

PD3101F

Compact **PSD*** for Camera AF

■ Features

1. Compact flat package
2. High noise resistance
3. Visible light cut-off type
4. Provide continuous electrical signal according to incident position of light

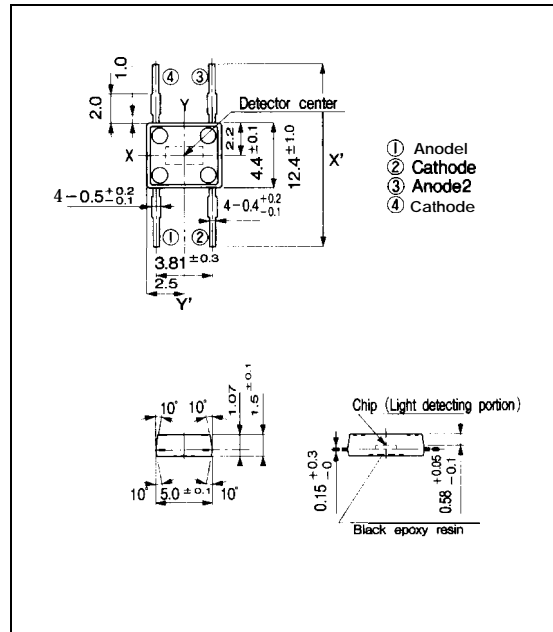
■ Applications

1. Cameras

* PSD : Position Sensitive Detector

■ Outline Dimensions

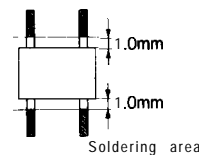
(Unit :mm)



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Position Sensitive
Detectors

■ Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Rating	Unit
Reverse voltage	V_R	30	V
Operating temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-40 to +85	°C
*1 Soldering temperature	T_{sol}	+260	°C



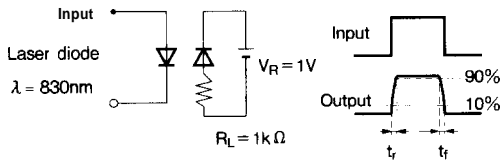
*1] For MAX. 3 seconds at the position of 1.0mm from the resin edge

Electro-optical Characteristics

($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Reverse voltage	V_R	$I_R = 10 \mu\text{A}$	30	—	—	V
Dark current	I_d	$V_R = 1\text{V}$	—	—	2.0	nA
Short circuit current	$*1 I_L$	$V_R = 1\text{V}, E_v = 1000 \text{lx}$	8	13	—	μA
Short circuit current difference	$\Delta I_L / I_L$	*2	—	—	± 2	%
Terminal capacitance	C_t	$V_R = 1\text{V}, f = 1\text{MHz}$	—	15	30	pF
Peak sensitivity wavelength	λ_p	—	—	940	—	nm
Response time	*3 t_r, t_f	$V_R = 1\text{V}, R_L = 1\text{k}\Omega$	—	15	30	μs
Resistance between electrode	R_{ie}	$V_R = 1\text{V}, V_a = 0.5\text{V}$	300	450	600	k Ω
Error of position detection	*4 —	—	—	—	± 25	μm
Sensitivity	R	—	—	0.5	—	A/W

- *1 $I_L = I_1 + I_2$
However, I_1 and I_2 are collector current of A1 and A2.
 E_v : Illuminance by CIE standard light source A (tungsten lamp)
- *2 $\Delta I_L = I_1 - I_2$
- *3 Test circuit for response time is shown below.



- *4 75% area from detecting portion center to the edge of detecting portion
Definition of error of position detection:

Error of position detection of each incident light position defines the following formula if electrical center position is $I_1 = I_2$.

$$\text{Error of position detection } (\mu\text{m}) = \frac{L}{2} \times \frac{I_1 - I_2}{I_1 + I_2} - \text{incident light position } (\mu\text{m})$$

L : Length of light detector surface

Fig. 1 Spectral Sensitivity

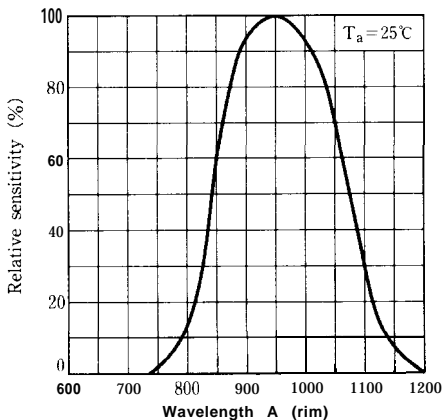


Fig. 2 Dark Current vs. Ambient Temperature

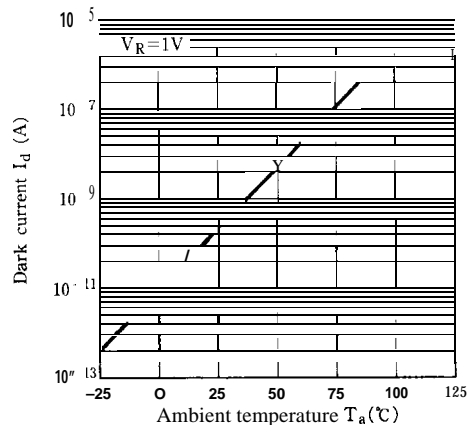


Fig. 3 Dark current vs. Reverse Voltage

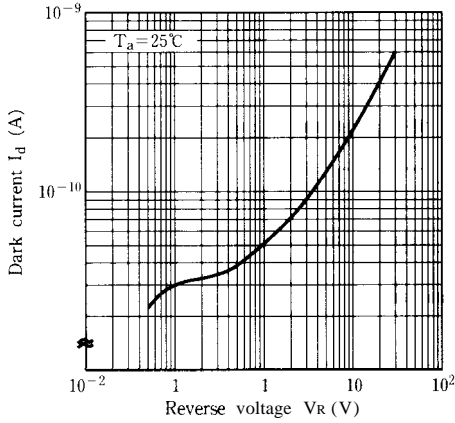


Fig. 4 Terminal Capacitance vs. Reverse Voltage

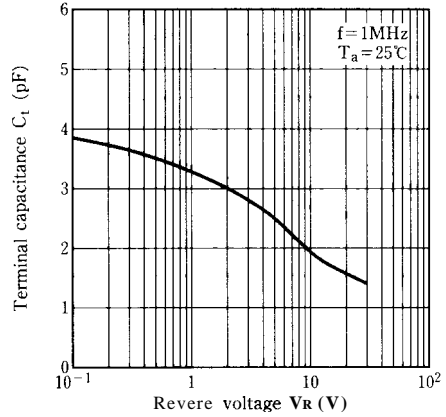


Fig. 5 Relative Output vs. Ambient Temperature

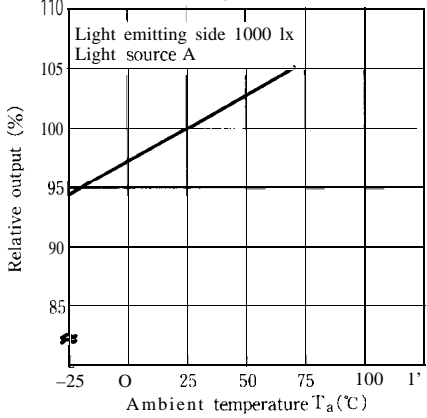


Fig. 6 Collector Current vs. Illuminance

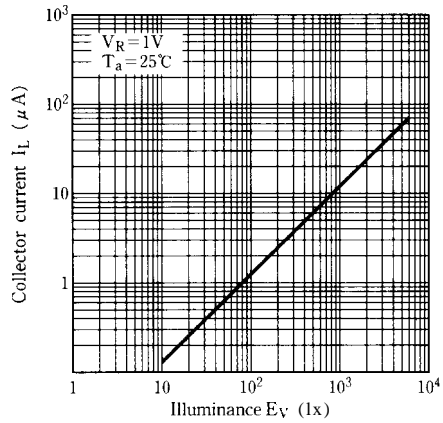
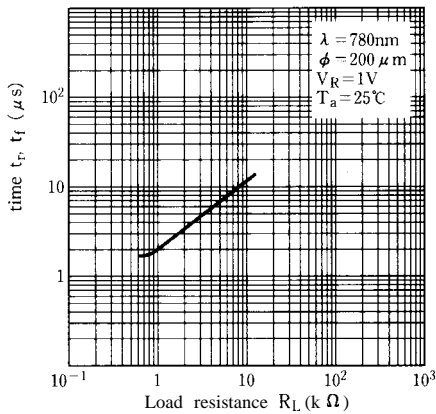
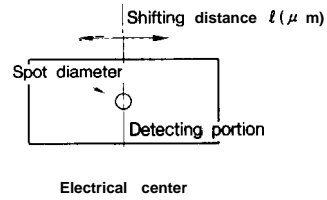
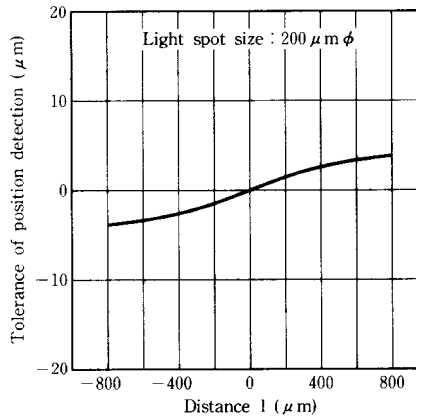


Fig. 7 Response Time vs. Load Resistance



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Fig. 8 Tolerance of Position Detection vs. Distance

- Please refer to the chapter "Precautions for Use" (Page 78 to 93)