

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

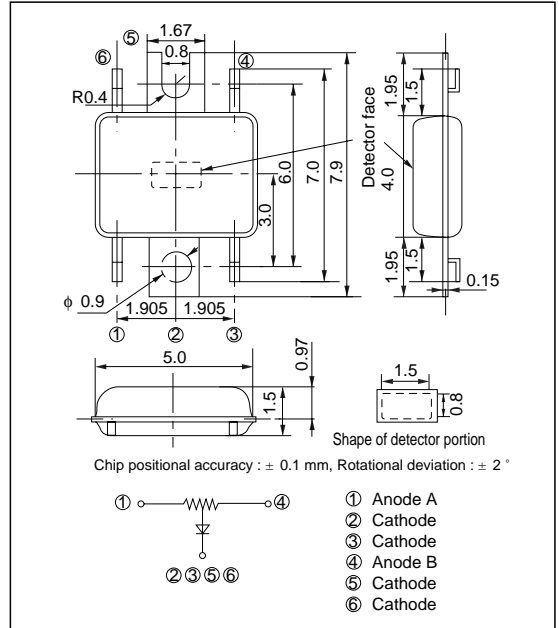
■ Applications

1. Cameras

* PSD: Position Sensitive Detector

■ Outline Dimensions

(Unit : mm)

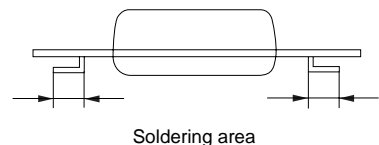


■ Absolute Maximum Ratings

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

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

*1 For MAX. 3 seconds in the soldering area



Electro-optical Characteristics

(Ta=25 °C)

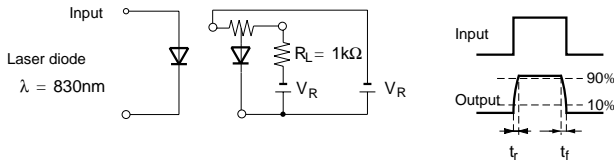
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Reverse voltage	V _R	I _R = 10μ A	30	-	-	V
Dark current	I _d	V _R = 1V	-	-	1.5	nA
Collector current	*2 I _L	V _R = 1V, E _v = 1000 lx	6	10	-	μ A
Terminal capacitance	C _t	V _R = 1V, f = 10kHz	-	10	30	pF
Peak sensitivity wavelength	λ _P	-	-	940	-	nm
Sensitivity wavelength range	λ	-	770	-	1130	nm
Response time	*3 t _r , t _f	V _R = 1V, R _L = 1kΩ	-	5	30	μ s
Resistance between electrodes	R _{ie}	V _R = 1V, V _a = 0.5V	320	400	480	kΩ
Error of position detection	*4 -	-	-	-	±25	μ m
Sensitivity	R	-	-	0.5	-	A/W
Forward voltage	V _F	I _F = 1mA	-	-	1.0	V

*2 I_L = I₁ + I₂

where, I₁ and I₂ are collector current of A1 and A2 respectively.

E_v: 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 I₁ = I₂.

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

L: Length of light detector surface = 1.5mm

Fig. 1 Spectral Sensitivity

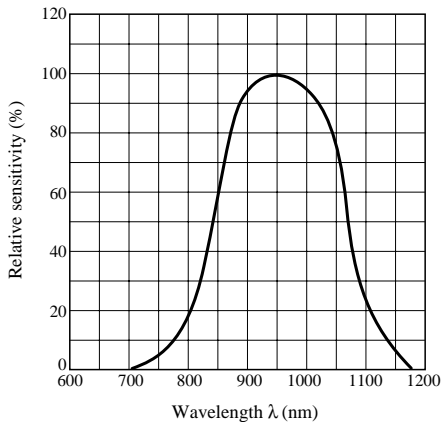


Fig. 2 Dark Current vs. Ambient Temperature

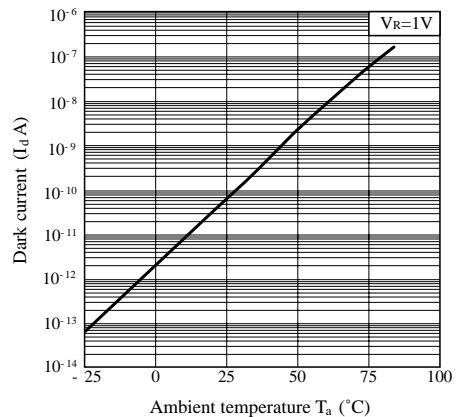


Fig. 3 Dark Current vs. Reverse Voltage

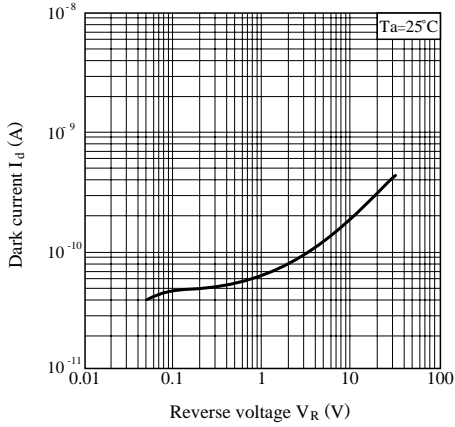


Fig. 4 Terminal Capacitance vs. Reverse Voltage

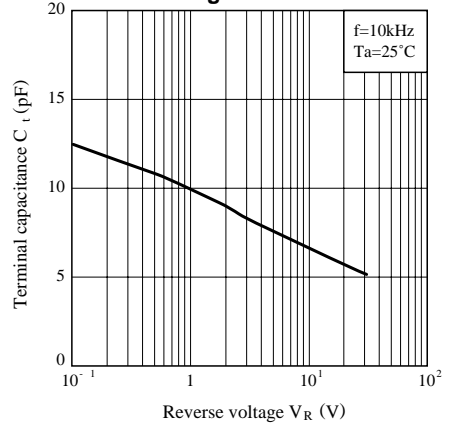


Fig. 5 Relative Output vs. Ambient Temperature

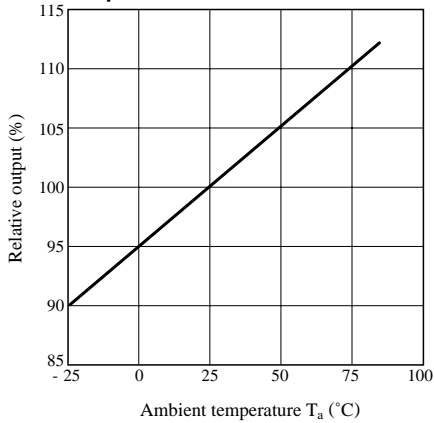
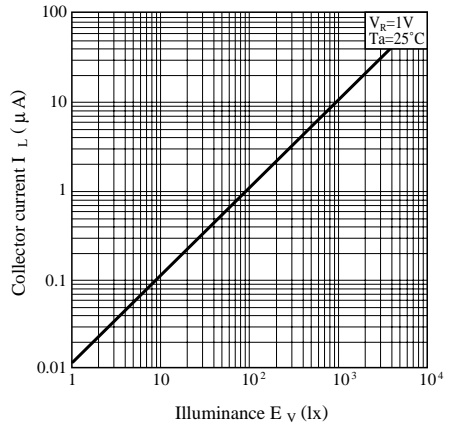


Fig. 6 Collector Current vs. Illuminance



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