PD3151F

Position Sensitive Detector with Location Hole (PSD *)

■ Features

1. Easy high accuracy positioning owing to location hole
   Detecting portion pattern positional accuracy : ± 0.1 mm
2. Thin, compact package
3. Visible light cut-off type

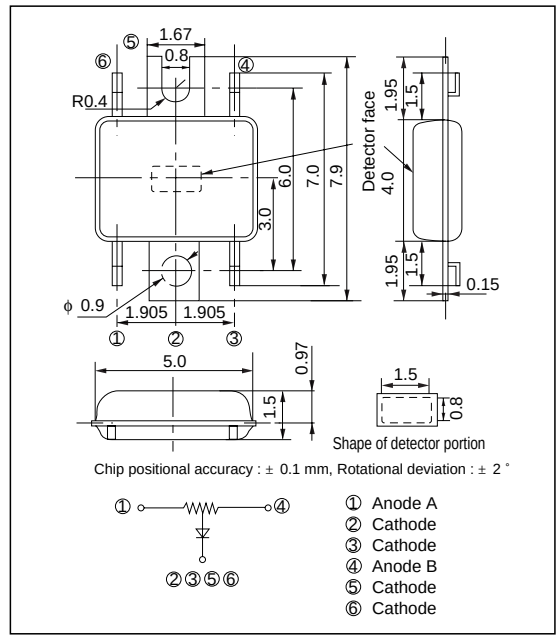
■ Applications

1. Cameras

   * PSD: Position Sensitive Detector

■ Outline Dimensions

(Unit : mm)

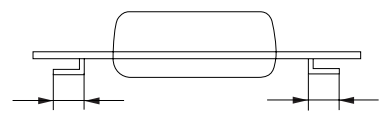


■ Absolute Maximum Ratings

(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 in the soldering area



Soldering area

■ Electro-optical Characteristics

(Ta=25 ˚C)

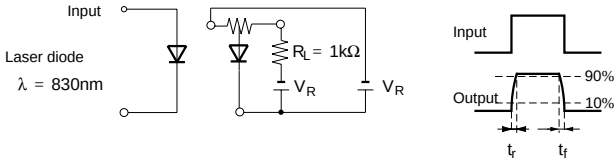
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Reverse voltage	V_R	I_R = 10μ A	30	-	-	V
Dark current	I_d	V_R = 1V	-	-	1.5	nA
Collector current	*2 I_L	V_R = 1V, E_V = 1000 lx	6	10	-	μ A
Terminal capacitance	C_t	V_R = 1V, f = 10kHz	-	10	30	pF
Peak sensitivity wavelength	λ_P	-	-	940	-	nm
Sensitivity wavelength range	λ	-	770	-	1130	nm
Response time	*3 t_r, t_f	V_R = 1V, R_L = 1kΩ	-	5	30	μs
Resistance between electrodes	Rie	V_R = 1V, V_a = 0.5V	320	400	480	kΩ
Error of position detection	*4 -	-	-	-	±25	μm
Sensitivity	R	-	-	0.5	-	A/W
Forward voltage	V_F	I_F = 1mA	-	-	1.0	V

*2 $I_L = I_1 + I_2$

where, I_1 and I_2 are collector current of A1 and A2 respectively.

Ev : Illuminance by CIE standard light source A (tungsten lamp)

*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 is defined by the following formula, if electrical center position is $I_1 = I_2$.

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

L : Length of light detector surface =1.5mm

Fig. 1 Spectral Sensitivity

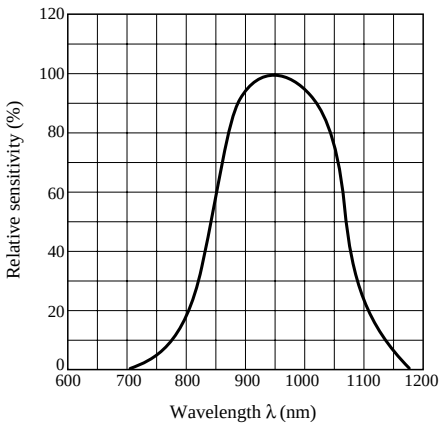


Fig. 2 Dark Current vs. Ambient Temperature

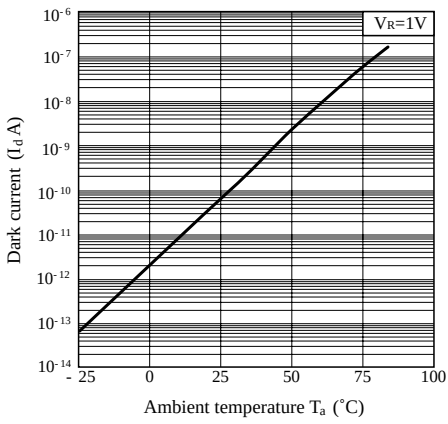


Fig. 3 Dark Current vs. Reverse Voltage

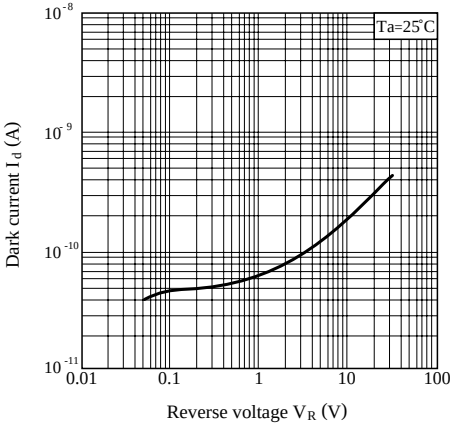


Fig. 4 Terminal Capacitance vs. Reverse Voltage

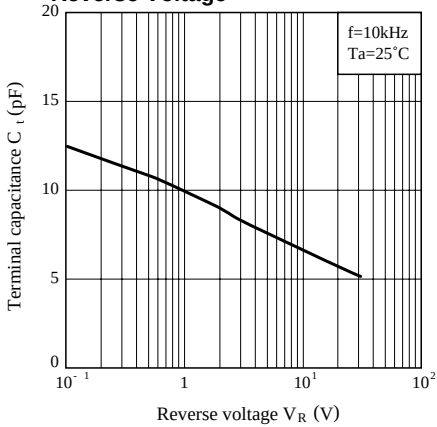


Fig. 5 Relative Output vs. Ambient Temperature

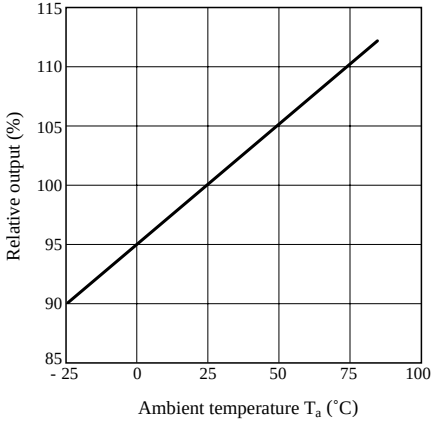
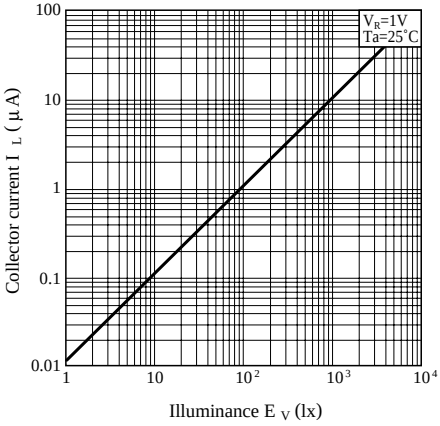


Fig. 6 Collector Current vs. Illuminance



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