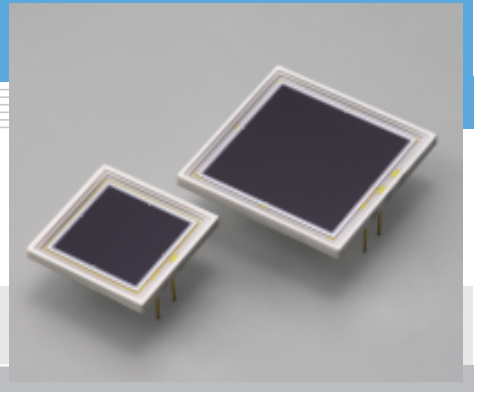


# Si PIN photodiode S3204/S3584 series

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

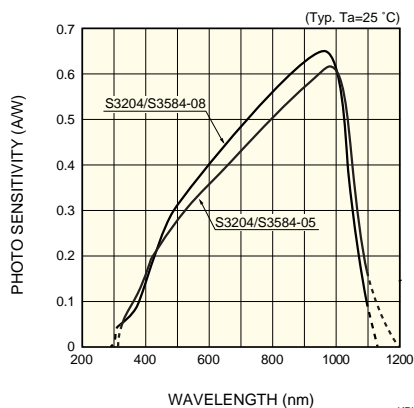
Type No.	Dimensional outline	Window material	Active area (mm)	Depletion layer thickness (mm)	Absolute maximum ratings			
					Reverse voltage $V_R$ Max.	Power dissipation P (mW)	Operating temperature $T_{opr}$ (°C)	Storage temperature $T_{stg}$ (°C)
S3204-05	①	Epoxy resin	18 × 18	0.5	150	100	-20 to +60	-20 to +80
S3204-06		Window-less						
S3204-08		Epoxy resin		0.3				
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						
S3584-08		Epoxy resin		0.3				
S3584-09		Window-less						

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

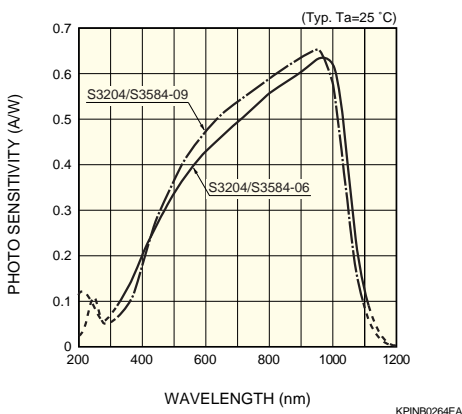
Type No.	Spectral response range $\lambda$ (nm)	Peak sensitivity wavelength $\lambda_p$ (nm)	Photo sensitivity S				Short circuit current $I_{sc}$ 100 lx ( $\mu$ A)	Dark current $I_D$ $V_R=100$ V		Temp. coefficient of $I_D$ $T_{CID}$ (times/°C)	Cut-off frequency $f_c$ $V_R=100$ V -3 dB (MHz)	Terminal capacitance $C_t$ $f=1$ MHz $V_R=100$ V (pF)	NEP $V_R=100$ V (W/Hz <sup>1/2</sup> )
			$\lambda=\lambda_p$ (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	$1.2 \times 10^{-13}$
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 *	$6.6 \times 10^{-14}$ *
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	1.12	10	200	$1.3 \times 10^{-13}$
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 *	$8.6 \times 10^{-14}$ *
S3584-09			0.66	0.22	0.33	0.41							

\*1:  $V_R=70$  V

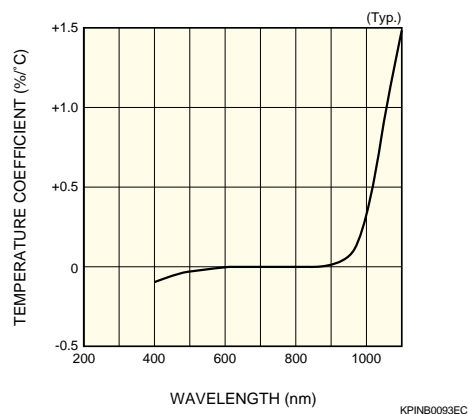
## ■ Spectral response



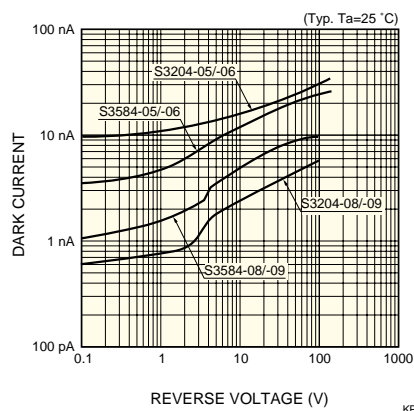
## ■ Spectral response (without window)



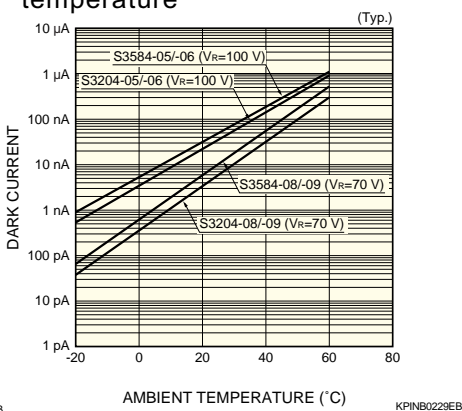
## ■ Photosensitivity temperature characteristic



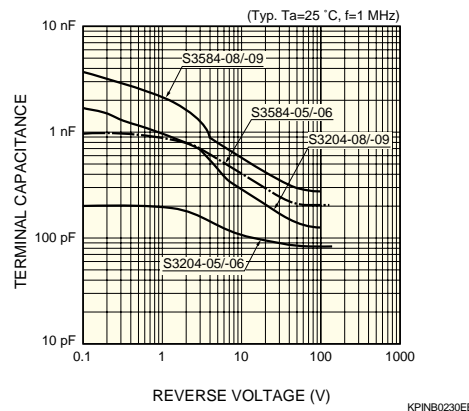
## ■ Dark current vs. reverse voltage



## ■ Dark current vs. ambient temperature

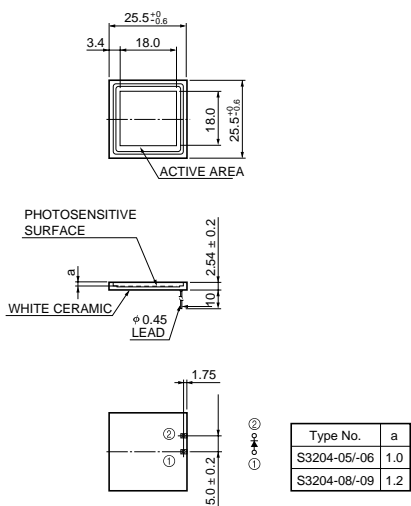


## ■ Terminal capacitance vs. reverse voltage



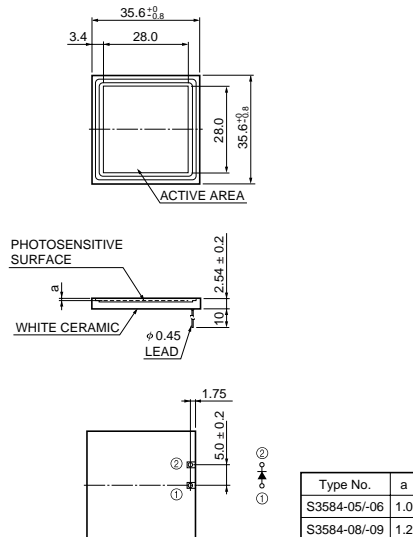
## ■ Dimensional outlines (unit: mm)

### ① S3204 series



KPINA0040EB

### ② S3584 series



KPINA0041EB

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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 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