

PNZ121S (PN121S)

Silicon NPN Phototransistor

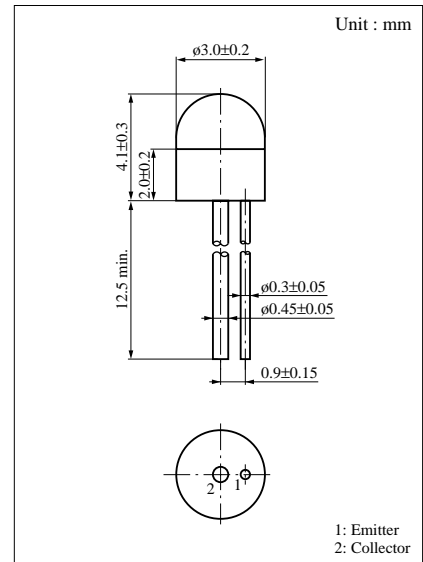
For optical control systems

■ Features

- Stable operations in high illuminance region
- Low dark current
- Fast response : $t_r = 1 \mu\text{s}$ (typ.)
- Small size ($\phi 3$) ceramic package

■ Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	20	V
Emitter to collector voltage	V_{ECO}	5	V
Collector current	I_{C}	10	mA
Collector power dissipation	P_{C}	50	mW
Operating ambient temperature	T_{opr}	-25 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}	-30 to +100	$^\circ\text{C}$



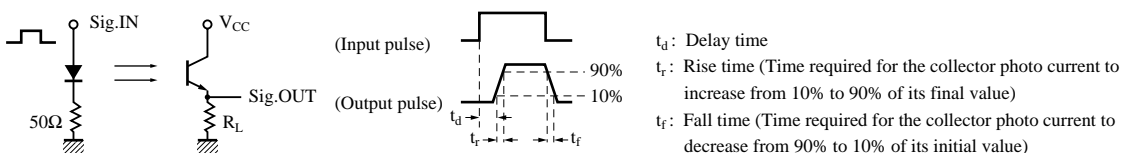
Unit : mm
1: Emitter
2: Collector

■ Electro-Optical Characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{\text{CE}} = 10\text{V}$		1	100	nA
Collector photo current	$I_{\text{CE(L)}}^{*3}$	$V_{\text{CE}} = 10\text{V}$, $L = 1000 \text{ lx}^{*1}$	120		280	μA
Peak sensitivity wavelength	λ_{p}	$V_{\text{CE}} = 10\text{V}$		800		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		30		deg.
Rise time	t_r^{*2}	$V_{\text{CC}} = 10\text{V}$, $I_{\text{CE(L)}} = 1\text{mA}$, $R_{\text{L}} = 100\Omega$		1		μs
Fall time	t_f^{*2}			1.3		μs

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

*2 Switching time measurement circuit



t_d : Delay time

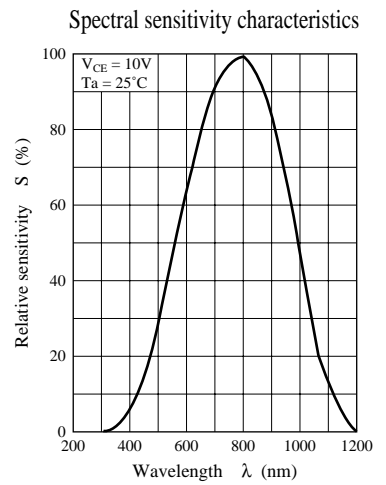
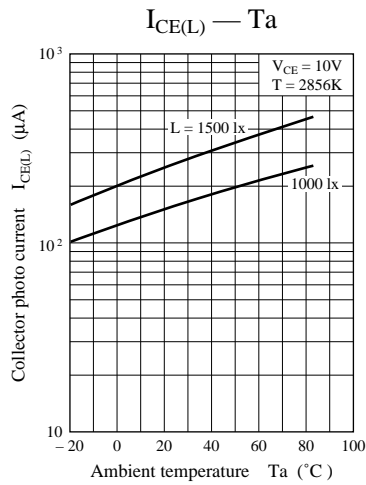
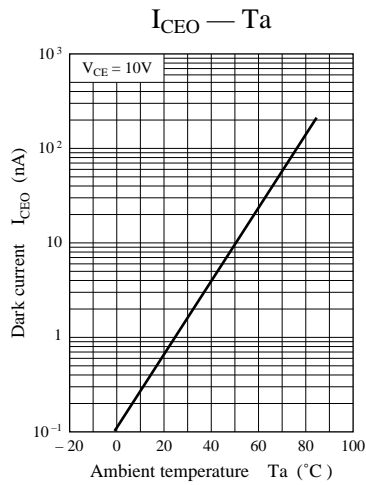
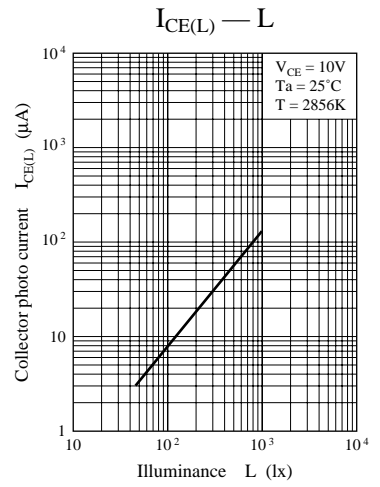
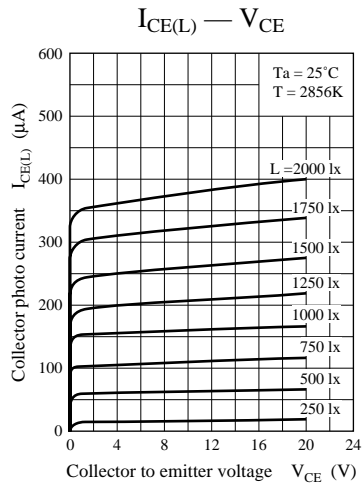
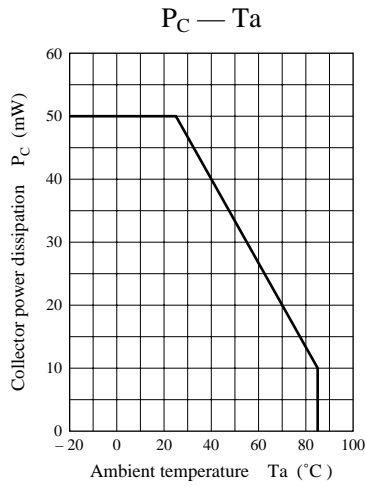
t_r : Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)

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

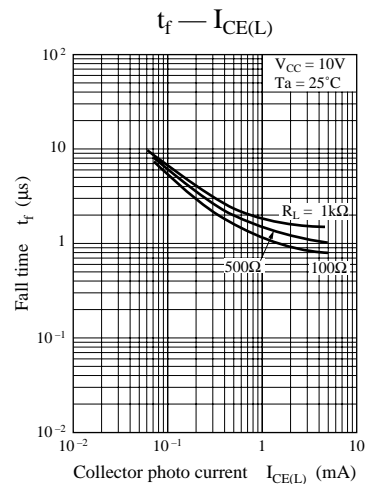
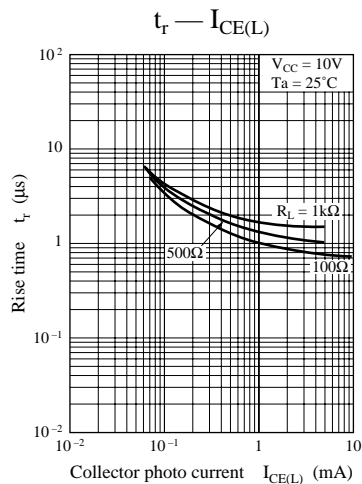
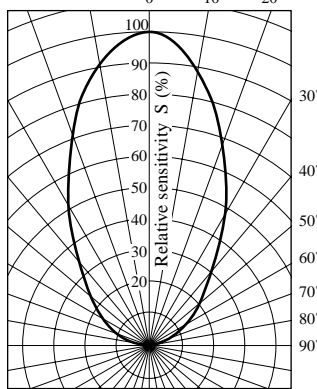
*3 $I_{\text{CE(L)}}$ Classifications

Class	Q	R	S	T
$I_{\text{CE(L)}} (\mu\text{A})$	120 to 180	160 to 200	180 to 235	210 to 280
Color indication	Black	Red	Green	—

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



Directivity characteristics



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