

FEATURES

- Fast time response
- High time resolution
- Compact profile
- High speed gating by low supply voltage (+10 V)

APPLICATIONS

- Environmental monitoring
- Satellite laser ranging
- Time resolve fluorescence decay analysis



SPECIFICATIONS

(at +25 °C)

Parameter			-50	-52	Unit
Spectral response			160 to 850	160 to 650	nm
Peak wavelength			430	400	nm
Photocathode material			Multialkali	Bialkali	—
Window material			Synthetic silica		—
Effective area			φ10		mm
Dynode structure			2-stage filmed MCP		—
MCP channel diameter			6		μm
Capacitance between mesh electrode and photocathode			14.7		pF
Maximum ratings	Supply voltage		-3400		V
	Operating ambient temperature ①		-50 to +50		°C
	Storage temperature ①		-50 to +50		°C
Cathode	Luminous sensitivity	Min.	100	20	μA/lm
		Typ.	150	45	
	Radiant sensitivity at peak wavelength	Typ.	52	45	mA/W
Gain (at -3000 V)		Min.	1.0 × 10 ⁵		—
		Typ.	3.0 × 10 ⁵		
Anode	Luminous sensitivity	Typ.	45	9	A/lm
	Dark current ②	Max.	10	0.5	nA
	Dark count (at -3000 V) ③	Max.	100	0.5	s ⁻¹
Switching ratio (at 500 nm)		Typ.	1.7 × 10 ⁸		—
Time response (-3000 V)	Rise time	Typ.	180		ps
		Max.	220		
	Fall time	Typ.	700		
	I.R.F. (FWHM) ④	Typ.	95		
Input gate pulse	Voltage	Min.	10		V
		Max.	20		
	Width	Min.	3		ns
		Max.	10 000		
	Duty cycle	Max.	1		%
PMT response	Rise time	Typ.	1		ns
		Max.	3		
	Fall time	Typ.	1		

NOTES: ①No condensation ②After 30 min storage in darkness. ③This is specified at a duty cycle of 1 %.

④I.R.F. stands for Instrument Response Function which is a convolution of the d-function (H(t)) of the measuring apparatus and the excitation function (E(t)) of a laser. The I.R.F. is given by the following formula: I.R.F. = H(t)* E(t)

We specify the I.R.F. as an FWHM of the time distribution taken by using the measuring apparatus in Figure 7 that is Hamamatsu standard I.R.F. measuring set-up. It can be estimated by the following equation: (I.R.F. (FWHM))² = (T.T.S.)² + (Tw)² + (Tj)² where Tw is the pulse width of the laser and Tj is the time jitter of all equipments used in the measurement. An I.R.F. is provided with the tube.

MICROCHANNEL PLATE PHOTOMULTIPLIER TUBES (MCP-PMT) R5916U SERIES

Figure 1: Typical spectral response

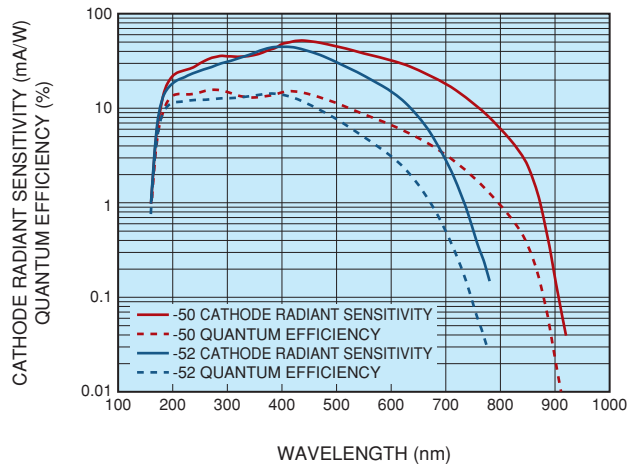


Figure 2: Typical gain

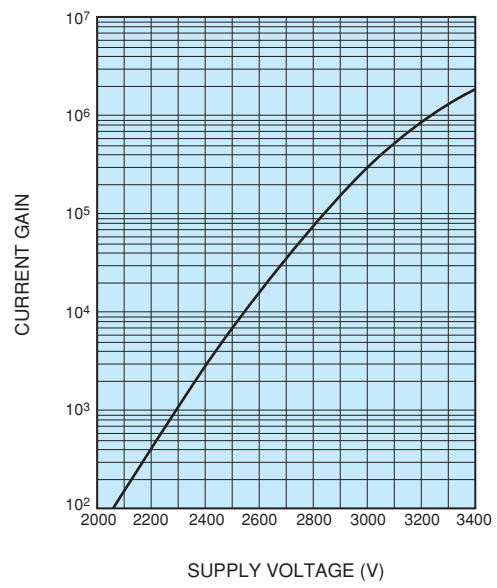


Figure 3: Typical output waveform

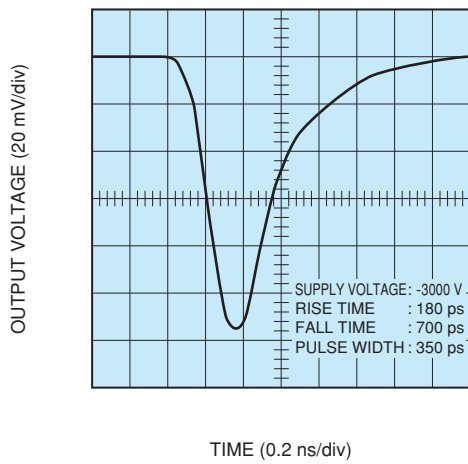


Figure 4: Typical I.R.F.

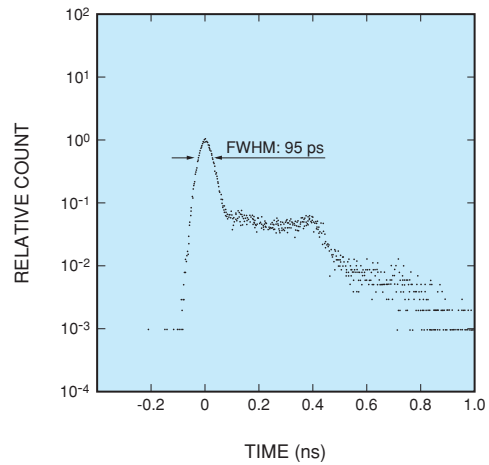


Figure 5: Dimensional outline (Unit: mm)

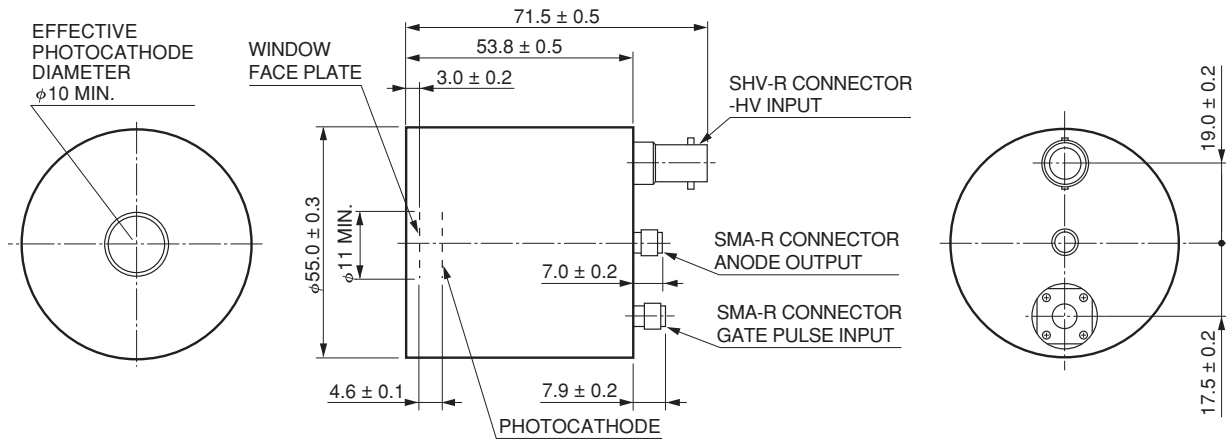
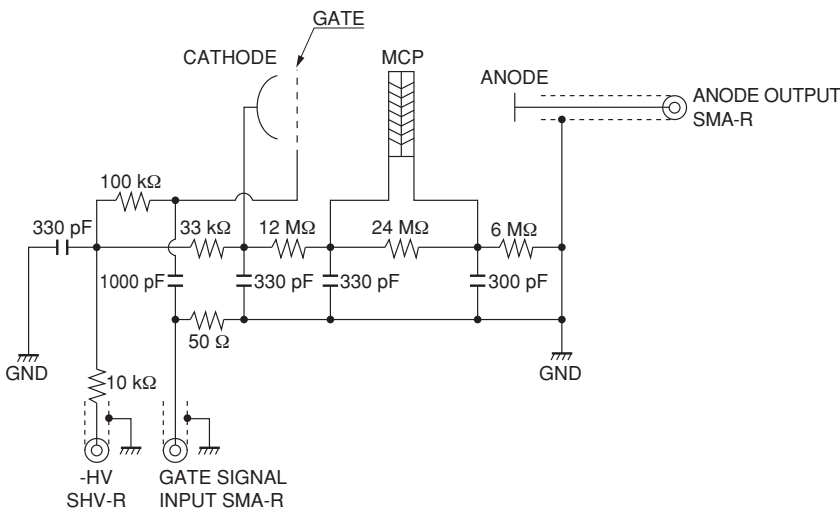
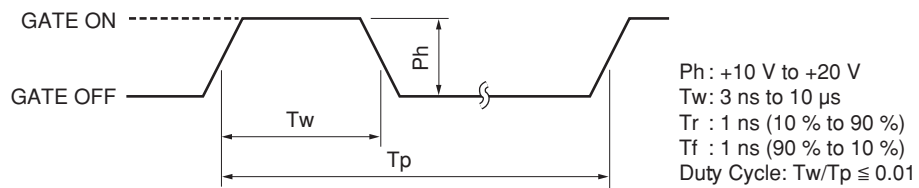


Figure 6: Voltage divider and gate circuit

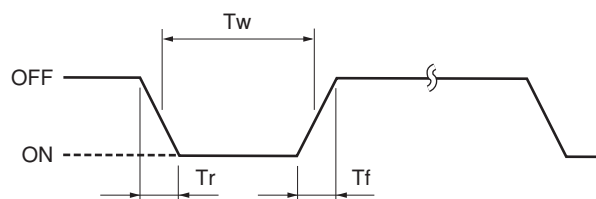


Some of the values indicated in this circuit may be different from actual values to meet the specifications.

INPUT GATE PULSE



PMT OPERATING MODE



R5916U-50 will be provided in a "normally off" mode configuration. It will be gated "on" only when the gate input pulse (+10 V to +20 V) is applied and gated "off" when it is grounded or left in open.

However, we can also provide this device in a "normally on" mode configuration which can be operated under the same operating conditions above to give inverse performance. Please specify if you require a "normally on" mode configuration when placing an order.

MICROCHANNEL PLATE PHOTOMULTIPLIER TUBES (MCP-PMT) R5916U SERIES

ACCESSORIES

Thermoelectric cooling unit C10373 series, Holder E3059-501



Left: Power supply, Right: Cooled PMT housing

Parameter	Description / Value	Unit
Cooling method	Thermoelectric cooling using peltier module	—
Heat exchange medium	Water	—
Cooling temperature ^①	Approx. -30	°C
Cooling time	Approx. 120	min
Applicable PMT holder ^②	E3059-501	—
AC Input voltage	100 to 240	V
Operating ambient temperature ^③	+5 to +40	°C
Operating ambient humidity ^③	Below 75	%
Storage temperature ^③	-15 to +50	°C
Storage humidity ^③	Below 80	%

NOTES

- ① Uses cooling water at 20 °C.
 ② Sold separately. The E3059-501 exclusive holder is necessary for R5916U series.
 ③ No condensation.

High speed amplifier C5594 series



Parameter	-12	-22	-44	Unit
Input connector	SMA plug (male)	SMA receptacle (female)	BNC receptacle (female)	—
Output connector	SMA receptacle (female)			—
Frequency response range	50 kHz to 1.5 GHz			—
Voltage gain	Typ.	36		dB
Current-to-voltage conversion factor		3.15		mV/A
Input / Output impedance		50		Ω
Noise figure (NF)	Typ.	5		dB
Supply voltage		+12 to +16		V
Supply current	Max.	95		mA

Bench-top high voltage power supply C9727 / C9727-01



Parameter	Description / Value	Unit
Output voltage	0 to -3500	V
Maximum output current	2	mA
Line regulation against 10 % line voltage change ^{①②}	Typ. ±0.005	%
Load regulation against 0 % to 100 % load change ^①	Typ. ±0.03	%
Ripple / Noise (p-p) ^{①②}	Typ. 0.003	%
Drift (after 30 min warm-up) ^{①②}	Typ. ±0.02	%/8h
Temperature coefficient ^{①②}	Typ. 0.01	%/°C
AC input voltage	100 to 240	V
Power consumption ^{①②}	Max. 60	V·A
Operating ambient temperature ^③	0 to +40	°C
Operating ambient humidity ^③	below 85	%
Storage temperature ^③	-20 to +50	°C
Storage humidity ^③	below 90	%

NOTES

- ① At maximum output voltage.
 ② At maximum output current.
 ③ No condensation.

* C9727: AC cable with a rating of 125 V
 C9727-01: AC cable with a rating of 250 V

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