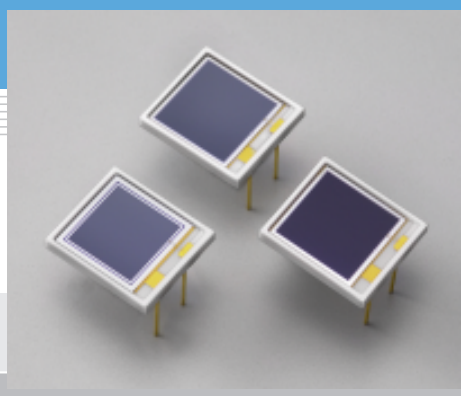


Si PIN photodiode S3590 series

Large area sensors for scintillation detection



Features

- Higher sensitivity and low dark current than conventional type
- Sensitivity matching with BGO and CsI (TI) scintillators
- High quantum efficiency: QE=85 % ($\lambda=540$ nm)
- Low capacitance
- High-speed response
- High stability
- Good energy resolution

Applications

- Scintillation detectors
- Calorimeters
- Hodoscopes
- TOF counters
- Air shower counters
- Particle detectors, etc.

General ratings / Absolute maximum ratings

Type No.	Window material	Active area (mm)	Absolute maximum ratings			
			Reverse voltage VR Max.	Power dissipation P (mW)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
S3590-01	Epoxy resin	10 × 10	50	100	-20 to +60	-20 to +80
S3590-02	Window-less					
S3590-05	Epoxy resin	9 × 9	150			
S3590-06	Window-less					
S3590-08	Epoxy resin	10 × 10	100			
S3590-09	Window-less					

Electrical and optical characteristics (Typ. $T_a=25$ °C, unless otherwise noted)

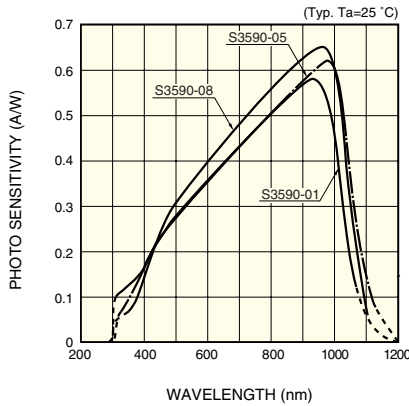
Type No.	Spectral response range λ (nm)	Peak sensitivity wavelength λ_p (nm)	Photo sensitivity S				Short circuit current Isc 100 lx (μ A)	Dark current ID		Temp. coefficient of ID TCID (times/°C)	Cut-off Frequency fc (MHz)	Terminal capacitance Ct f= 1MHz (pF)	NEP VR=70 V (W/Hz ^{1/2})
			$\lambda=\lambda_p$ (A/W)	LSO 420 nm (A/W)	BGO 480 nm (A/W)	CsI(Tl) 540 nm (A/W)		Typ.	Max.				
S3590-01	320 to 1060	920	0.58	0.19	0.26	0.31	80	1.5 *1	5 *1	1.12	35 *1	75 *1	3.9 × 10 ⁻¹⁴
S3590-02			0.62	0.23	0.32	0.39							
S3590-05	320 to 1120	980	0.62	0.19	0.25	0.30	77	8 *2	30 *2		20 *2	25 *2	8.4 × 10 ⁻¹⁴
S3590-06			0.64	0.23	0.32	0.39							
S3590-08	320 to 1100	960	0.66	0.20	0.30	0.36	100	2 *3	6 *3		40 *3	40 *3	3.8 × 10 ⁻¹⁴
S3590-09			0.66	0.22	0.33	0.41							

*1: $V_R=30$ V

*2: $V_R=100$ V

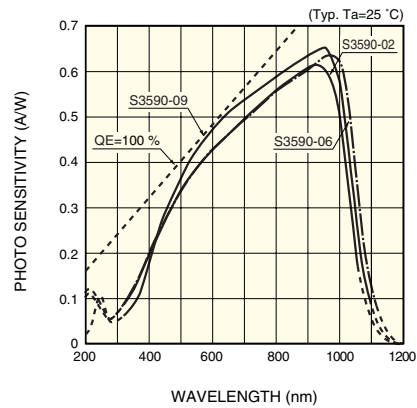
*3: $V_R=70$ V

Spectral response



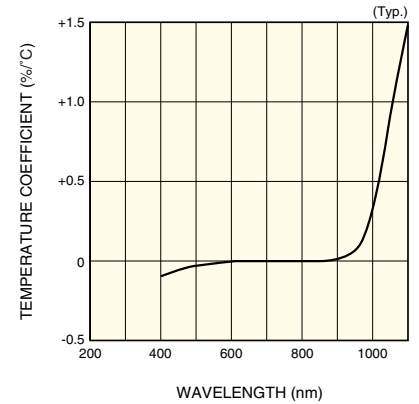
KPINB0231EA

Spectral response (without window)



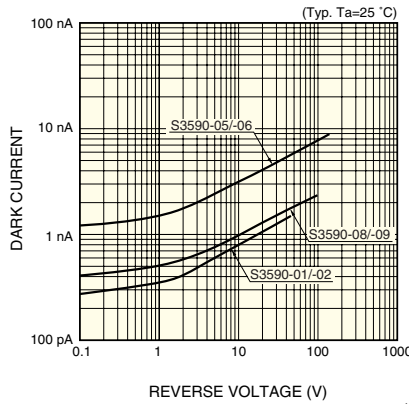
KPINB0263EA

Photo sensitivity temperature characteristic



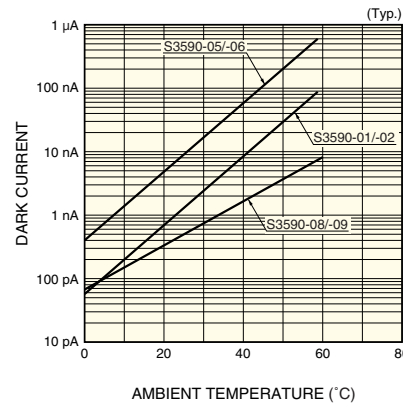
KPINB0093EC

Dark current vs. reverse voltage



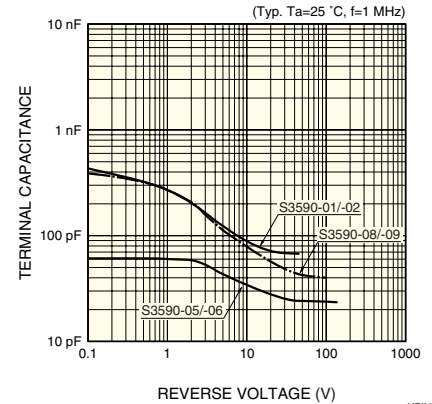
KPINB0232EB

Dark current vs. ambient temperature



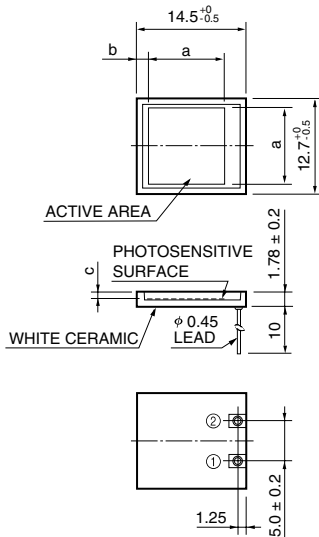
KPINB0233EB

Terminal capacitance vs. reverse voltage



KPINB0234EB

Dimensional outline (unit: mm)



The coating resin may extend a maximum of 0.1 mm beyond the upper surface of the package.

	-01	-05	-08
a	10.0	9.0	10.0
b	1.4	1.9	1.4
c	0.8	0.5	0.7

KPINA0014EE

HAMAMATSU

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