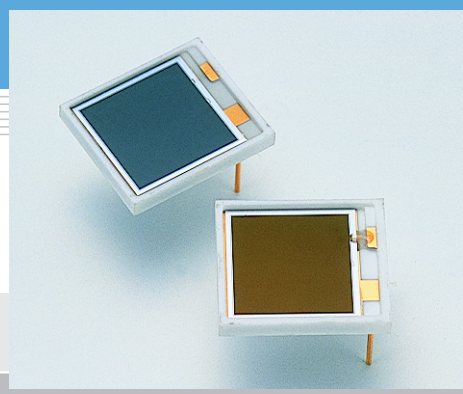


Si PIN photodiode

S3590-18/-19

Large area Si PIN photodiode for scintillation counting



Features

- Suitable for coupling with blue scintillator (LSO, GSO, etc.)
- Internal quantum efficiency: 100 % ($\lambda=420$ nm)
- S3590-19: bare chip type (without window)

Applications

- Radiation detection (PET, etc.)
- X-ray detection

■ Absolute maximum ratings

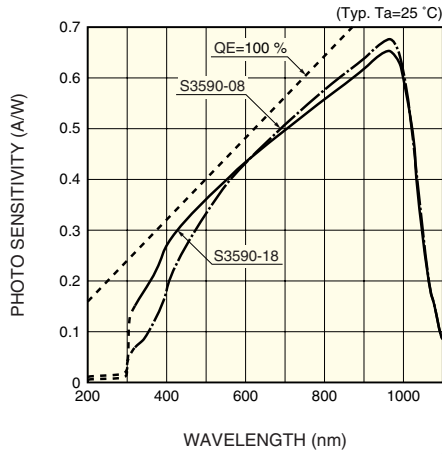
Parameter	Symbol	Value	Unit
Reverse voltage	V_R	100	V
Power dissipation	P	100	mW
Operating temperature	T_{opr}	-20 to +60	°C
Storage temperature	T_{stg}	-20 to +80	°C

■ Electrical and optical characteristics ($T_a=25$ °C)

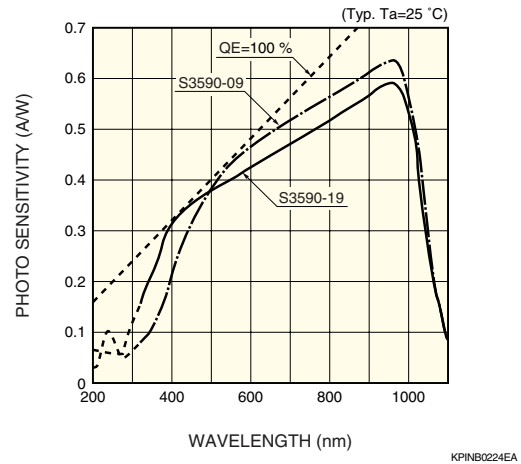
Parameter	Symbol	Condition	S3590-18			S3590-19			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	320 to 1100	-	-	320 to 1100	-	nm
Peak sensitivity wavelength	λ_p		-	960	-	-	960	-	nm
Photo sensitivity	S	$\lambda=\lambda_p$	-	0.65	-	-	0.58	-	A/W
		$\lambda=420$ nm (LSO)	-	0.28	-	-	0.33	-	A/W
		$\lambda=480$ nm (BGO)	-	0.34	-	-	0.37	-	A/W
		$\lambda=540$ nm (CsI)	-	0.38	-	-	0.4	-	A/W
Short circuit current	I_{sc}	100 lx	-	100	-	-	86	-	μ A
Dark current	I_D	$V_R=70$ V	-	4	10	-	4	10	nA
Temperature coefficient of I_D	T_{CID}		-	1.12	-	-	1.12	-	times/°C
Cut-off frequency	f_c	$V_R=70$ V, -3 dB $R_L=50$ Ω	-	40	-	-	40	-	MHz
Terminal capacitance	C_t	$V_R=70$ V, $f=1$ MHz	-	40	-	-	40	-	pF
Noise equivalent power	NEP		-	7.6×10^{-14}	-	-	7.6×10^{-14}	-	W/Hz ^{1/2}

Spectral response

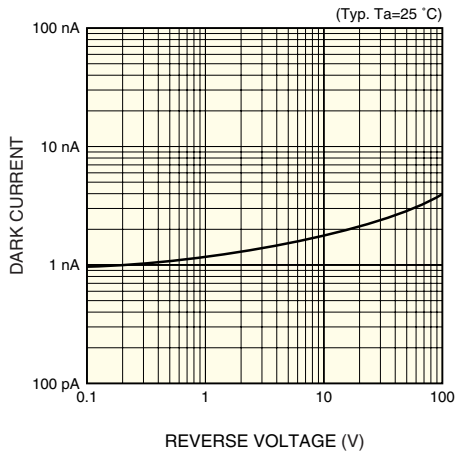
S3590-18



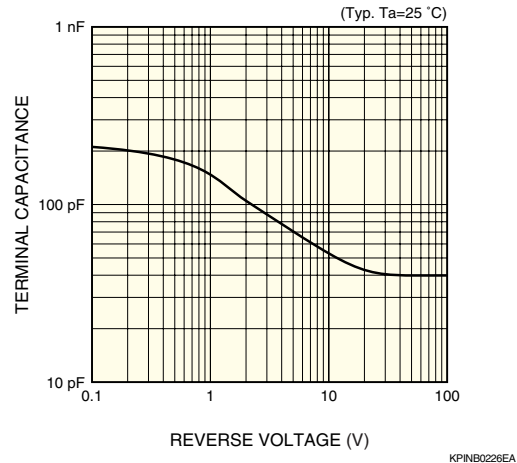
S3590-19 (Bare chip type)



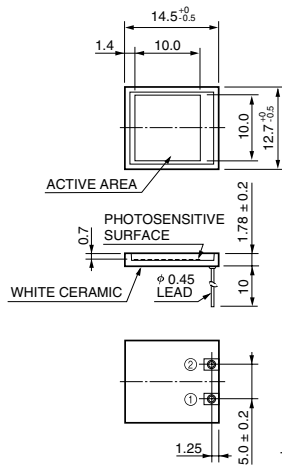
Dark current vs. reverse voltage



Terminal capacitance vs. reverse voltage



Dimensional outline (unit: mm)



HAMAMATSU

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