

## OVERVIEW

The H9305 series photosensor modules contain a high-voltage power supply circuit and a 13-mm (1/2") diameter side-on photomultiplier tube in a compact aluminum housing. Its photocathode has a reflection mode that delivers high quantum efficiency at wavelengths above 600 nm, an adequate gain of up to  $10^7$  and fast time response. Flexible cables are used for easy installation in equipment.

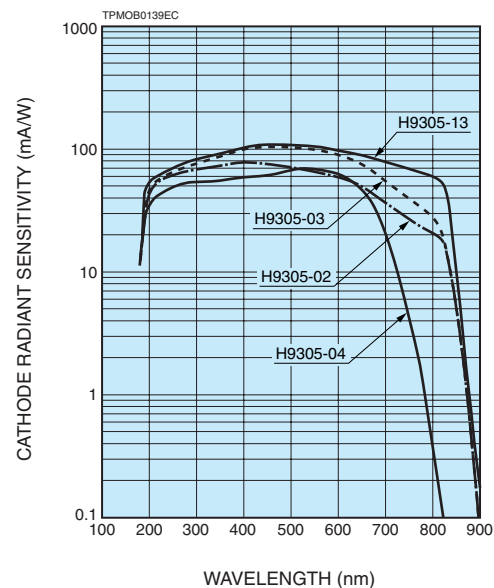
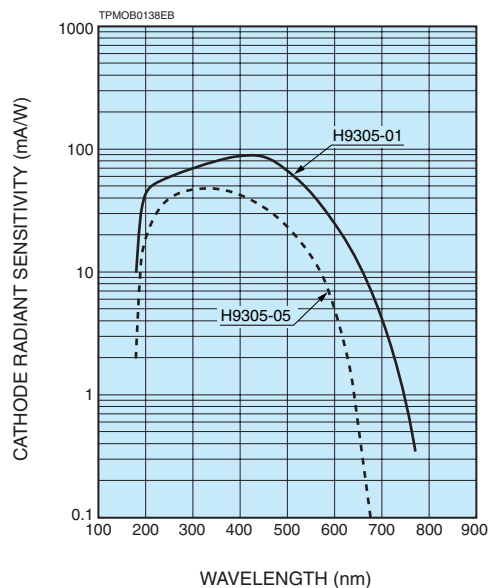


## PRODUCT VARIATIONS

Type No.	Spectral Response	Photocathode	Window Material	Features
H9305-01	185 nm to 750 nm	Bialkali	UV glass	High sensitivity in UV to visible range
H9305-02	185 nm to 900 nm	Multialkali	UV glass	For general applications in UV to near IR range
H9305-03	185 nm to 900 nm	Multialkali	UV glass	High sensitivity in UV to near IR range
H9305-13	185 nm to 900 nm	Multialkali	UV glass	High sensitivity in UV to near IR range, Higher sensitivity in near IR range than -03
H9305-04	185 nm to 830 nm	Multialkali	UV glass	Low dark current in UV to near IR range
H9305-05	185 nm to 650 nm	Bialkali	UV glass	For general applications in UV to visible range

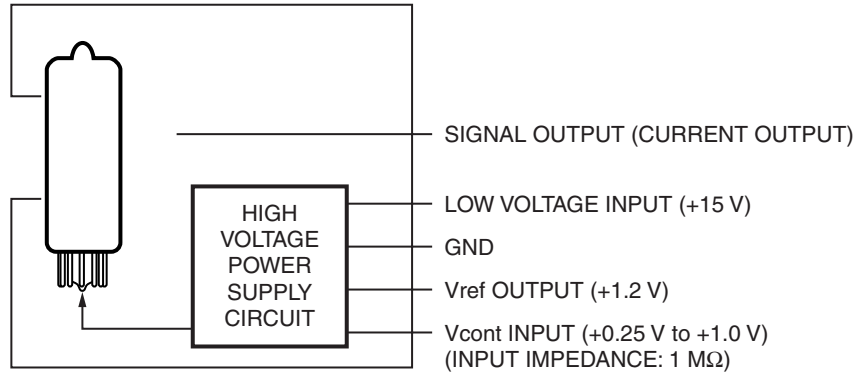
This product can't be used at vacuum environment or reduced pressure environment. Please pay attention when the H9305 series is used for measuring the light below 190 nm.

Figure 1: Typical Spectral Response



# PHOTOSENSOR MODULES H9305 SERIES

Figure 2: Schematic Diagram



## SPECIFICATIONS

(at +25 °C)

Parameter		H9305 Series						Unit	
		-01	-02	-03	-13	-04	-05		
Suffix		-01	-02	-03	-13	-04	-05	—	
Input Voltage		+11.5 to +15.5						V	
Max. Input Voltage		+18						V	
Max. Input Current *1		7						mA	
Max. Output Signal Current *2		10						μA	
Max. Control Voltage		+1.2 (Input impedance: 1 MΩ)						V	
Recommended Control Voltage Adjustment Range		+0.25 to +1.0 (Input impedance: 1 MΩ)						V	
Effective Area		3.7 × 13.0						mm	
Peak Sensitivity Wavelength		420	400	450	450	530	340	nm	
Cathode	Luminous Sensitivity	Min.	80	200	350	620	140	20	μA/lm
		Typ.	120	300	500	650	200	40	
	Blue Sensitivity Index (CS 5-58)	Typ.	10	—	—	15	—	5	—
	Red/White Ratio	Typ.	—	0.3	0.4	0.43	0.15	—	—
Radiant Sensitivity *3		Typ.	90	77	105	109	70	48	mA/W
Anode	Luminous Sensitivity *2	Min.	100	400	1000	400	300	50	A/lm
		Typ.	700	1200	2000	2600	700	300	
	Radiant Sensitivity *2 *3	Typ.	5.2 × 10 <sup>5</sup>	3.1 × 10 <sup>5</sup>	4.2 × 10 <sup>5</sup>	4.3 × 10 <sup>5</sup>	2.5 × 10 <sup>5</sup>	3.6 × 10 <sup>5</sup>	A/W
Dark Current *2 *4		Typ.	1	1	2	3	0.1	0.5	nA
		Max.	10	10	10	10	1	5	
Rise Time *2		Typ.	1.4						ns
Ripple Noise *2 *5 (peak to peak)		Max.	0.5						mV
Settling Time *6		Max.	10						s
Operating Ambient Temperature *7		+5 to +50						°C	
Storage Temperature *7		-20 to +50						°C	
Weight		110						g	

\*1: Input voltage = +15 V, Control voltage = +1.0 V, Dark current output

\*2: Control voltage = +1.0 V

\*3: Measured at the peak sensitivity wavelength

\*4: After 30 minutes storage in darkness

\*5: Cable RG-174/U, Cable length 450 mm, Load resistance = 1 MΩ, Load capacitance = 22 pF

\*6: The time required for the output to reach a stable level following a change in the control voltage from +1.0 V to +0.5 V.

\*7: No condensation

Figure 3: Sensitivity Adjustment Method

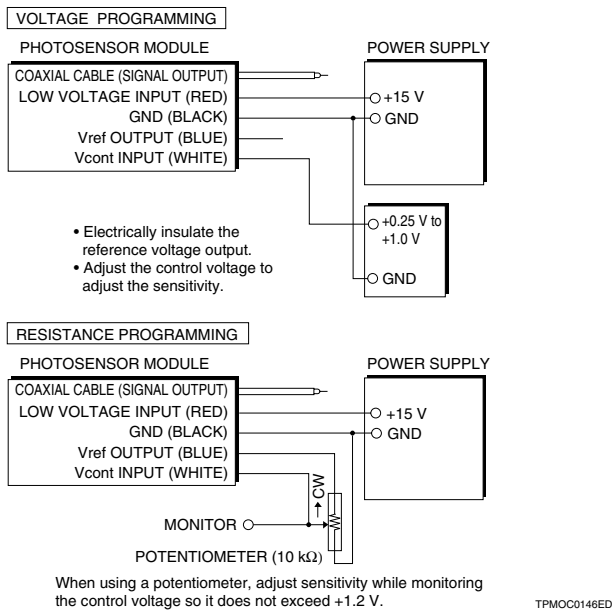


Figure 4: Gain

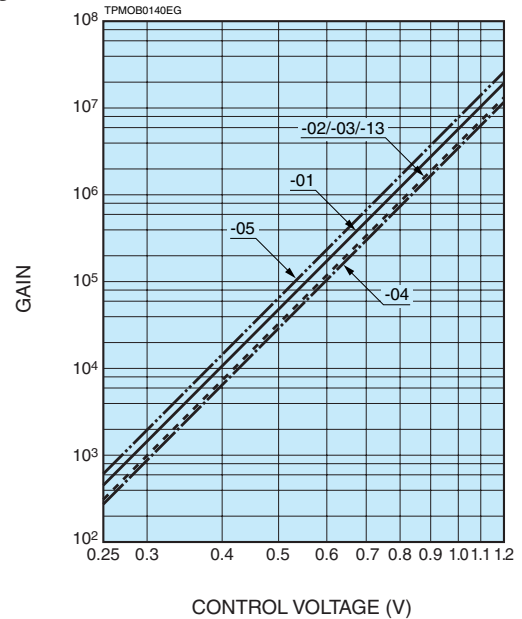


Figure 5: Output Signal Current vs. Input Current

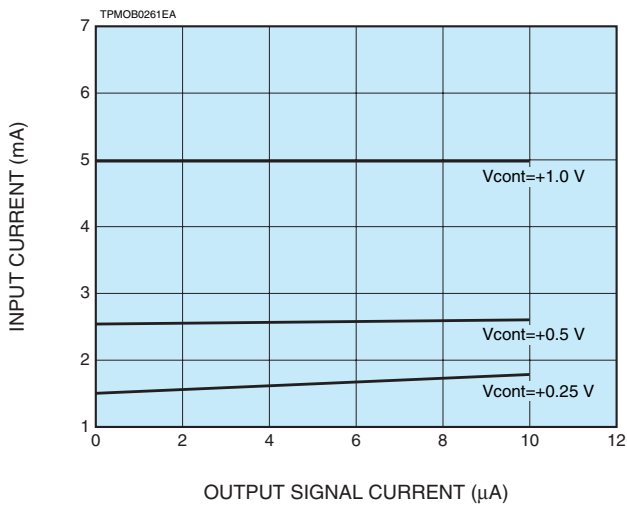


Figure 6: Ripple Noise

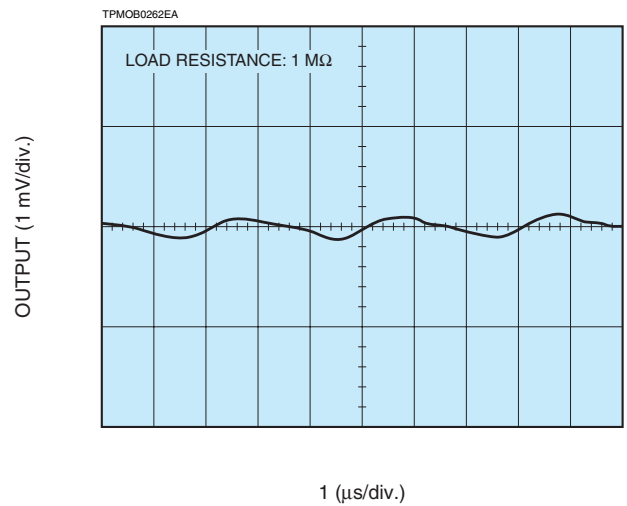


Figure 7: DC Linearity

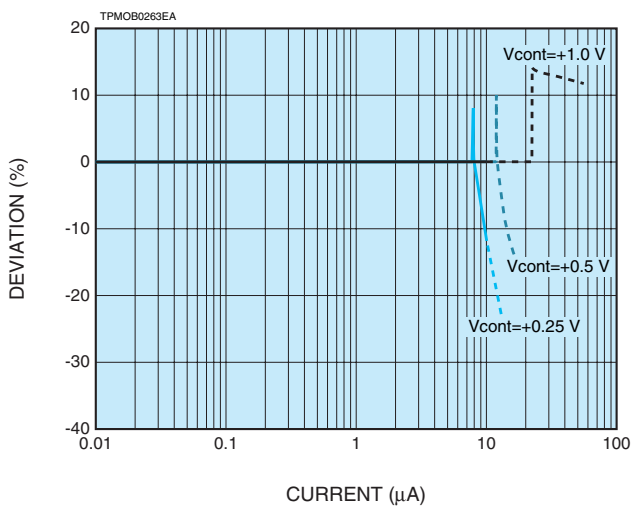
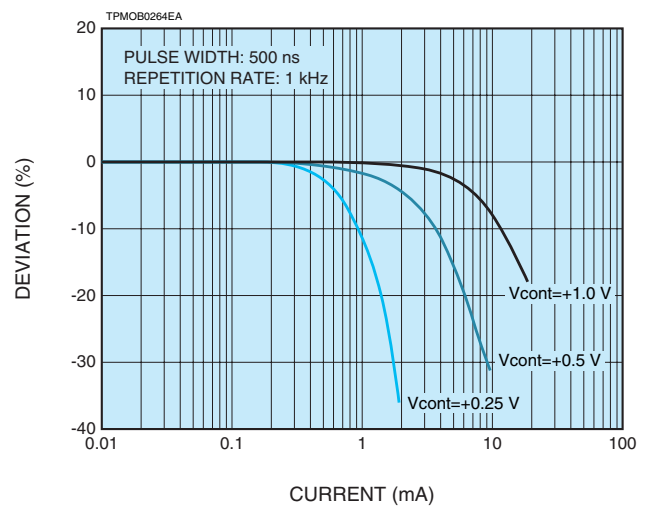
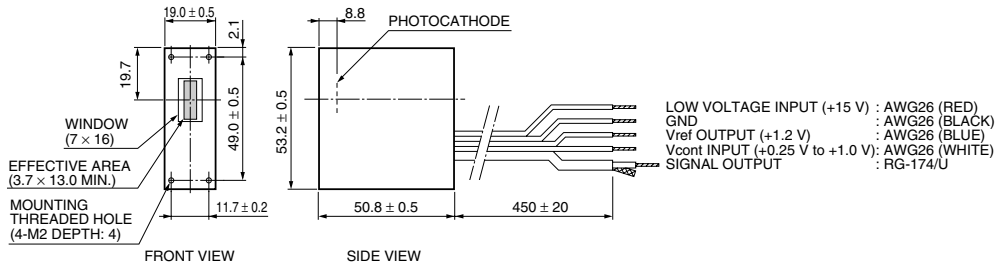


Figure 8: Pulse Linearity



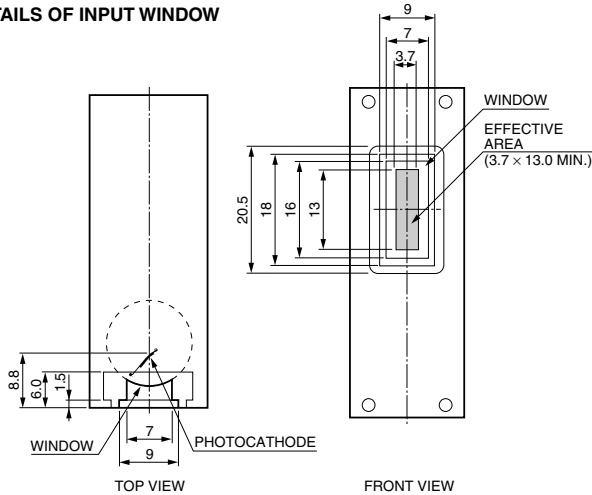
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Figure 9: Dimensional Outlines (Unit: mm)



TPMOA0013EH

## DETAILS OF INPUT WINDOW



TPMOA0018EE

## RELATED PRODUCT

### POWER SUPPLY FOR PHOTOMULTIPLIER TUBE MODULES C7169

The C7169 is the power supply for photomultiplier tube modules which has 15 V input voltage.

This unit can provide both the driving voltage and the control voltage. This feature enables users to operate the modules easily.



Parameter	Description / Value	Unit
Output Voltage	±15	V
Output Current	Max. 0.3 (+15 V), 0.2 (-15 V)	A
Control Voltage <sup>(A)</sup> (variable voltage range)	+0.25 to +1.8	V
Terminal Connection Method	Binding post	—
Input Voltage	AC100 to AC240	V
Operating Ambient Temperature	+5 to +50	°C
Dimensions (W × H × D) <sup>(B)</sup>	147 × 61 × 200	mm
Weight	Approx. 1.2	kg

**NOTE:** (A) Adjust within the recommended control voltage range for the photomultiplier tube module being used.

(B) Excluding protuberance

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