

PNZ102 (PN102)

Silicon NPN Phototransistor

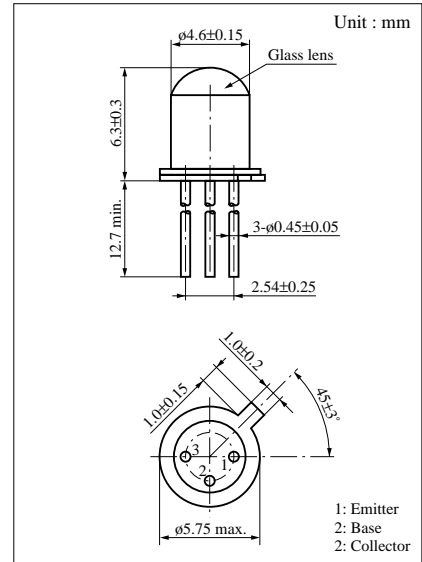
For optical control systems

■ Features

- High sensitivity
- Wide spectral sensitivity, suited for detecting GaAs LEDs
- Low dark current : $I_{CEO} = 5 \text{ nA (typ.)}$
- Fast response : $t_r, t_f = 3 \text{ } \mu\text{s (typ.)}$
- Base pin for easy circuit design
- TO-18 standard type package

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

Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	30	V
Collector to base voltage	V_{CBO}	40	V
Emitter to collector voltage	V_{ECO}	5	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Operating ambient temperature	T_{opr}	-25 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}	-30 to +100	$^\circ\text{C}$

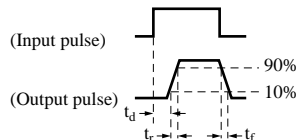
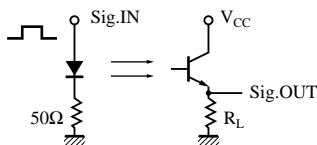


■ Electro-Optical Characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{CE} = 10\text{V}$		5	300	nA
Collector photo current	$I_{CE(L)}$	$V_{CE} = 10\text{V}, L = 100 \text{ lx}^{*1}$	1.5	3.5		mA
Peak sensitivity wave length	λ_p	$V_{CE} = 10\text{V}$		800		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		10		deg.
Response time	t_r, t_f^{*2}	$V_{CC} = 10\text{V}, I_{CE(L)} = 5\text{mA}, R_L = 100\Omega$		3		μs
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 1\text{mA}, L = 500 \text{ lx}^{*1}$		0.2	0.4	V

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

*2 Switching time measurement circuit

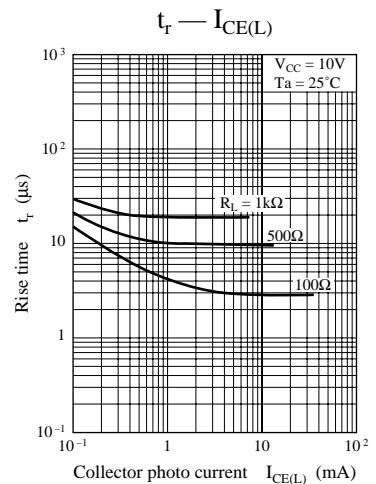
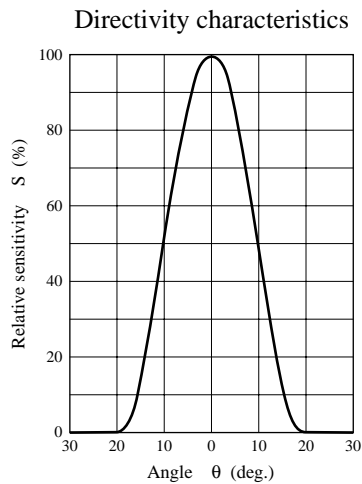
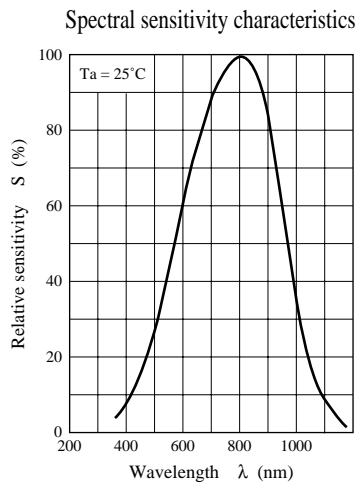
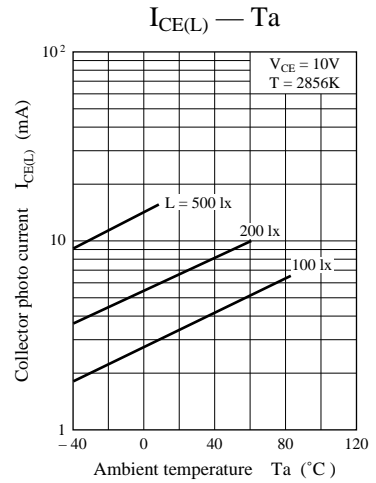
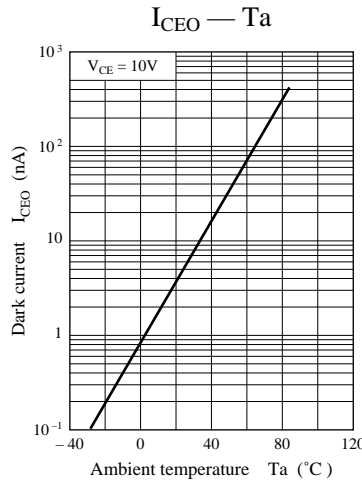
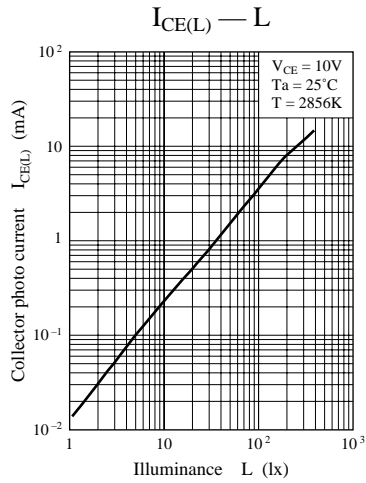
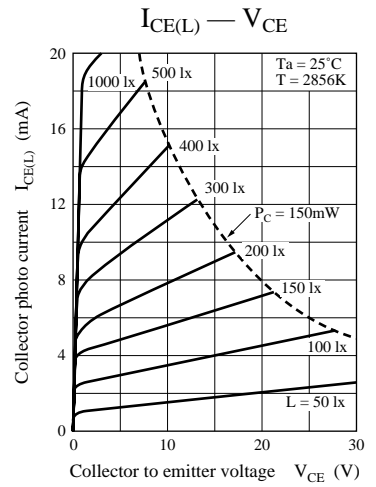
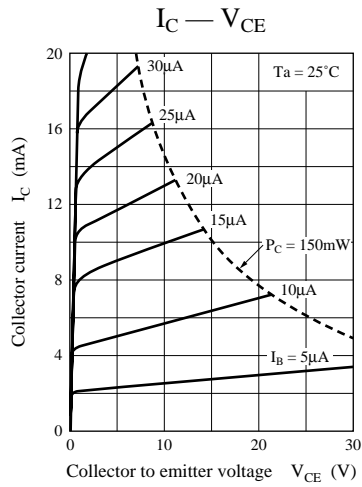
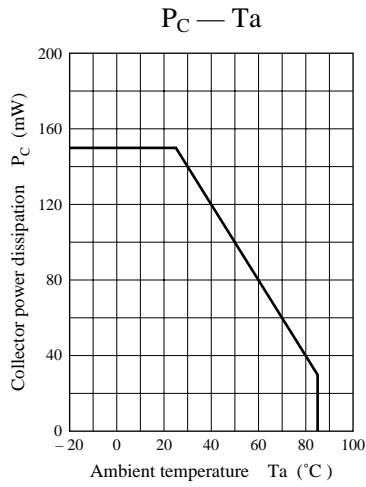


t_d : Delay time

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)

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



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