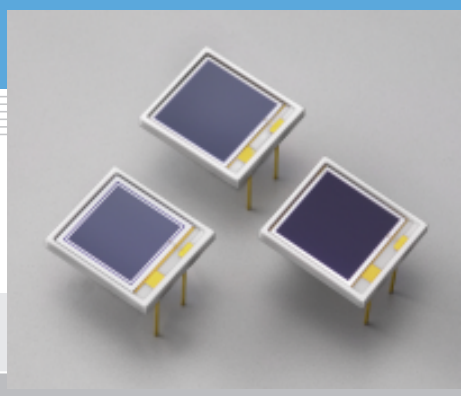


Si PIN photodiode S3590 series

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)

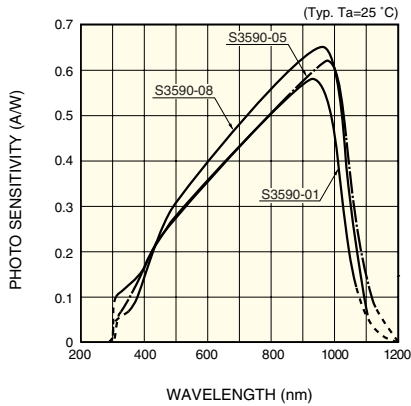
Type No.	Spectral response range λ (nm)	Peak sensitivity wavelength λ_p (nm)	Photo sensitivity S				Short circuit current I_{sc} 100 lx (μ A)	Dark current I_D		Temp. coefficient of I_D T_{CID} (times/°C)	Cut-off Frequency f_c (MHz)	Terminal capacitance C_t $f=1$ MHz (pF)	NEP $V_R=70$ V (W/Hz ^{1/2})
			$\lambda=\lambda_p$	LSO 420 nm	BGO 480 nm	CsI(Tl) 540 nm		Typ.	Max.				
			(A/W)	(A/W)	(A/W)	(A/W)		(nA)	(nA)				
S3590-01	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



Spectral response (without window)

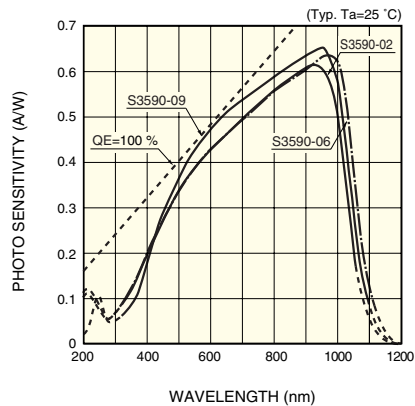
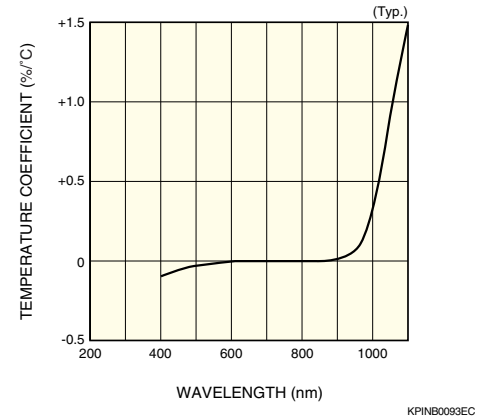
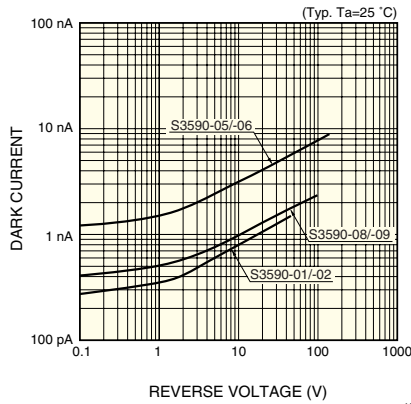


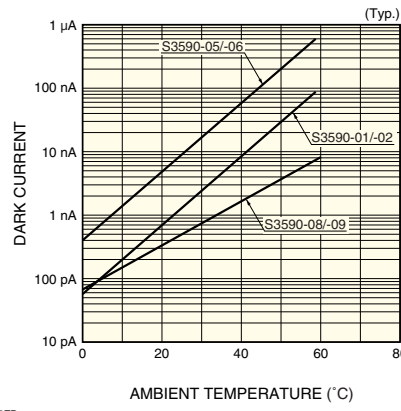
Photo sensitivity temperature characteristic



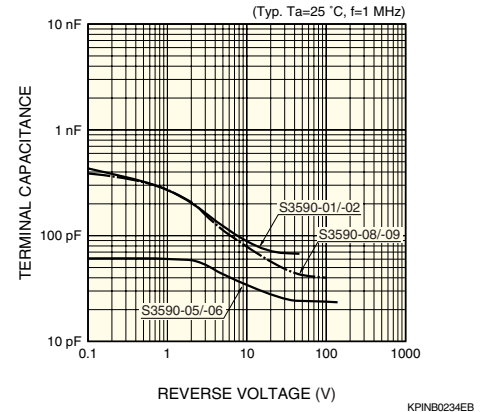
Dark current vs. reverse voltage



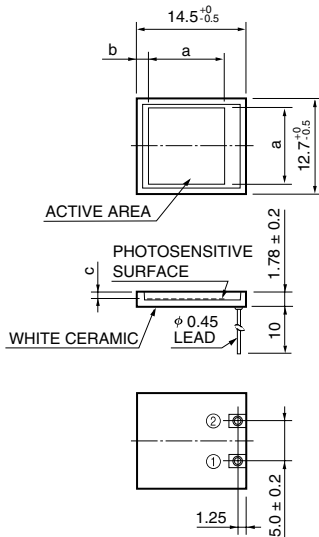
Dark current vs. ambient temperature



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.

	-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

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 053-434-3311, Fax: (81) 053-434-5184, <http://www.hamamatsu.com>

U.S.A.: Hamamatsu Corporation, 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH, Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 08152-3750, Fax: (49) 08152-2658

France: Hamamatsu Photonics France S.A.R.L.: 8, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741

Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. ©2003 Hamamatsu Photonics K.K.