

## APPLICATIONS

- For High Energy Physics

## GENERAL

Parameter		Description/Value	Unit
Spectral Response		300 to 650	nm
Wavelength of Maximum Response		420	nm
Photocathode	Material	Bialkali	—
	Effective Area	530 (Min. 450)	cm <sup>2</sup> Typ.
Window Material		Borosilicate glass	—
Dynode	Structure	Box and Line	—
	Number of Stages	10	—
Direct Interelectrode Capacitances (Approx.)	Anode to Last Dynode	3	pF
	Anode to All Other Dynode	7	pF
Base		20-pin base JEDEC B20-102	—
Weight		Approx. 720	g
Suitable Socket		E678-20A (supplied)	—

## CHARACTERISTICS (at 25°C)

Parameter		Min.	Typ.	Max.	Unit
Cathode Sensitivity	Luminous (2856K)	—	70	—	μA/lm
	Radiant at 420nm	—	72	—	mA/W
	Blue (CS 5-58 filter)	—	9.0	—	μA/lm-b
	Quantum Efficiency at 390nm	—	22	—	%
Anode Sensitivity <sup>1)</sup>	Luminous (2856K)	—	700	—	A/lm
	Radiant at 420nm	—	$7.2 \times 10^5$	—	A/W
Gain <sup>1)</sup>		—	$1.0 \times 10^7$	—	—
Supply Voltage for Gain of $10^7$		—	1500	1800	V
Anode Dark Current (after 30min. storage in darkness) <sup>1)</sup>		—	50	700	nA
Dark Count (after dark condition for 15 hours) <sup>1)</sup>		—	4	8	kcps
Time Response <sup>1)</sup>	Anode Pulse Rise Time	—	3.8	—	ns
	Electron Transit Time	—	55	—	ns
	Transit Time Spread (FWHM) <sup>3)</sup>	—	2.4	—	ns
Pre Pulse <sup>4)</sup>	4ns to 20ns before Main pulse	—	0.5	2	%
Late Pulse <sup>3)</sup>	8ns to 60ns after Main pulse	—	1.5	3	%
After Pulse <sup>3)</sup>	100ns to 16μns after Main pulse	—	2	10	%
Single Photoelectron	PHD (Peak to Valley Ratio)	—	2.5	—	—
Pulse Linearity <sup>2)</sup>	at ±2% Deviation	—	60	—	mA
	at ±5% Deviation	—	80	—	mA
Magnetic characteristics (at 200mG/20μT)	Sensitivity Degradation	—	10	—	%

1) Measured with the condition shown in the Table 1.

2) Measured with the condition shown in the Table 2.

3) Measured with 0.25 photoelectrons detection threshold (at single photoelectron/ event).

4) Measured with 0.25 photoelectrons detection threshold (at 50 photoelectron/ event).

# PHOTOMULTIPLIER TUBE R5912

**Table 1: VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE**

Electrodes	K	Dy1	F2	F1	F3	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	P
Ratio	11.3	0	0.6	0	3.4	5	3.33	1.67	1	1	1	1	1	1	1

Supply Voltage: 1500Vdc, K: Cathode, Dy: Dynode, P: Anode, F: Focus

**Table 2: TAPERED VOLTAGE DISTRIBUTION RATIO FOR LINEARITY MEASUREMENT**

Electrodes	K	Dy1	F2	F1	F3	Dy2	Dy3	Dy4	Dy5	Dy6	Dy7	Dy8	Dy9	Dy10	P
Ratio	11.3	0	0.6	0	3.4	5	3.33	1.67	1	1.2	1.5	2.2	3	2.4	
Capacitors in $\mu$ F												0.01	0.01	0.01	

Supply Voltage: 1500Vdc, K: Cathode, Dy: Dynode, P: Anode, F: Focus

## MAXIMUM RATINGS (Absolute Maximum Values)

Parameter	Value	Unit
Supply Voltage	Between Anode and Cathode	1800
	Between Anode and Last Dynode	300
Average Anode Current	0.1	mA
Average Cathode Current	100	nA
Ambient Temperature	-60 to +50	$^{\circ}$ C
Pressure	7	atm

Figure 1: Typical Spectral Response

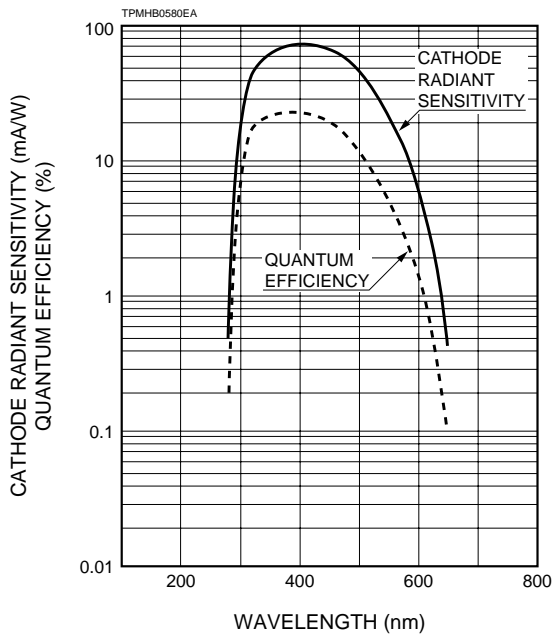


Figure 2: Typical Gain Characteristic

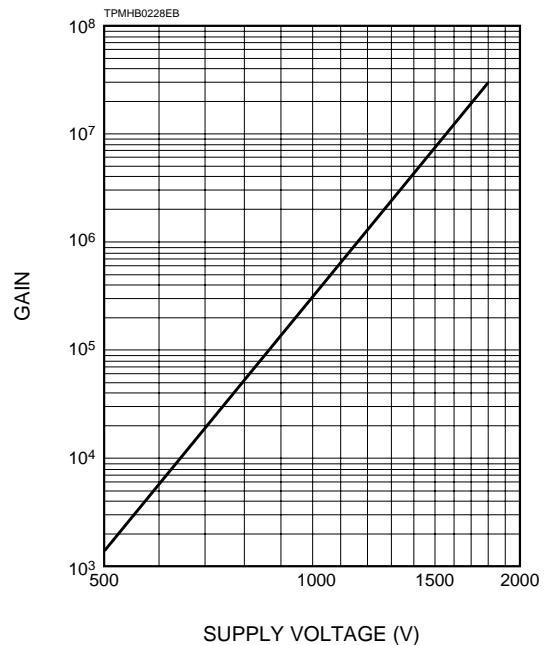


Figure 3: Pulse Height Distribution

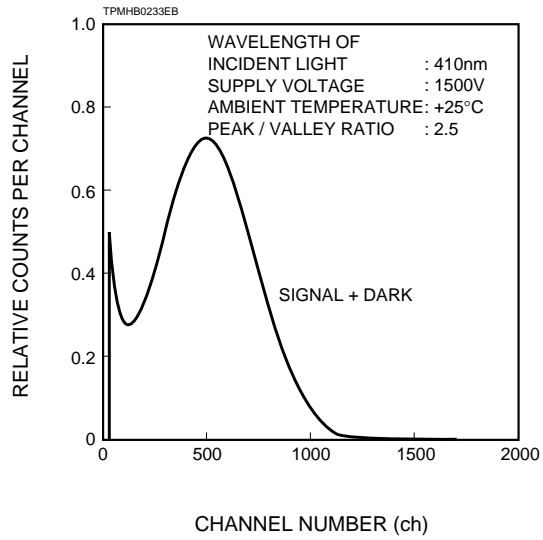


Figure 4: Transit Time Spread

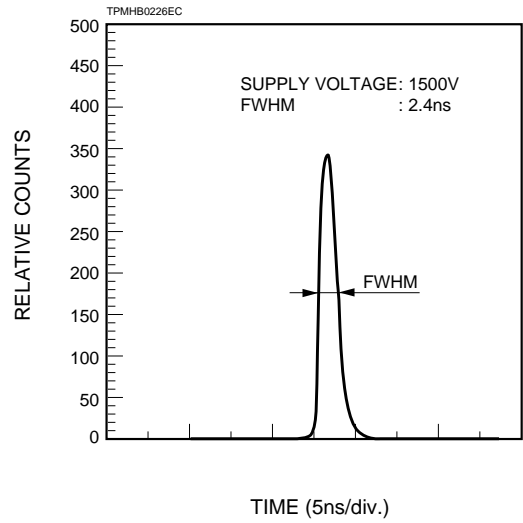
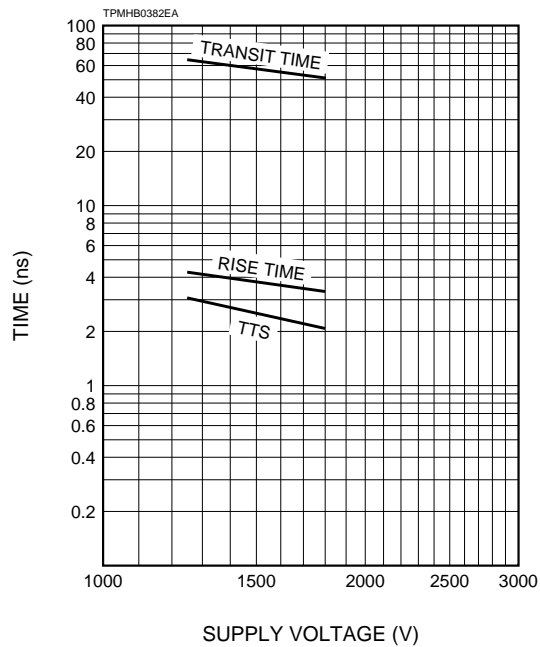
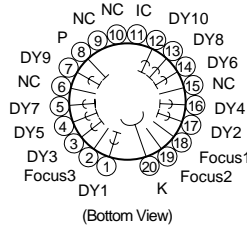
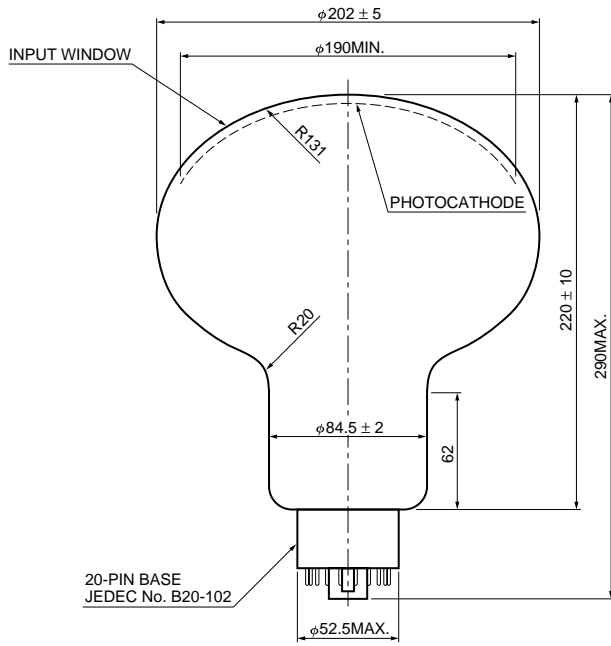


Figure 5: Typical Time Response



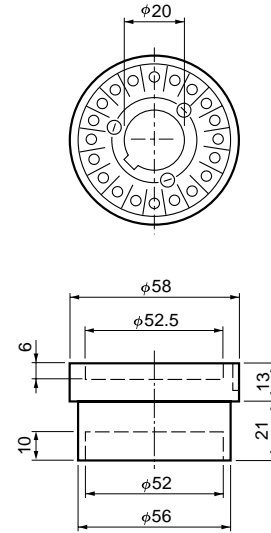
# PHOTOMULTIPLIER TUBE R5912

Figure 6: Dimensional Outline and Voltage Divider (Unit: mm)

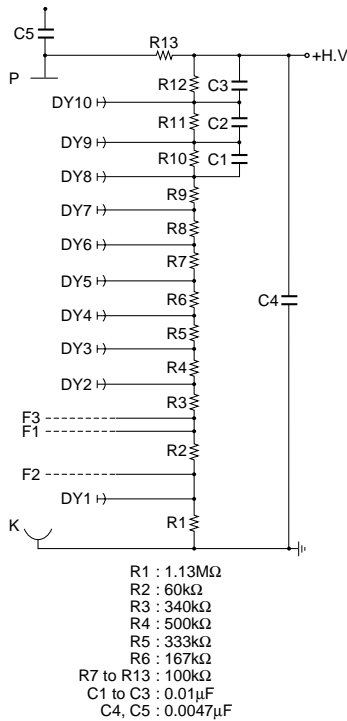


TPMHA0261EB

## Socket (E678-20A)



TACCA0003EA



TPMHC0112EA

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