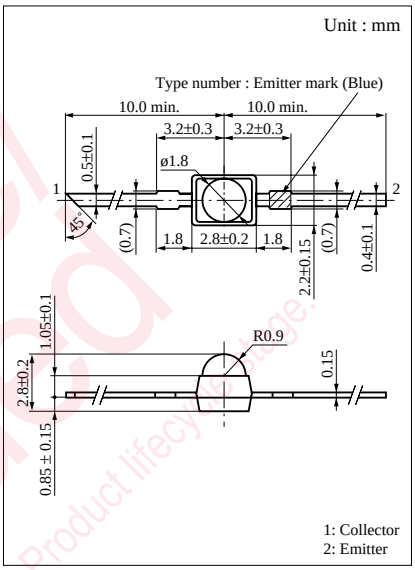
# PNZ1270

## 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 µs (typ.)
- Small size designed for easier mounting to printed circuit board

### Absolute Maximum Ratings (Ta = 25˚C)

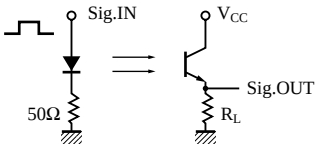
| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to emitter voltage | $V_{CEO}$ | 20 | V |
| Emitter to collector voltage | $V_{ECO}$ | 5 | V |
| Collector current | $I_C$ | 20 | mA |
| Collector power dissipation | $P_C$ | 50 | mW |
| Operating ambient temperature | $T_{opr}$ |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

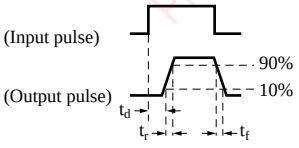
### Electro-Optical Characteristics (Ta = 25˚C)

| 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 lx*1 | 0.8 | | 19.2 | mA |
| Peak sensitivity wavelength | $\lambda_P$ | $V_{CE}$ = 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, $R_L$ = 100Ω | | 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)

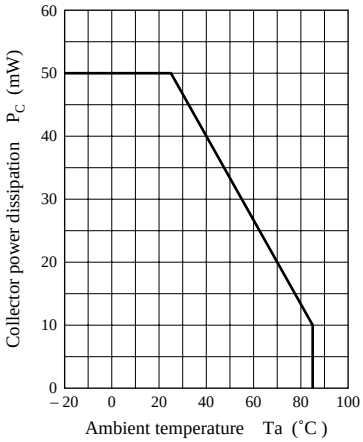
$t_f$ : Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

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

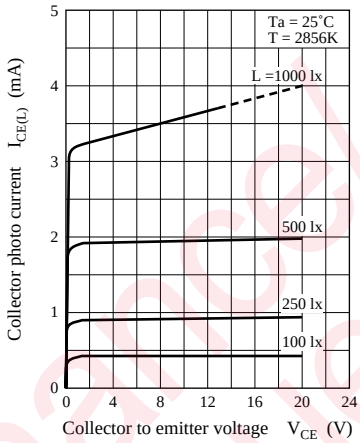
| Class | Q | R | S | T |
|---|---|---|---|---|
| $I_{CE(L)}$ (mA) | 0.8 to 2.4 | 1.6 to 4.8 | 3.2 to 9.6 | 6.4 to 19.2 |

Maintenance/ Discontinued
Maintenance/discontinued includes following four Product lifecycle phase.
planned maintenance type
maintenance type
discontinued typed
discontinued type
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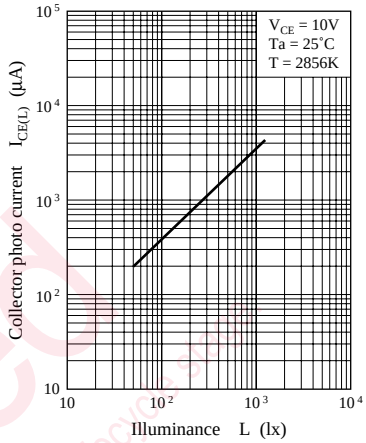
$P_C$ — Ta



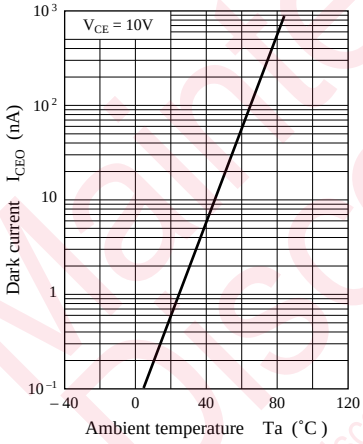

$I_{CE(L)}$ — $V_{CE}$



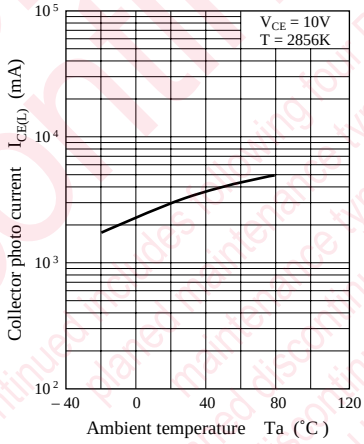

$I_{CE(L)}$ — L



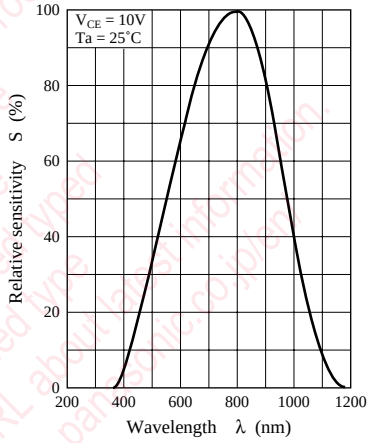

$I_{CEO}$ — Ta



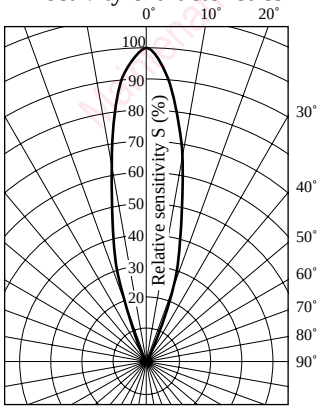

$I_{CE(L)}$ — Ta



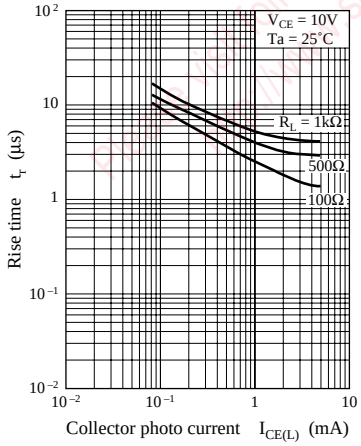

Spectral sensitivity characteristics



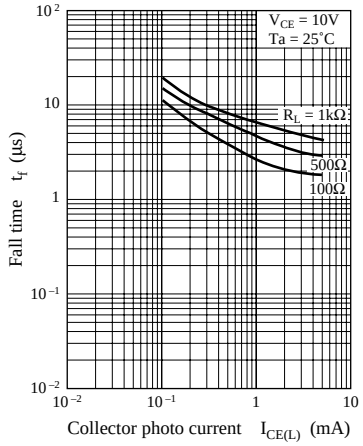

Directivity characteristics




$t_r$ — $I_{CE(L)}$




$t_f$ — $I_{CE(L)}$




Maintenance/Discontinued
Planned discontinued type
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