

# PNZ147 (PN147)

## Silicon NPN Phototransistor

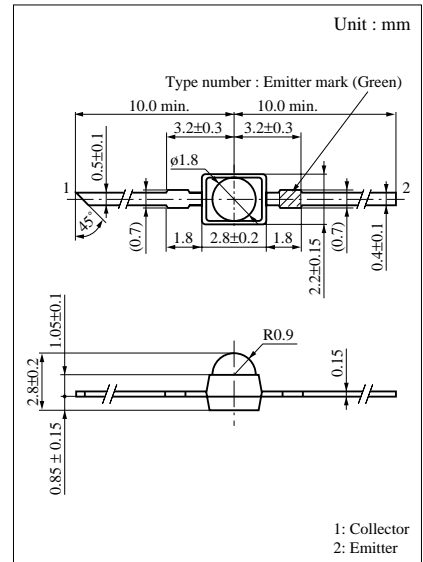
For optical control systems

### ■ Features

- High sensitivity
- Wide spectral sensitivity, matched to GaAs LEDs
- Fast response :  $t_r, t_f = 3 \mu\text{s}$  (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

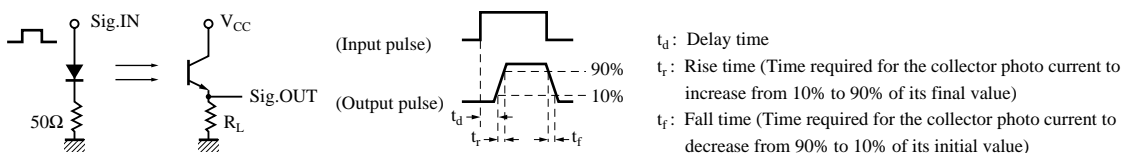


### ■ Electro-Optical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	$I_{CEO}$	$V_{CE} = 10V$		0.01	0.5	$\mu\text{A}$
Collector photo current	$I_{CE(L)1}^{*3}$	$V_{CE} = 10V, L = 2 \text{ lx}^{*1}$	3	12		$\mu\text{A}$
	$I_{CE(L)2}$	$V_{CE} = 10V, L = 500 \text{ lx}^{*1}$		3.5		mA
Peak sensitivity wavelength	$\lambda_p$	$V_{CE} = 10V$		800		nm
Acceptance half angle	$\theta$	Measured from the optical axis to the half power point		24		deg.
Response time	$t_r, t_f^{*2}$	$V_{CC} = 10V, I_{CE(L)} = 5\text{mA}, R_L = 100\Omega$		3	10	$\mu\text{s}$
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 1\text{mA}, L = 1000 \text{ lx}^{*1}$		0.2	0.5	V

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

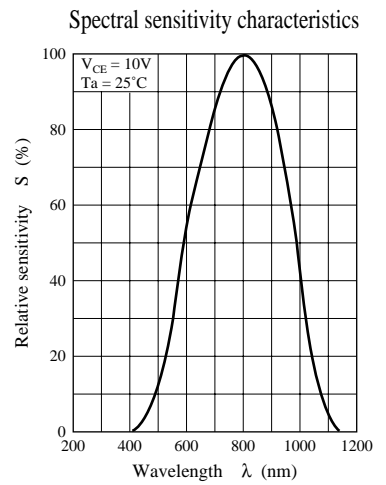
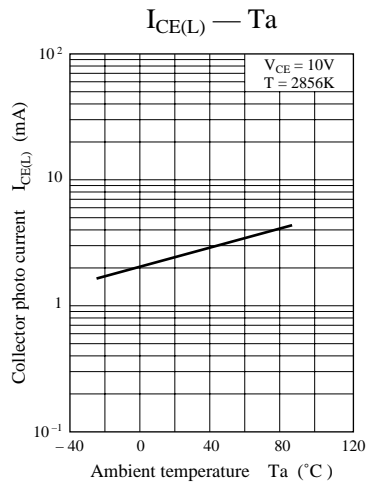
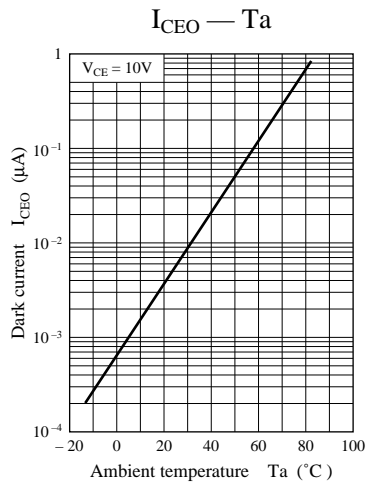
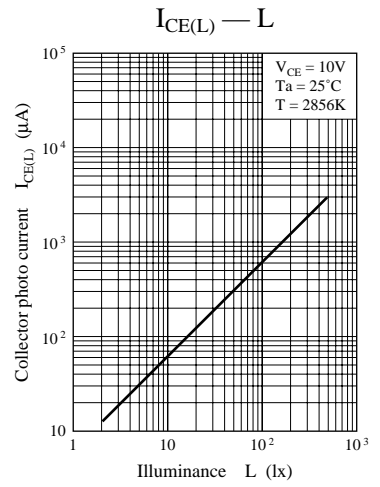
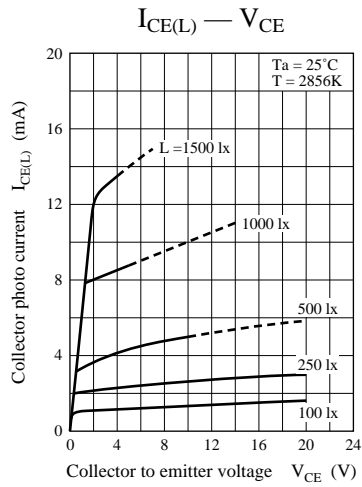
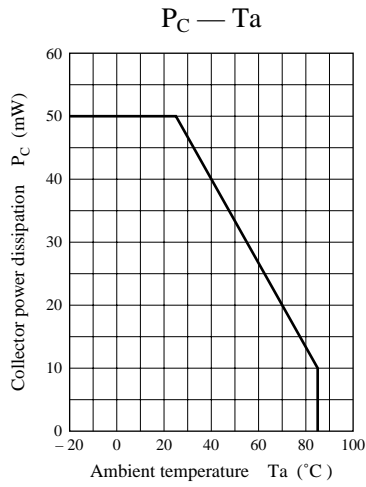
\*2 Switching time measurement circuit



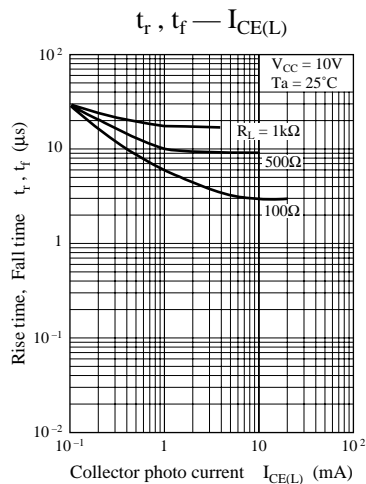
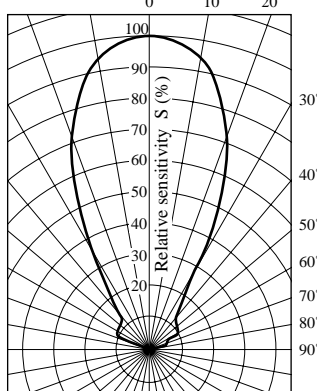
\*3  $I_{CE(L)}$  Classifications

Class	Q	R	S
$I_{CE(L)}$ ( $\mu\text{A}$ )	3.0 to 11.0	7.0 to 24.0	>16.0

(Note) The part number in the parenthesis shows conventional part number.



### Directivity characteristics



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