

PNZ1270

Silicon NPN Phototransistor

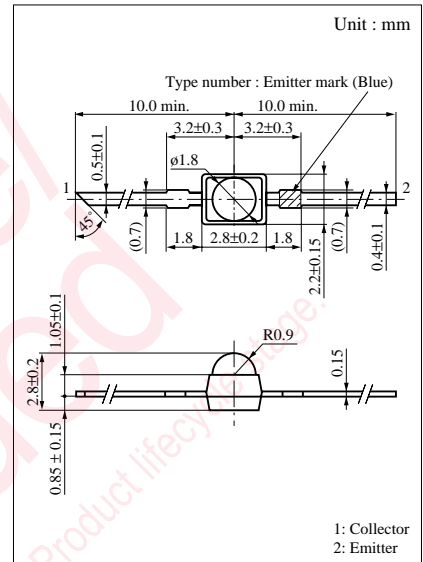
For optical control systems

■ Features

- High sensitivity
- Good collector photo current linearity with respect to optical power input
- Fast response : $t_r = 2.5 \mu s$ (typ.)
- Small size designed for easier mounting to printed circuit board

■ Absolute Maximum Ratings (Ta = 25°C)

| Parameter | Symbol | Rated | Unit |
|-------------------------------|-----------|-------------|------|
| Collector to emitter voltage | V_{CEO} | 20 | V |
| Emitter to collector voltage | V_{ECO} | 5 | V |
| Collector current | I_C | 20 | mA |
| Collector power dissipation | P_C | 50 | mW |
| Operating ambient temperature | T_{opr} | -25 to +85 | °C |
| Storage temperature | T_{stg} | -30 to +100 | °C |

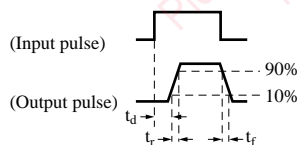
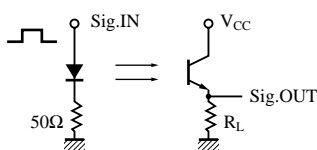


■ Electro-Optical Characteristics (Ta = 25°C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|-----------------------------|------------------|--|-----|-----|------|---------|
| Dark current | I_{CEO} | $V_{CE} = 10V$ | | 1 | 100 | nA |
| Collector photo current | $I_{CE(L)}^{*3}$ | $V_{CE} = 10V, L = 1000 \text{ lx}^{*1}$ | 0.8 | | 19.2 | mA |
| Peak sensitivity wavelength | λ_p | $V_{CE} = 10V$ | | 800 | | nm |
| Acceptance half angle | θ | Measured from the optical axis to the half power point | | 14 | | deg. |
| Rise time | t_r^{*2} | $V_{CC} = 10V, I_{CE(L)} = 1mA, R_L = 100\Omega$ | | 2.5 | | μs |
| Fall time | t_f^{*2} | | | 3.5 | | μs |

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

*2 Switching time measurement circuit



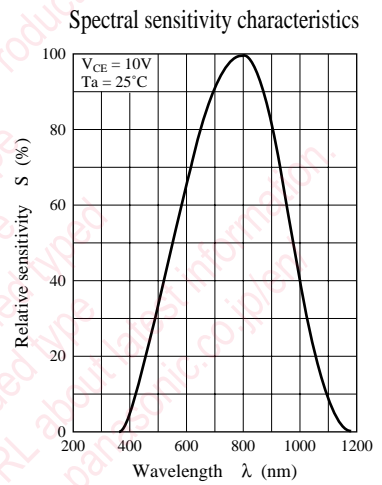
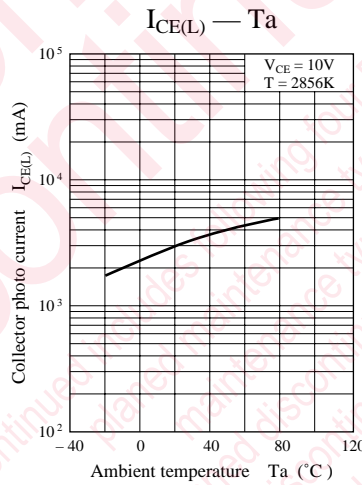
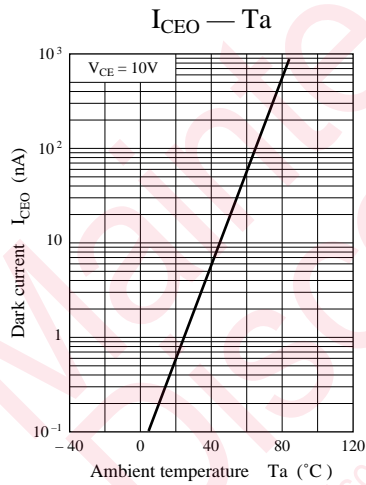
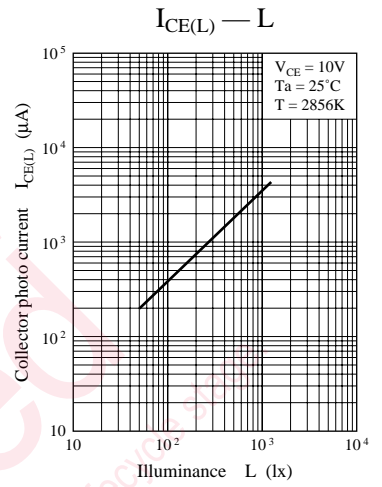
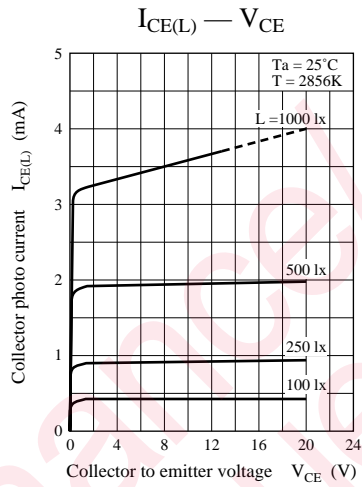
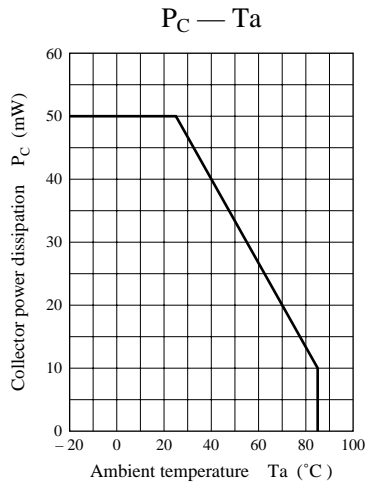
t_d : Delay time

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

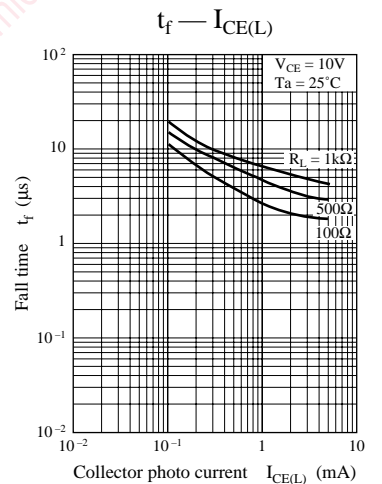
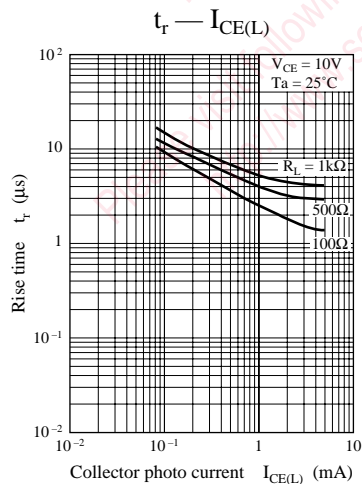
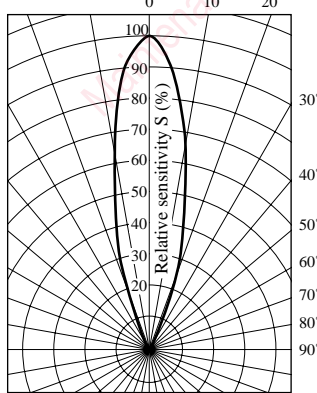
t_f : Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

*3 $I_{CE(L)}$ Classifications

| Class | Q | R | S | T |
|------------------|------------|------------|------------|-------------|
| $I_{CE(L)}$ (mA) | 0.8 to 2.4 | 1.6 to 4.8 | 3.2 to 9.6 | 6.4 to 19.2 |



Directivity characteristics



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