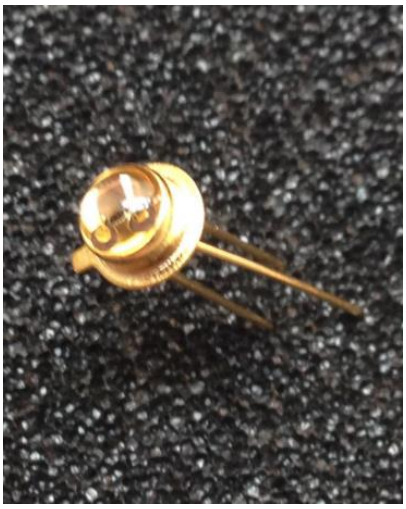
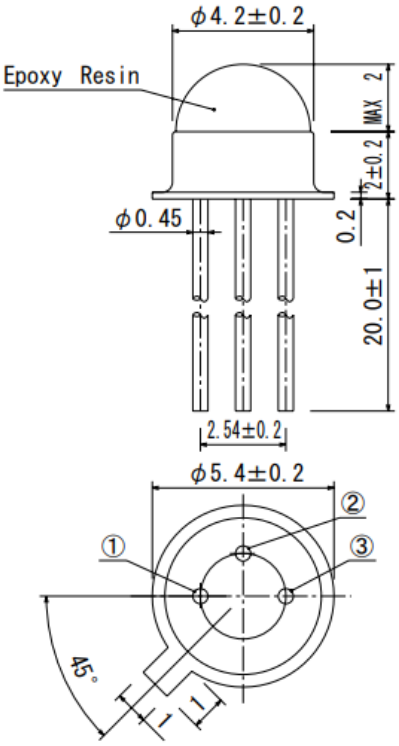
Silicon Photomultiplier Detector

SiPM1-VT





NOTES: ①Cathode ②Anode ③Case
All dimension are in millimeters.

Description

The SiPM1-VT is a photon counting solid state replacement For photomultiplier tubers. The low dark count rates made On TO-18 resin type package.

Extremely fast rise time and short recovery time, facilitate high performance operation： both in analog/linear mode, as Multi-photon detectors in which the output signal is proportional to the number of input photons, as well as in digital mode, as high speed photon counters with a wide dynamic range.

Features

* Very low dark current
* High speed (1ns rise time typical)
* Wide single photon counting dynamic range (>30MHz)
* 3-stage, thermoelectric cooled, TO8 package
* Operating temperature is from -25 to +60℃
* Storage temperature is from -45 to +70℃

Applications

* High Energy Physics(HEP)
* PET scanning
* Fluorescence lifetime measurements
* Dynamic spectrometry
* DNA sequencing
* Nuclear medicine

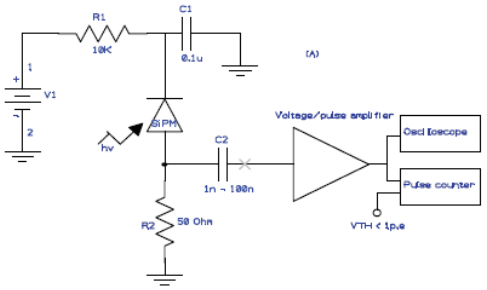
OTRON ELECTRONIC TECHNOLOGY CO., LTD
TEL:+86-21-54971821
FAX:+86-21-54971823
EMAL:frank.shuai@e-otron.com
Http://www.e-otron.com

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Sensitive area	A			1		mm^2
Interconnect elements	Pix	32*32 square		1024		pixels
Breakdown Voltage	Vbr	+20℃,, I=1nA		36		V
Vbr Temperature Coefficient	TC Vbr			107		mV/℃
Over voltage range		+20℃	1		10	V
Pixel gain	Gain	Depending on overvoltage (Ubr+5V)	10^5		10^6	
Pixel capacitance	C			10		fF
Dark current	I_D	room temperature, before breakdown			1	nA
Dark count rate		+20℃ and Ubr+5V	400	-	1200	Kcps
Spectral Response Range	λ_{range}		350		1100	nm
Photon detection efficiency*	E	λ=500nm	25%			
Pulse width		FWHM	2.2	3.2	6	ns
Rise time	Tr	Up=Ubr+5V,λ=500nm	Leading edge	1		ns
Fall time	Tf		Trailing edge	1.5		ns
Single photon counting dynamic range		Comparator threshold<1 p.e.	40			MHz
Saturation power	Pmin				10	uW
TEC cooling time	T		10		12	s

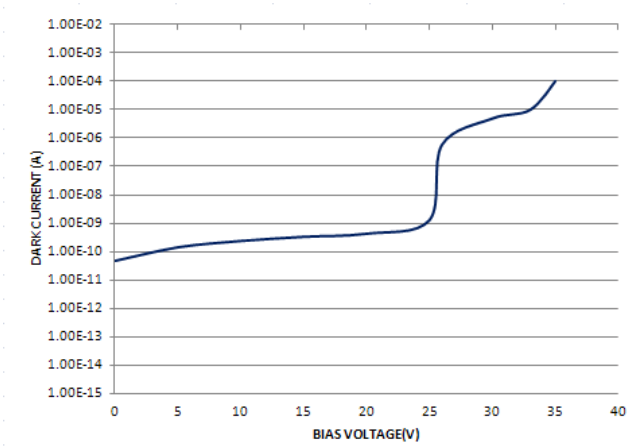
* PDE includes crosstalk and afterpulsing

■Typical application circuit

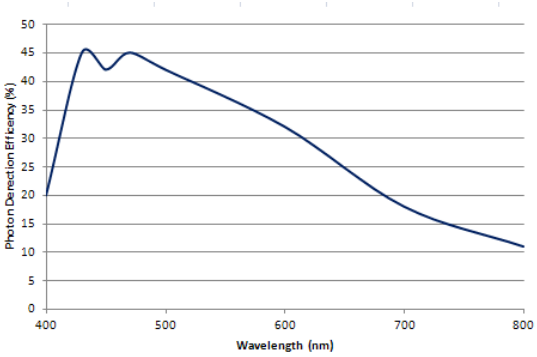


Information in this technical datasheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject change without notice

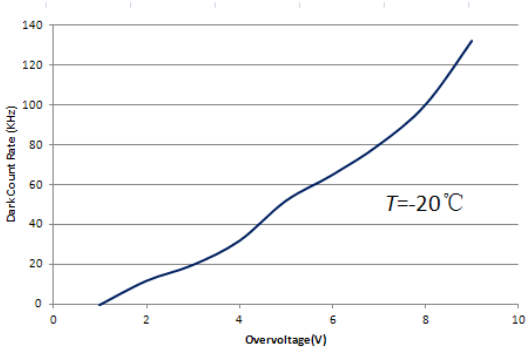
■Dark current vs. reverse voltage



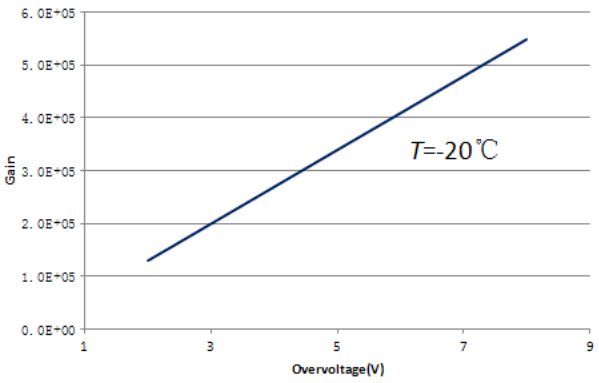
■ Photon detect efficiency vs. wavelength



■Dark count Vs. Overbias



■Gain Vs. Overbias



■Breakdown voltage VS. Temperature