

OVERVIEW

The H13543 series is a photosensor module containing a 25-mm (1") square metal package photomultiplier tube, and a high-voltage power supply circuit.

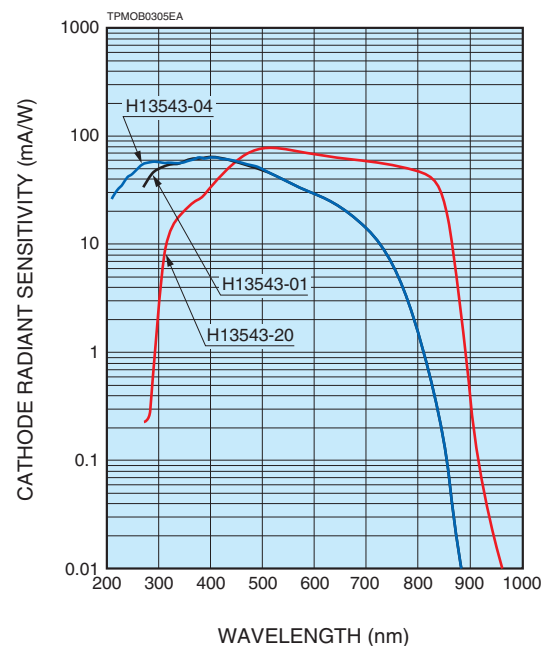
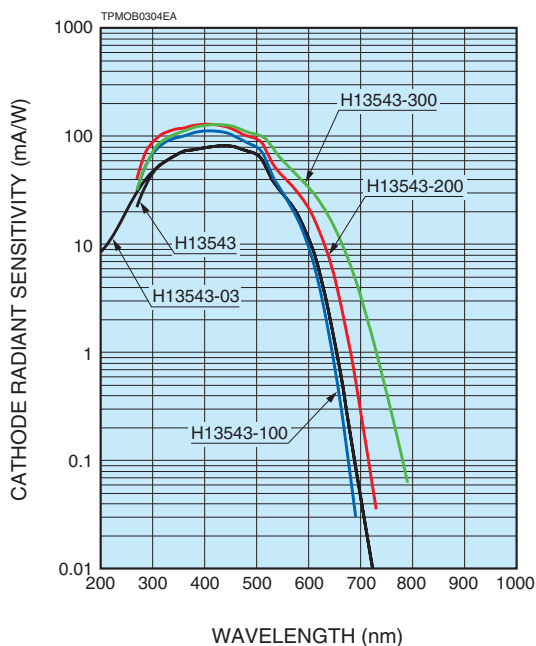
Eight types of photomultiplier tubes are available as standard lineups to meet various needs for spectral response range.



PRODUCT VARIATIONS

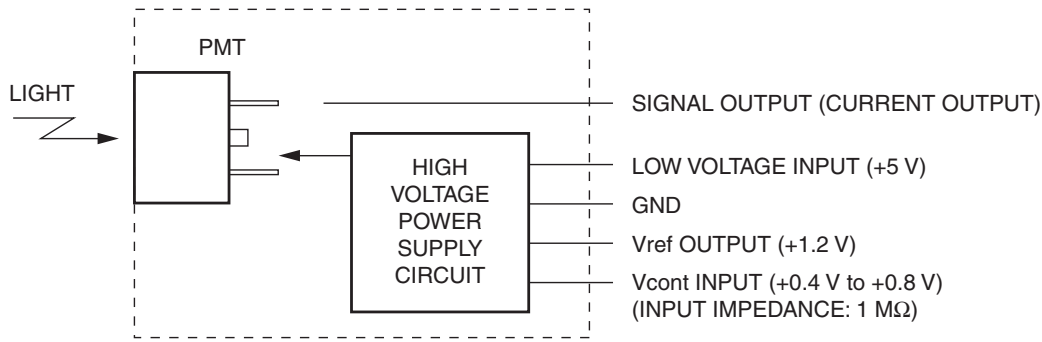
Type No.	Spectral response	Photocathode	Window material	Features
H13543	300 nm to 650 nm	Bialkali	Borosilicate glass	For visible range
H13543-01	300 nm to 880 nm	Multialkali	Borosilicate glass	For visible to near IR range
H13543-03	185 nm to 650 nm	Bialkali	UV glass	For UV to visible range
H13543-04	185 nm to 880 nm	Multialkali	UV glass	For UV to near IR range
H13543-20	300 nm to 920 nm	Extended red multialkali	Borosilicate glass	For visible to near IR with enhanced red sensitivity
H13543-100	300 nm to 650 nm	Super bialkali	Borosilicate glass	High sensitivity in visible range
H13543-200	300 nm to 650 nm	Ultra bialkali	Borosilicate glass	Higher sensitivity in visible range
H13543-300	300 nm to 700 nm	Extended green bialkali	Borosilicate glass	For visible range with enhanced green sensitivity

Figure 1: Typical spectral response



PHOTOSENSOR MODULES H13543 SERIES

Figure 2: Schematic diagram



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SPECIFICATIONS

(at +25 °C)

Parameter			H13543 series							Unit		
Suffix			none	-01	-03	-04	-20	-100	-200	-300	—	
Input voltage			+4.5 to +5.5							V		
Max. input voltage			+6.0							V		
Max. input current *1			5							mA		
Max. average output signal current *2			100							μA		
Max. control voltage			+0.9 (Input impedance 1 MΩ)							V		
Recommended control voltage adjustment range			+0.4 to +0.8 (Input impedance 1 MΩ)							V		
Effective area (X × Y)			18 × 18							mm		
Peak sensitivity wavelength			420	400	420	420	530	400	400	420	nm	
Cathode	Luminous sensitivity	Min.	60	150	60	150	350	90	110	120	μA/lm	
		Typ.	80	200	80	200	500	105	135	160		
	Blue sensitivity index (CS 5-58)	Typ.	9.5	—	9.5	—	—	13.5	15.5	14	—	
	Red/White ratio	Typ.	—	0.2	—	0.25	0.4	—	—	—	—	
Radiant sensitivity *3			Typ.	80	65	80	67	78	110	130	125	mA/W
Anode	Luminous sensitivity *2	Min.	40	50	40	50	100	50	50	80	A/lm	
		Typ.	160	400	160	200	1000	105	135	320		
	Radiant sensitivity *2 *3	Typ.	1.6 × 10 ⁵	1.3 × 10 ⁵	1.6 × 10 ⁵	6.7 × 10 ⁴	1.6 × 10 ⁵	1.1 × 10 ⁵	1.3 × 10 ⁵	2.5 × 10 ⁵	A/W	
Dark current *2 *4			Typ.	2	10	2	10	20	2	2	nA	
			Max.	20	50	20	50	50	20	20		
Rise time *2			1.6							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: At +5 V input voltage, +0.8 V control voltage, and output current equal to dark current

*2: Control voltage = +0.8 V

*3: Measured at the peak sensitivity wavelength

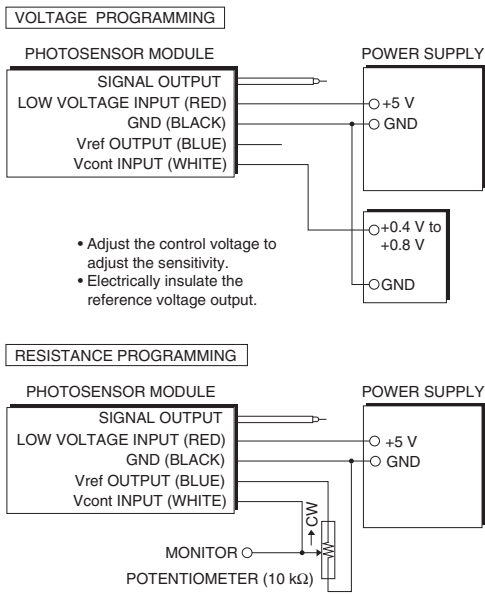
*4: After 30 minutes storage in darkness

*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 +0.8 V to +0.5 V.

*7: No condensation

Figure 3: Sensitivity adjustment method



* When using a potentiometer, adjust sensitivity while monitoring the control voltage so it does not exceed +0.9 V.

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Figure 4: Typical gain

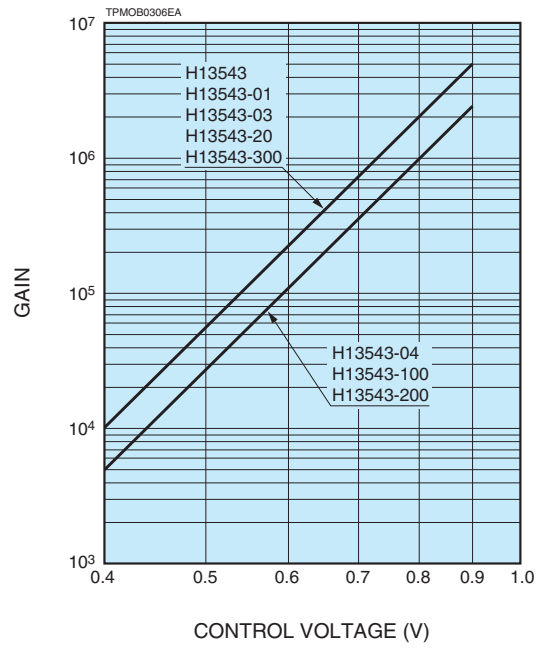


Figure 5: Typical output current vs. input current

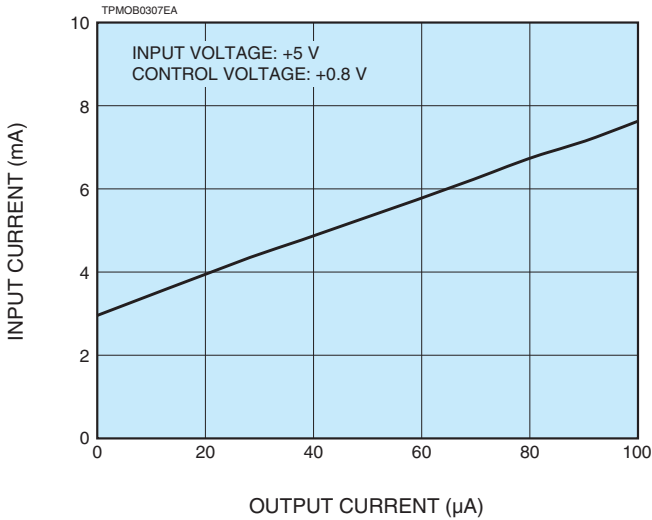


Figure 6: Typical ripple noise

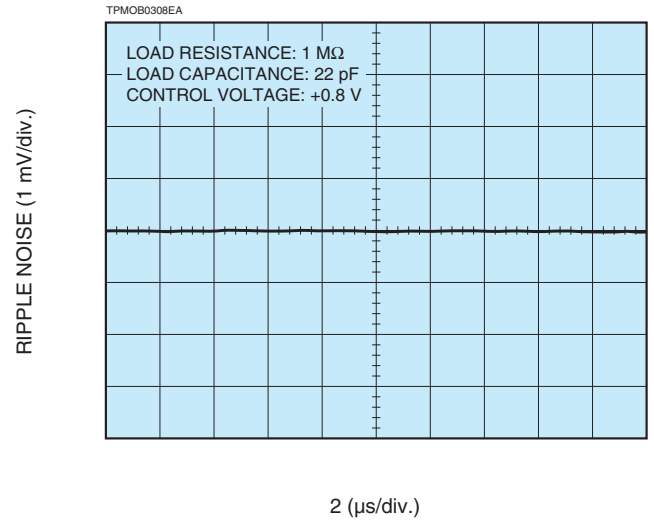


Figure 7: Typical DC linearity

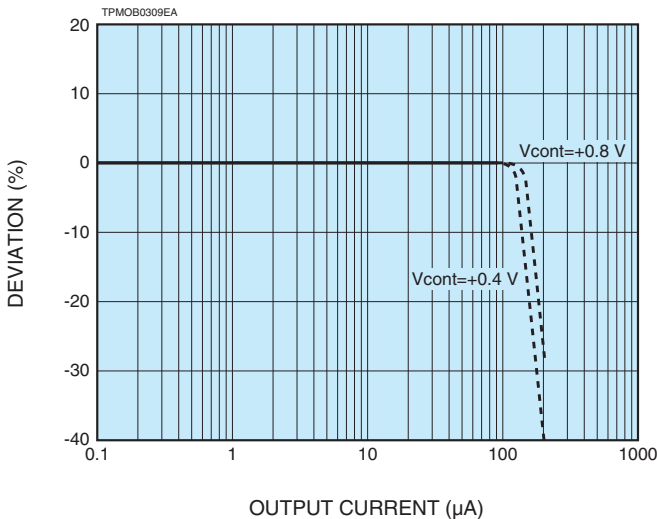
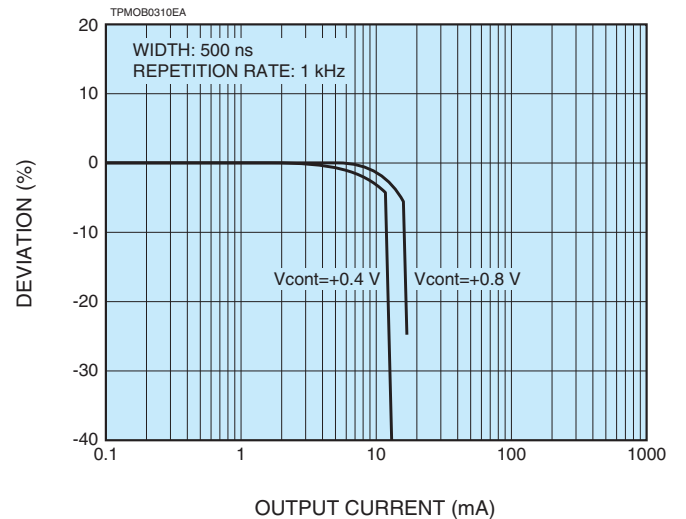


Figure 8: Typical pulse linearity



PHOTOSENSOR MODULES H13543 SERIES

Figure 9: Typical time response

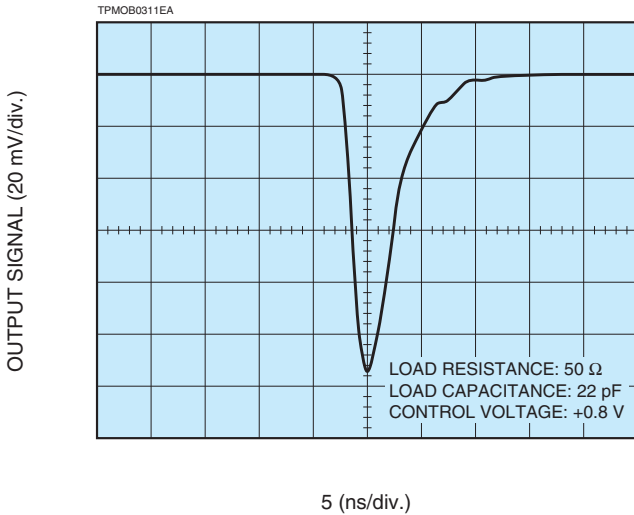


Figure 10: Typical T.T.S. characteristics

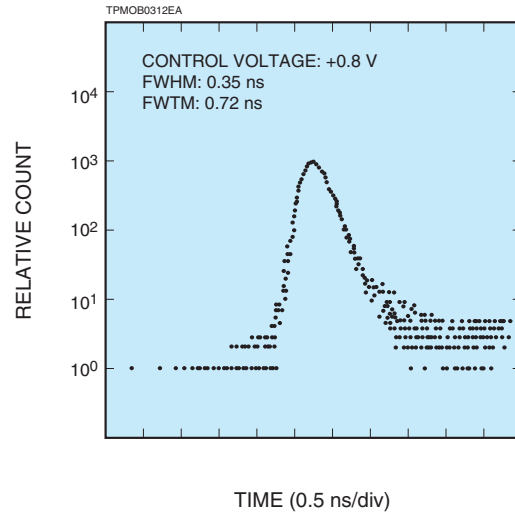
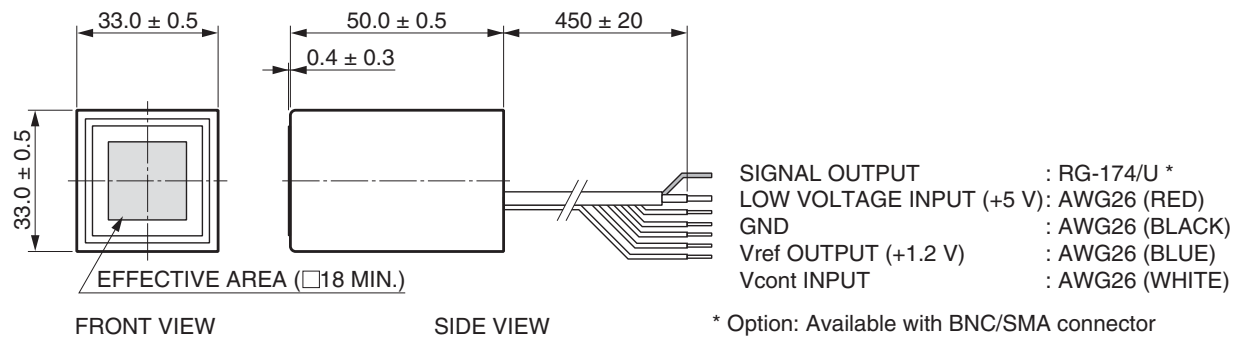


Figure 11: Dimensional outlines (Unit: mm)



TPMOA0099EA

RELATED PRODUCT

POWER SUPPLY FOR PHOTOMULTIPLIER TUBE MODULES C10709

The C10709 is the power supply for photomultiplier tube modules with 5 V input voltage.

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

Parameter	Description / Value	Unit
Output voltage	±5	V
Output current	Max. 2.0 (+5 V), 0.2 (-5 V)	A
Control voltage ^(A) (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) ^(B)	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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