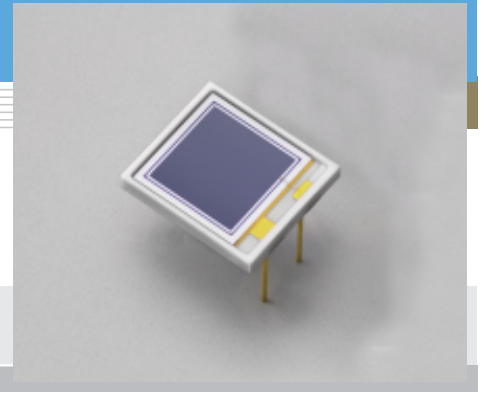


# Si PIN photodiode

## S3590-08/-09

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

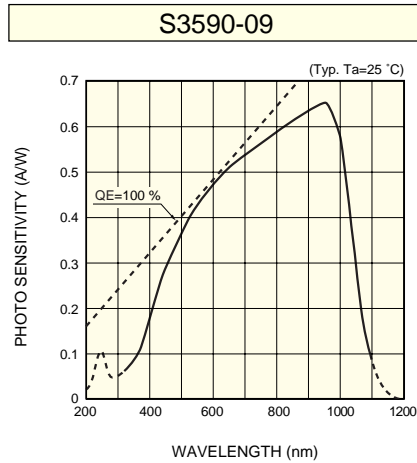
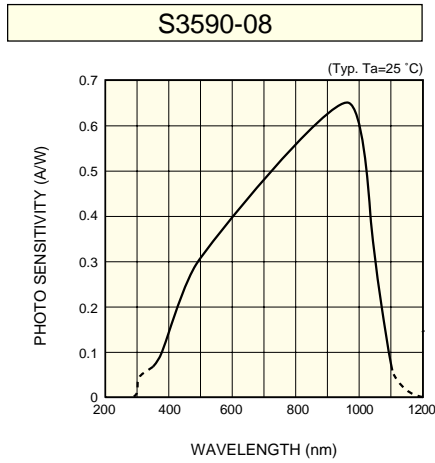
Type No.	Window material	Active area (mm)	Depletion layer thickness (mm)	Absolute maximum ratings			
				Reverse voltage VR Max.	Power dissipation P (mW)	Operating temperature T <sub>opr</sub> (°C)	Storage temperature T <sub>stg</sub> (°C)
S3590-08	Epoxy resin	10 × 10	0.3	100	100	-20 to +60	-20 to +80
S3590-09	Window-less						

### Electrical and optical characteristics (Typ. T<sub>a</sub>=25 °C, unless otherwise noted)

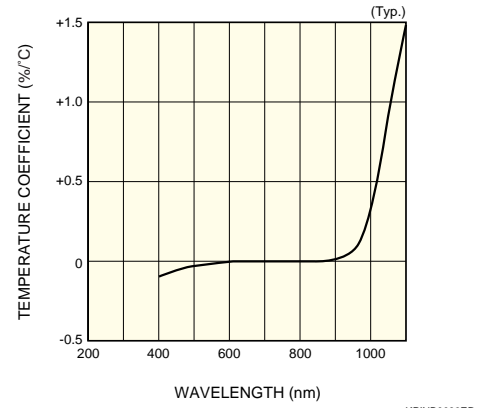
Type No.	Spectral response range $\lambda$ (nm)	Peak sensitivity wavelength $\lambda_p$ (nm)	Photo sensitivity S				Short circuit current I <sub>sc</sub> 100 lx ( $\mu$ A)	Dark current I <sub>D</sub>		Temp. coefficient of I <sub>D</sub> T <sub>CID</sub> (times/°C)	Cut-off Frequency f <sub>c</sub> (MHz)	Terminal capacitance C <sub>t</sub> f= 1MHz (pF)	NEP VR=70 V (W/Hz <sup>1/2</sup> )
			$\lambda=\lambda_p$	LSO 420 nm	BGO 480 nm	CsI(Tl) 540 nm		Typ.	Max.				
			(A/W)	(A/W)	(A/W)	(A/W)		(nA)	(nA)				
S3590-08	320 to 1100	960	0.66	0.20	0.30	0.36	100	2 *	6 *	1.12	40 *	40 *	3.8 × 10 <sup>-14</sup>
S3590-09			0.66	0.22	0.33	0.41							

\* VR=70 V

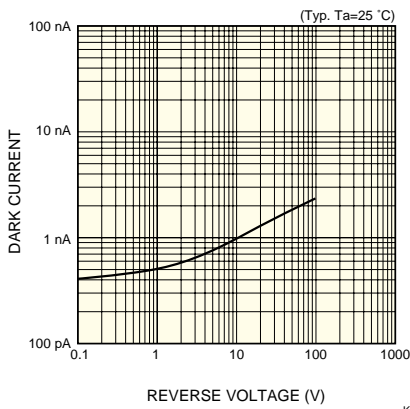
■ Spectral response



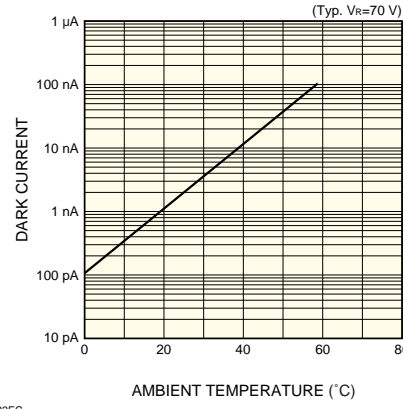
■ Photo sensitivity temperature characteristic



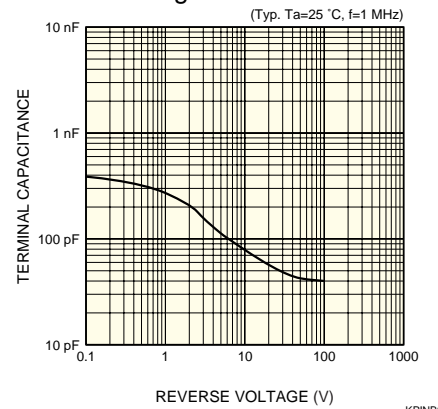
■ Dark current vs. reverse voltage



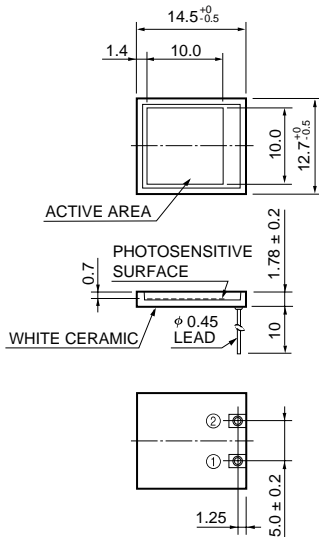
■ Dark current vs. ambient temperature



■ Terminal capacitance vs. reverse voltage



■ Dimensional outline (unit: mm)



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

KPINA0014EF

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