

# PD41 OPI

## High Speed Photodiode

### Features

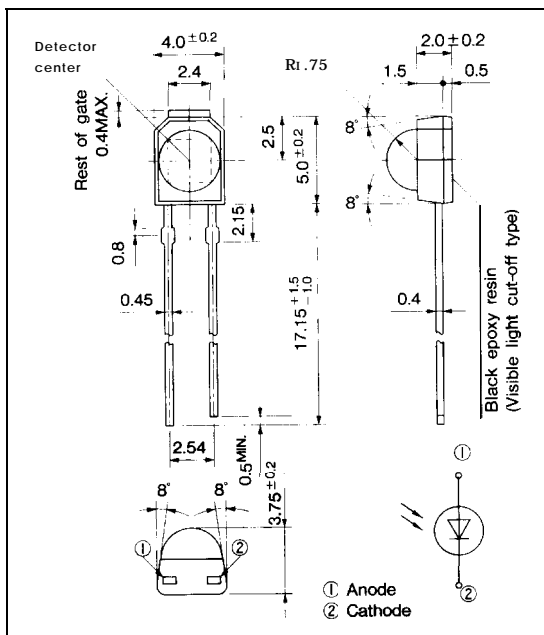
1. Peak sensitivity wavelength matching with infrared LED ( $\lambda_p = 1\ 000\text{nm}$ )
2. Built-in visible light cut-off filter

### Applications

1. Infrared remote controllers for TVs, VCRs, audio equipment and air conditioners, etc.

### Outline Dimensions

(Unit : mm)



4  
PIN Photodiodes

### Absolute Maximum Ratings

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

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

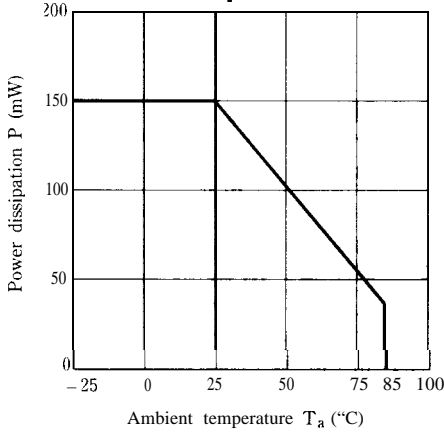
\*1 For 5 seconds at the position of 2.3mm from the bottom face of resin package

### Electro-optical Characteristics

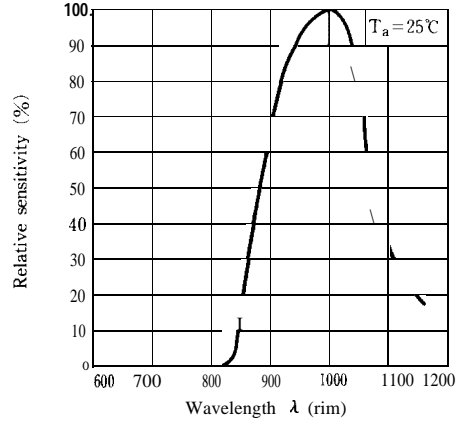
( $T_a = 25^\circ\text{C}$ )

| Parameter                                     | Symbol         | Conditions                                | MIN. | TYP.     | MAX. | Unit                      |
|---|----------------|---|------|----------|------|---------------------------|
| Shortcircuit current                          | $I_{sc}$       | $E_v = 100\ \text{lx}$                    | 2.5  | 3.0      | —    | $\mu\text{A}$             |
| Short-circuit current temperature coefficient | $\beta_T$      | $E_v = 100\ \text{lx}$                    | —    | 0.2      | —    | $\%/^\circ\text{C}$       |
| Dark current                                  | $I_d$          | $V_R = 10\text{V}, E_v = 0$               | —    | 0.5      | 10   | nA                        |
| Dark current temperature coefficient          | $\alpha_T$     | $V_R = 10\text{V}, E_v = 0$               | —    | 3.5      | 5.0  | times/ $10^\circ\text{C}$ |
| Terminal capacitance                          | $C_t$          | $V_R = 3\text{V}, f = 1\text{MHz}$        | —    | 20       | 35   | pF                        |
| Peak sensitivity wavelength                   | $\lambda_p$    |   | —    | 1000     | —    | nm                        |
| Peak spectral sensitivity                     | K              | $\lambda = 1000\text{nm}$                 | —    | 1        | —    | A/W                       |
| 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                        |

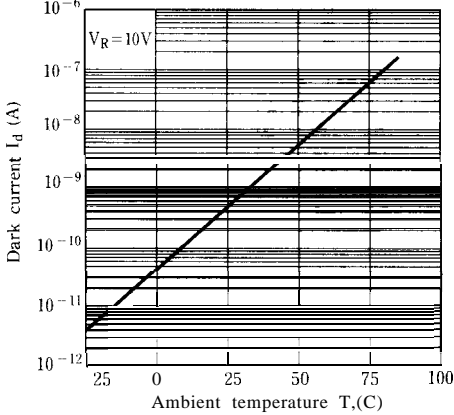
**Fig. 1 Power Dissipation vs. Ambient Temperature**



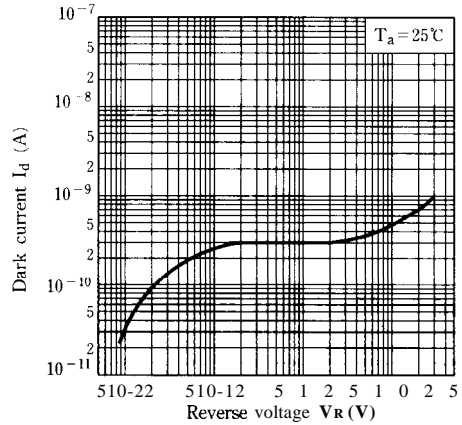
**Fig. 2 Spectral Sensitivity**



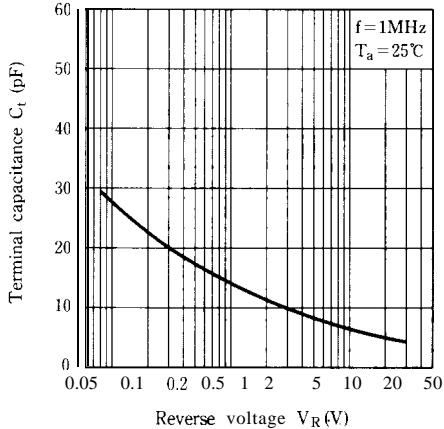
**Fig. 3 Dark Current vs. Ambient Temperature**



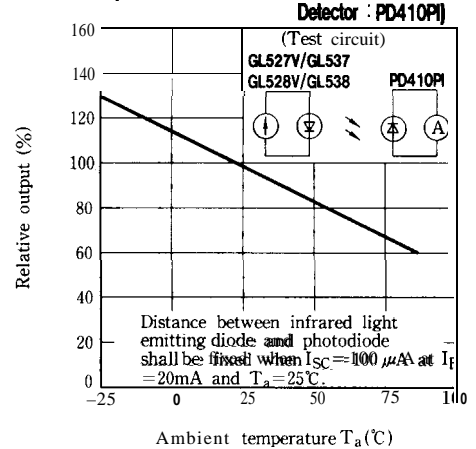
**Fig. 4 Dark Current vs. Reverse Voltage**



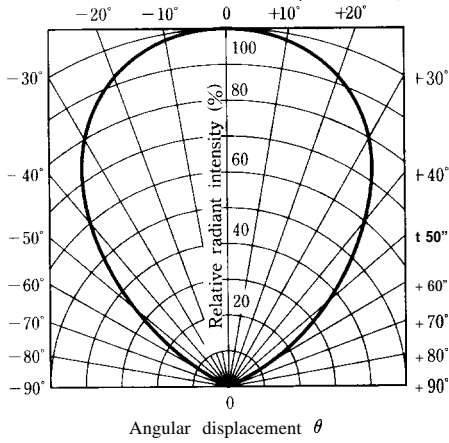
**Fig. 5 Terminal Capacitance vs. Reverse Voltage**



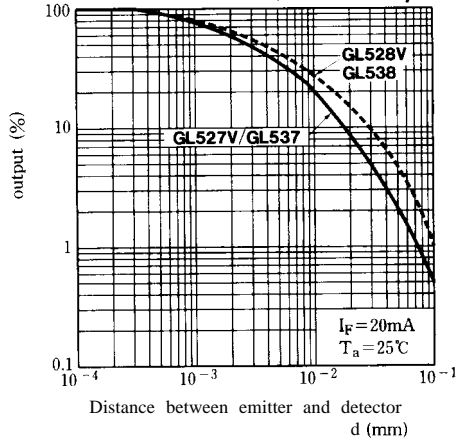
**Fig. 6 Relative Output vs. Ambient Temperature**



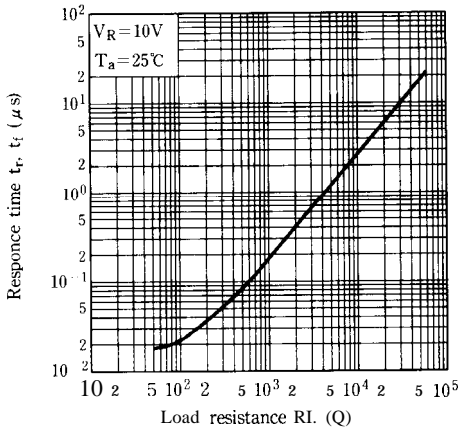
**Fig. 7 Sensitivity Diagram** ( $T_a=25^\circ\text{C}$ )



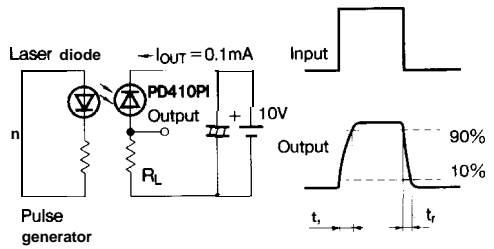
**Fig. 8 Relative Output ve. Distance**  
(Emitter : GL527V/GL537/GL528V/GL538, Detector : PD410PI)



**Fig. 9 Response Time vs. Load Resistance**



**Test Circuit for Response Time**



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