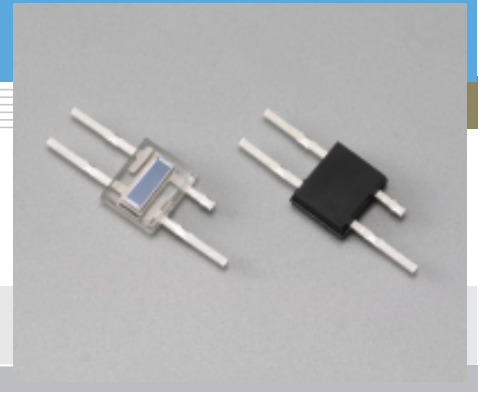


One-dimensional PSD S8301 series

Nonlinear output PSD



S8301 is a nonlinear output PSD (Position Sensitive Detector) specifically developed to improve accuracy of triangular measurement over long distances.

Features

- Nonlinear output one-dimensional PSD
- Large signal output change level for long distances
- Active area: 1.0 × 3.2 mm (resistance length 3.0 mm)

Applications

- Displacement meter
- Optical switch

■ Absolute maximum ratings (Ta=25 °C)

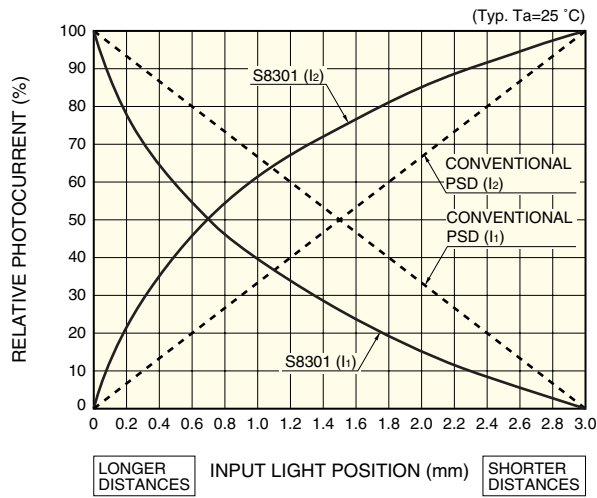
Parameter	Symbol	Value	Unit
Reverse voltage	V _R Max.	20	V
Operating temperature	T _{opr}	-25 to +85	°C
Storage temperature	T _{stg}	-40 to +100	°C

■ Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	S8301			S8301-01			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	320 to 1100	-	-	760 to 1100	-	nm
Peak sensitivity wavelength	λ_p		-	960	-	-	960	-	nm
Photo sensitivity	S	$\lambda = \lambda_p$	-	0.55	-	-	0.55	-	A/W
Interelectrode resistance	R _{ie}	V _b =0.1 V	180	250	320	180	250	320	k Ω
Position detection error	-	V _R =1 V Spot light size= ϕ 0.1 mm 50 to 2950 μ m range	-	$\pm$ 30	$\pm$ 60	-	$\pm$ 30	$\pm$ 60	μ m
Saturation current	I _{st}	V _R =1 V, R _L =1 k Ω	20	-	-	20	-	-	μ A
Dark current	I _D	V _R =1 V	-	0.1	2	-	0.1	2	nA
Temperature coefficient of I _D	-		-	1.15	-	-	1.15	-	times/°C
Rise time	t _r	V _R =1 V, R _L =1 k Ω *	-	5	15	-	10	30	μ s
Terminal capacitance	C _t	V _R =1 V, f=10 kHz	-	35	70	-	35	70	pF

* S8301: λ =650 nm, S8301-01: λ =890 nm

■ Photocurrent vs. input light position



KPSDB0075EA

■ Operation expression

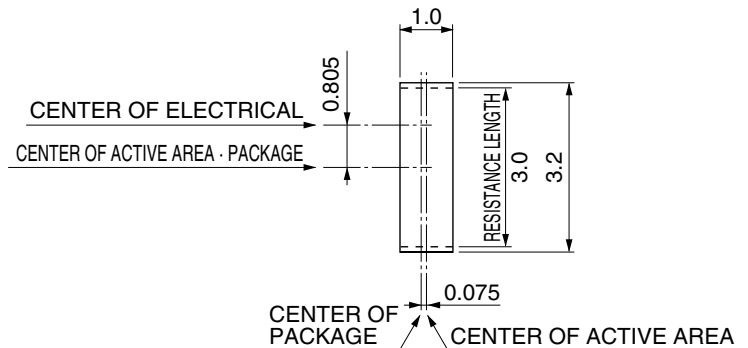
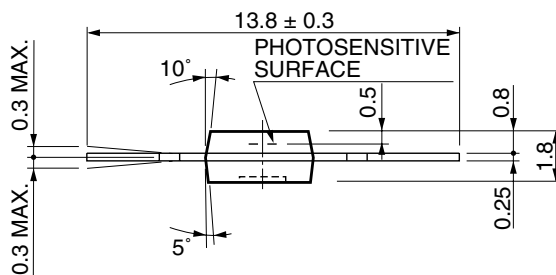
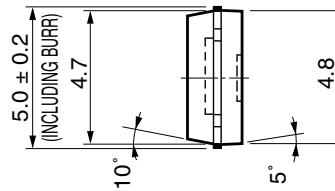
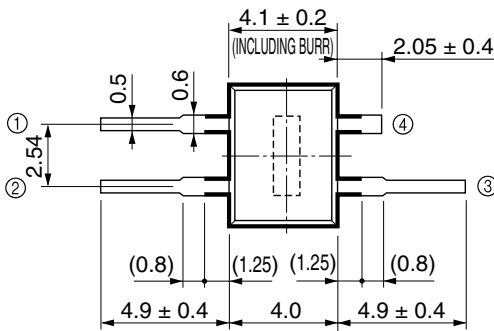
$$\text{Input light position } (\mu\text{m}) = 10^n - a$$

$$n = \frac{\log |a| \cdot I_1 + \log |L + a| \cdot I_2}{I_1 + I_2}$$

$$L = 3000$$

$$a = 300$$

■ Dimensional outline (unit: mm)



- ① ANODE 1
- ② CATHODE (COMMON)
- ③ ANODE 2
- ④ CATHODE (COMMON): DISPLAY FOR LONGER DISTANCES

DETAILS OF
PHOTODIODE

KPSDA0055EB

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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

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