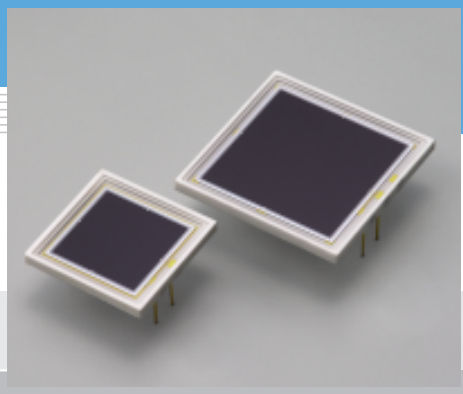


Si PIN photodiode S3204/S3584 series

Large area sensors for scintillation detection



S3204/S3584 series are large area Si PIN photodiodes having an epoxy resin window. These photodiodes are also available without window.

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

General ratings / Absolute maximum ratings					Absolute maximum ratings						
Type No.	Dimensional outline	Window material	Active area (mm)	Depletion layer thickness (mm)	Reverse voltage VR Max.	Power dissipation P (mW)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)			
S3204-05	①	Epoxy resin	18 × 18	0.5	150	100	-20 to +60	-20 to +80			
S3204-06		Window-less		0.3	100						
S3204-08		Epoxy resin									
S3204-09		Window-less									
S3584-05	②	Epoxy resin	28 × 28	0.5	150				100	-20 to +60	-20 to +80
S3584-06		Window-less		0.3	100						
S3584-08		Epoxy resin									
S3584-09		Window-less									

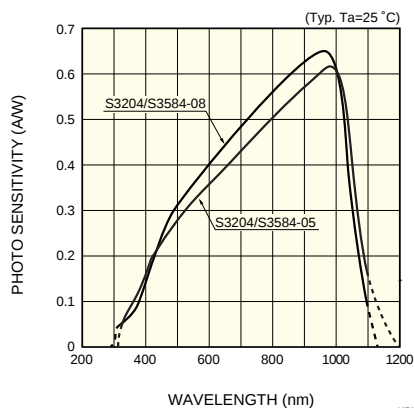
Electrical and optical characteristics (Typ. $T_a=25$ °C, unless otherwise noted)

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 $V_R=100$ V		Temp. coefficient of I_D T_{CID} (times/°C)	Cut-off frequency f_c $V_R=100$ V -3 dB (MHz)	Terminal capacitance C_t $f=1$ MHz $V_R=100$ V (pF)	NEP $V_R=100$ 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.				
S3204-05	320 to 1120	980	0.62	0.19	0.25	0.3	310	15	50	1.12	20	80	1.2×10^{-13}
S3204-06			0.64	0.23	0.32	0.39							
S3204-08	320 to 1100	960	0.66	0.20	0.3	0.36	340	6 *	20 *		20 *	130 *	6.6×10^{-14} *
S3204-09			0.66	0.22	0.33	0.41							
S3584-05	320 to 1120	980	0.62	0.19	0.25	0.3	740	20	100		10	200	1.3×10^{-13}
S3584-06			0.64	0.23	0.32	0.39							
S3584-08	320 to 1100	960	0.66	0.20	0.3	0.36	780	10 *	30 *		10 *	300 *	8.6×10^{-14} *
S3584-09			0.66	0.22	0.33	0.41							

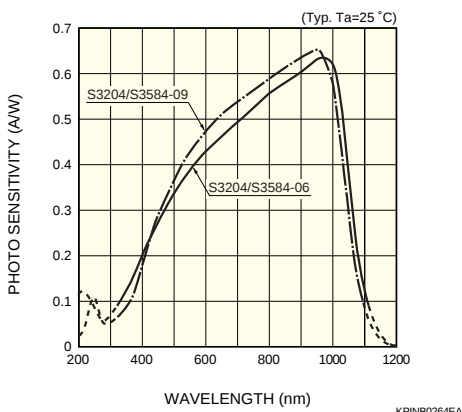
*1: $V_R=70$ V

Si PIN photodiode S3204/S3584 series

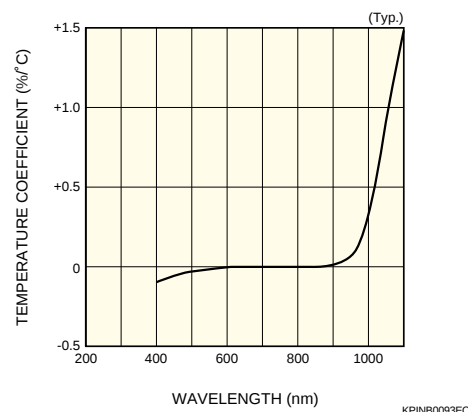
■ Spectral response



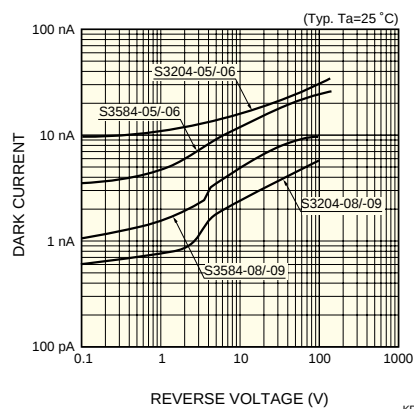
■ Spectral response (without window)



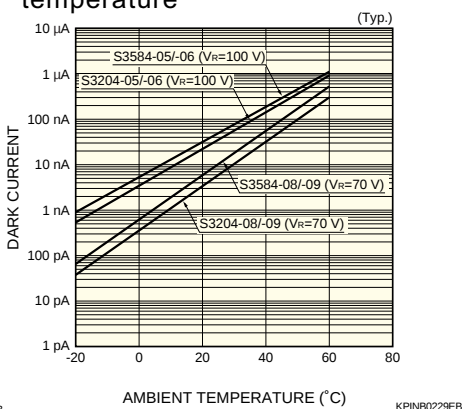
■ Photo sensitivity temperature characteristic



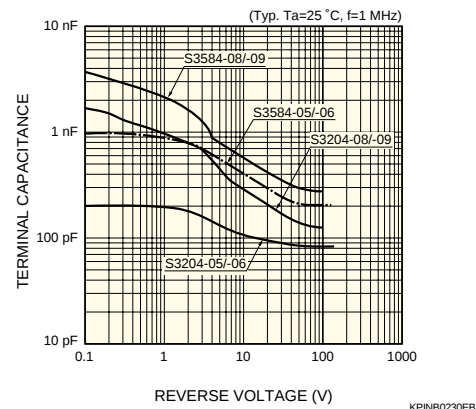
■ Dark current vs. reverse voltage



■ Dark current vs. ambient temperature

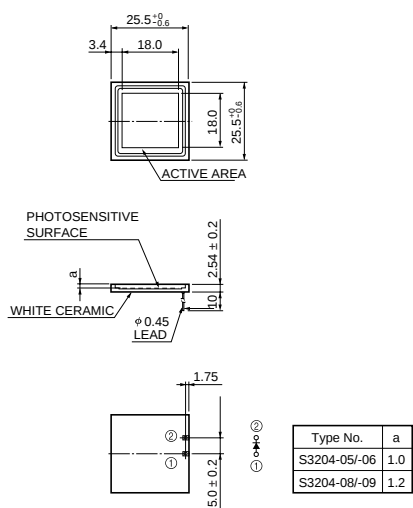


■ Terminal capacitance vs. reverse voltage

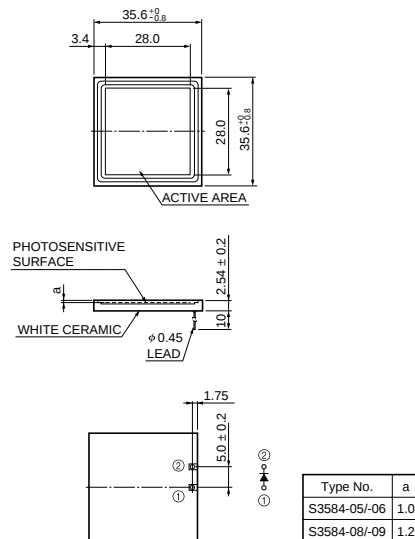


■ Dimensional outlines (unit: mm)

① S3204 series



② S3584 series



HAMAMATSU

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184, 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.: 19, Rue du Saule Trappu, 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. ©2006 Hamamatsu Photonics K.K.