

# Side-on PMT

## Photon Counting Head H8259 Series



The H8259 series are photon counting head devices containing a 28 mm (1-1/8") diameter side-on photomultiplier tube, high-speed photon counting circuit, and high-voltage power supply circuit. Three types of photomultiplier tubes are provided as standard lineups to meet various needs for spectral response range. The photomultiplier tube sensitive in the near IR region usually has a large dark count due to thermal noise but high S/N measurements can be obtained since a low-noise photomultiplier tube is selected. The high voltage supply for photomultiplier tube and the discrimination level are preset to optimum levels, allowing photon counting measurement by just connecting a +5 V supply. An electronic gate circuit (shutter circuit) is also included to eliminate extraneous light such as excitation light from the measurement.

### Product Variations

Type No.	Spectral Response	Features
H8259	185 nm to 680 nm	Low dark count in UV to visible range
H8259-01	185 nm to 850 nm	Low dark count in UV to near IR range
H8259-02	185 nm to 900 nm	High sensitivity and low dark count in UV to near IR range. Sensitive area 4 mm × 6 mm

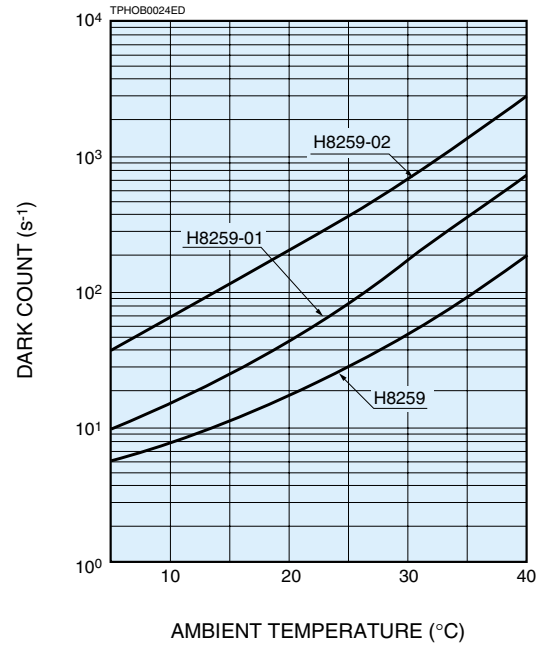
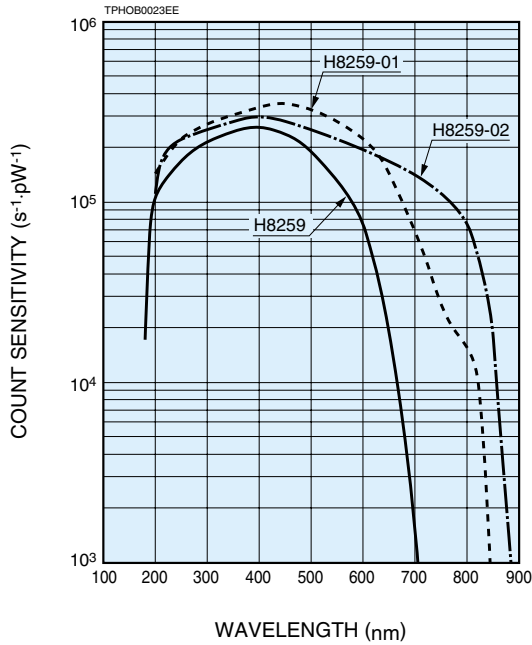
### Specifications

Parameter				H8259	H8259-01	H8259-02	Unit	
Input Voltage				+4.5 to +5.5			V	
Max. Input Voltage				+6			V	
Max. Input Current				80			mA	
Effective Area				4 × 20		4 × 6	mm	
Peak Sensitivity Wavelength				400	430	400	nm	
Count Sensitivity	Typ.	300 nm	2.1 × 10 <sup>5</sup>	2.7 × 10 <sup>5</sup>	2.5 × 10 <sup>5</sup>	s <sup>-1</sup> ·pW <sup>-1</sup>		
		400 nm	2.6 × 10 <sup>5</sup>	3.3 × 10 <sup>5</sup>	3.0 × 10 <sup>5</sup>			
		500 nm	1.9 × 10 <sup>5</sup>	3.2 × 10 <sup>5</sup>	2.5 × 10 <sup>5</sup>			
		600 nm	7.5 × 10 <sup>4</sup>	2.3 × 10 <sup>5</sup>	2.0 × 10 <sup>5</sup>			
		700 nm	1.5 × 10 <sup>3</sup>	6.8 × 10 <sup>4</sup>	1.4 × 10 <sup>5</sup>			
		800 nm	—	1.6 × 10 <sup>4</sup>	7.5 × 10 <sup>4</sup>			
		900 nm	—	—	3.0 × 10 <sup>2</sup>			
Count Linearity *1				2.5 × 10 <sup>6</sup>			s <sup>-1</sup>	
Dark Count *2		Typ.	30	80	400	s <sup>-1</sup>		
		Max.	80	200	800			
Gate	Mode			Normally ON			—	
	Switching Ratio			1/1000			—	
	Gate Input	Level			C-MOS (High level: +3.5 V to +5.0 V)			—
		Input Impedance			1			kΩ
		Gate Width (FWHM)			50 μs to ∞			—
		Repetition Rate			10			kHz
		Max.						
Pulse-pair Resolution				35			ns	
Output Pulse Width				30			ns	
Output Pulse Height *3		Typ.	2.2			V		
		Min.	2.0					
Recommended Load Resistance				50			Ω	
Signal Output Logic				Positive logic			—	
Operating Ambient Temperature				+5 to +40			°C	
Storage Temperature				-20 to +50			°C	
Weight				220			g	

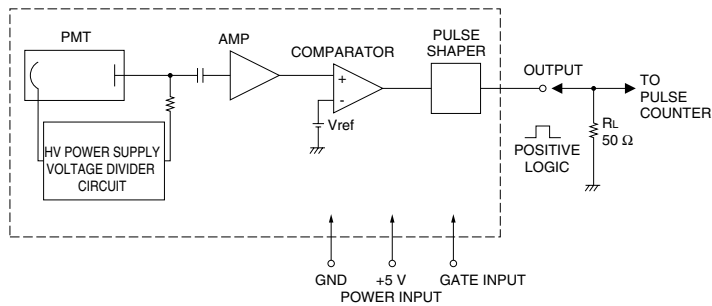
\*1: Random pulse, at 10 % count loss      \*2: After 30 minute storage in darkness

\*3: With input voltage +5 V, Load resistance 50 Ω and Coaxial cable RG-174/U (450 mm)

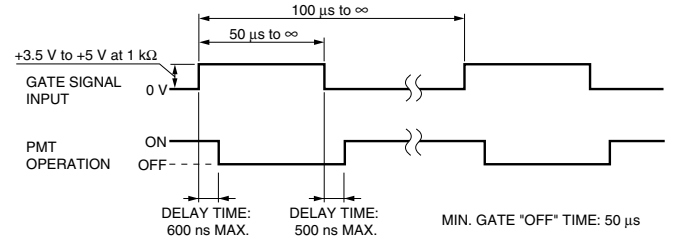
## Characteristics (Count sensitivity, Dark count)



## Block Diagram



## Gate Timing Chart



## Dimensional Outlines (Unit: mm)

