

# PD413PI

## High Speed Type Photodiode

### ■ Features

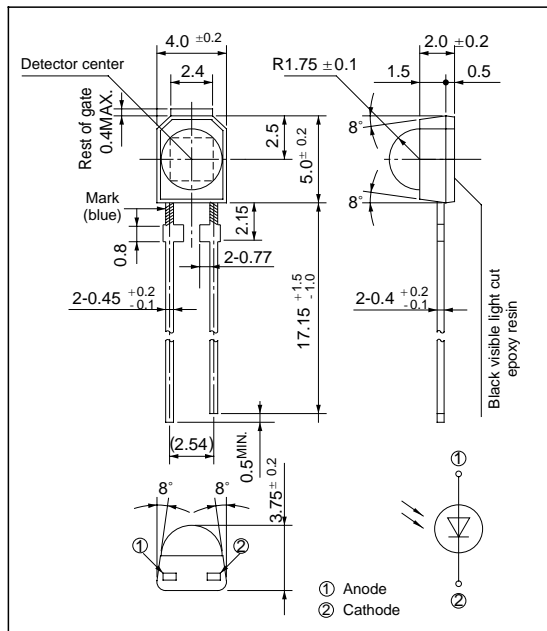
1. Built-in visible light cut-off filter  
(Sensitivity wavelength range : 750 to 1070 nm)
2. Half intensity angle :  $\Delta\theta : \pm 45^\circ$

### ■ Applications

1. Portable information terminal equipment
2. Personal computers
3. Printers

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse voltage	$V_R$	32	V
Power dissipation	P	150	mW
Operating temperature	$T_{opr}$	- 25 to + 85	°C
Storage temperature	$T_{stg}$	- 40 to + 100	°C
*1 Soldering temperature	$T_{sol}$	260	°C

\*1 For 5 seconds at the position of 2.15 mm from bottom face of resin package

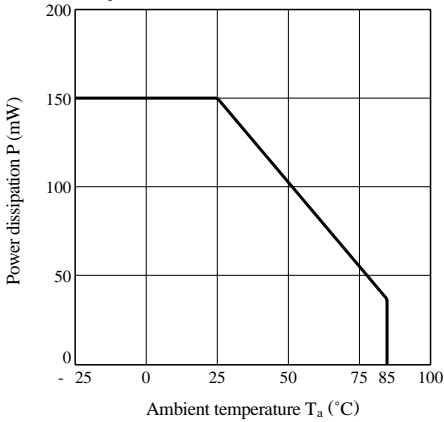
### ■ Electro-optical Characteristics

(Ta=25 °C)

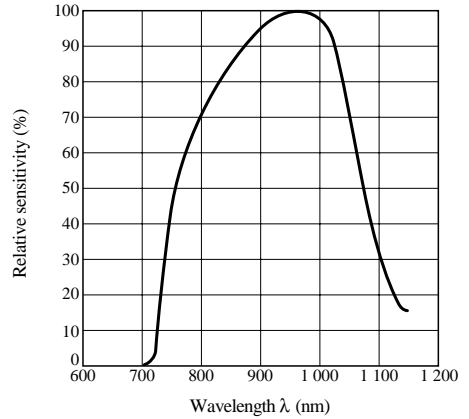
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Shortcircuit current	$I_{SC}$	$E_v^{*2} = 100 \text{ lx}$	4.5	5.4	8.1	$\mu\text{A}$
Dark current	$I_d$	$V_R = 10\text{V}, E_v = 0$	-	-	10	nA
Forward voltage	$V_F$	$I_F = 1\text{mA}$	-	-	1	V
Terminal capacitance	$C_t$	$V_R = 3\text{V}, f = 1\text{MHz}$	-	20	35	pF
Peak sensitivity wavelength	$\lambda_p$	-	-	960	-	nm
Half intensity angle	$\Delta\theta$	-	-	$\pm 45$	-	°
Response time	$t_r, t_f$	$R_L = 1\text{k}\Omega, V_R = 10\text{V}$	-	200	-	ns

\*2  $E_v$  : Illuminance by CIE standard light source A (tungsten lamp)

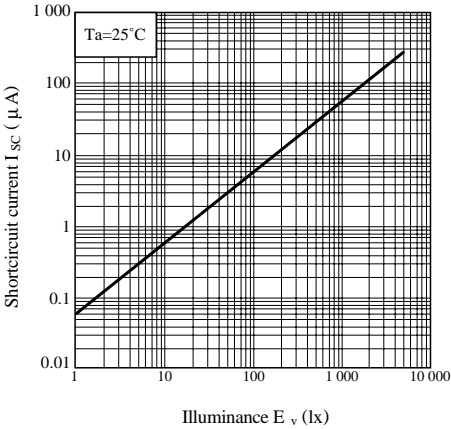
**Fig. 1 Power Dissipation vs. Ambient Temperature**



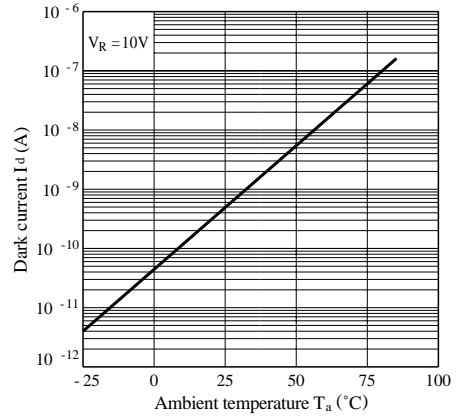
**Fig. 2 Spectral Sensitivity**



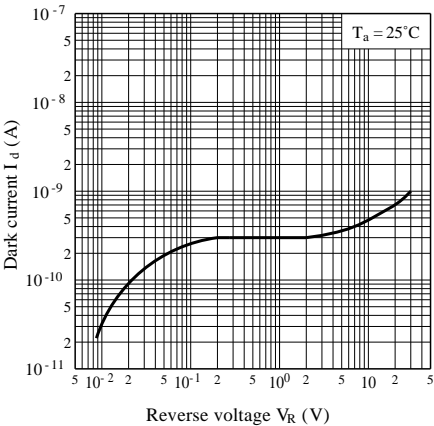
**Fig. 3 Shortcircuit Current vs. Illuminance**



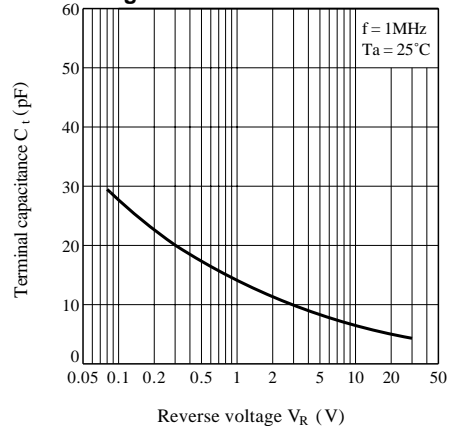
**Fig. 4 Dark Current vs. Ambient Temperature**



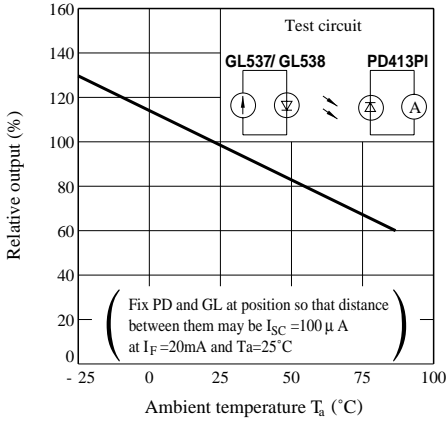
**Fig. 5 Dark Current vs. Reverse Voltage**



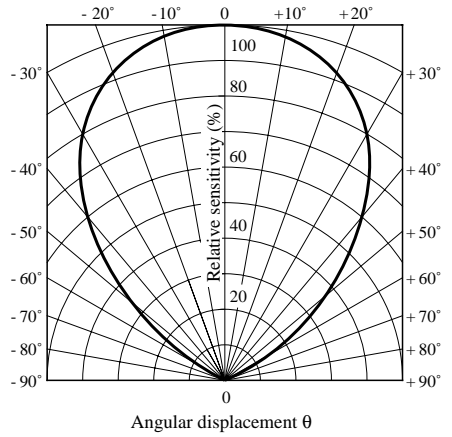
**Fig. 6 Terminal Capacitance vs. Reverse Voltage**



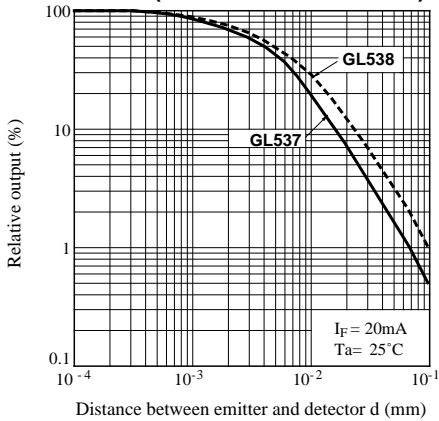
**Fig. 7 Relative Output vs. Ambient Temperature (Detector : GL537/GL538)**



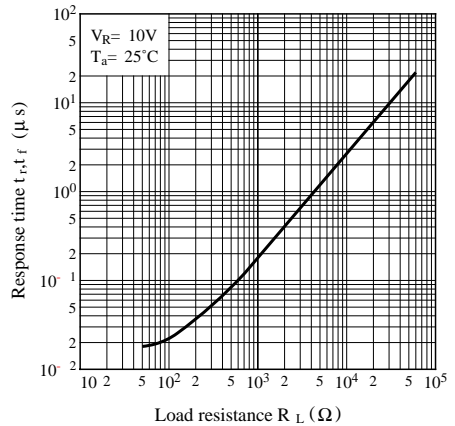
**Fig. 8 Radiation Diagram ( $T_a = 25^{\circ}\text{C}$ )**



**Fig. 9 Relative Output vs. Distance (Detector : GL537/GL538)**



**Fig. 10 Response Time vs. Load Resistance**



**Test Circuit for Response Time**

