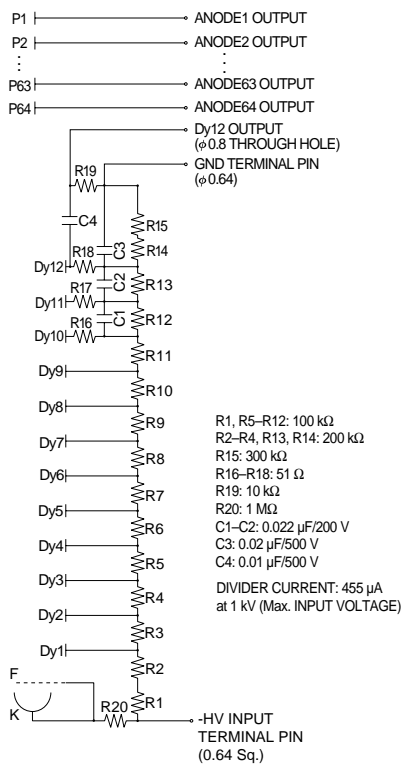
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Figure 8: Dimensional Outline and Circuit Diagram (Unit: mm)



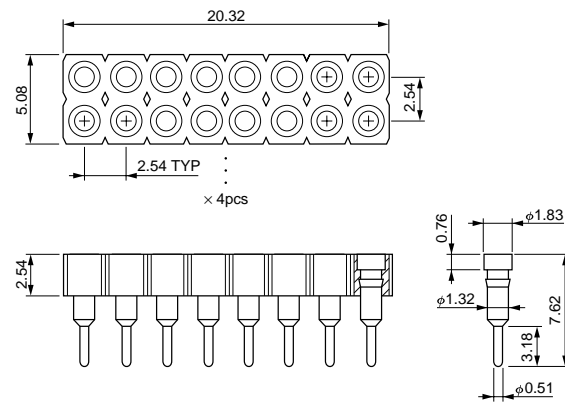
NOTE: 4 sockets for anode output pins are attached.

TPMHA0445EA



TPMHC0179EB

SOCKET: SD-108-T-22 (Mfg. SAMTEC U.S.A.)



TACCA0182EA

PATENT US: 5410211 and other (6). GB: 551767 and other (4). DE: 69209809 and other (4). FR: 551767 and other (4).

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