

# PNZ323B

## PIN Photodiode

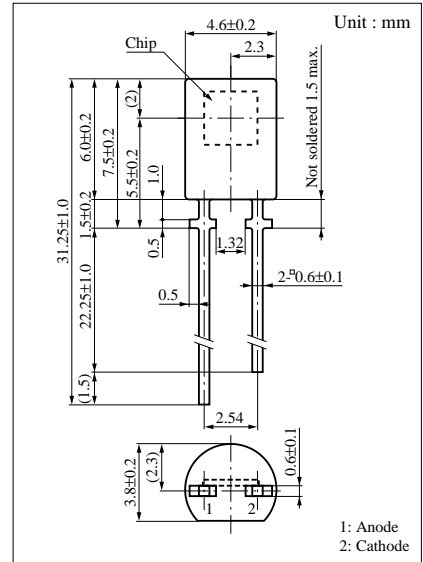
For optical control systems

### ■ Features

- Fast response which is well suited to high speed modulated light detection :  $t_r, t_f = 50$  ns (typ.)
- High sensitivity, high reliability
- Peak sensitivity wavelength matched with infrared light emitting diodes :  $\lambda_p = 970$  nm (typ.)
- Wide detection area, wide acceptance half angle :  $\theta = 70$  deg. (typ.)
- Adoption of visible light cutoff resin

### ■ Absolute Maximum Ratings (Ta = 25°C)

| Parameter                     | Symbol    | Ratings     | Unit |
|-------------------------------|-----------|-------------|------|
| Reverse voltage (DC)          | $V_R$     | 30          | V    |
| Power dissipation             | $P_D$     | 100         | mW   |
| Operating ambient temperature | $T_{opr}$ | -30 to +85  | °C   |
| Storage temperature           | $T_{stg}$ | -40 to +100 | °C   |



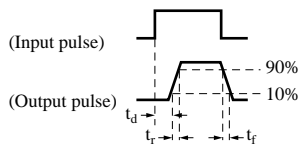
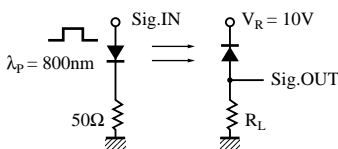
### ■ Electro-Optical Characteristics (Ta = 25°C)

| Parameter                        | Symbol                   | Conditions                                             | min | typ | max | Unit |
|----------------------------------|--------------------------|--------------------------------------------------------|-----|-----|-----|------|
| Dark current                     | $I_D$                    | $V_R = 10V$                                            |     | 5   | 50  | nA   |
| Photo current                    | $I_L$                    | $V_R = 10V, L = 1000$ lx <sup>*1</sup>                 |     | 31  |     | μA   |
| Sensitivity to infrared emitters | $S_{IR}$ <sup>*2</sup>   | $V_R = 5V, H = 0.1$ mW/cm <sup>2</sup>                 | 3.2 | 4   |     | μA   |
| Peak sensitivity wavelength      | $\lambda_p$              | $V_R = 10V$                                            |     | 970 |     | nm   |
| Response time                    | $t_r, t_f$ <sup>*3</sup> | $V_R = 10V, R_L = 1$ kΩ                                |     | 50  |     | ns   |
| Response time                    | $t_r, t_f$ <sup>*3</sup> | $V_R = 10V, R_L = 100$ kΩ                              |     | 5   |     | μs   |
| Capacitance between pins         | $C_t$                    | $V_R = 0V, f = 1$ MHz                                  |     | 70  |     | pF   |
| Acceptance half angle            | $\theta$                 | Measured from the optical axis to the half power point |     | 70  |     | deg. |

<sup>\*1</sup> Measurements were made using a tungsten lamp (color temperature T = 2856K) as a light source.

<sup>\*2</sup> Light source :  $\lambda = 940$  nm

<sup>\*3</sup> Switching time measurement circuit



$t_d$  : Delay time

$t_r$  : Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)

$t_f$  : Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

