

PNZ107, PNZ108 (PN107, PN108)

Silicon NPN Phototransistors

For optical control systems

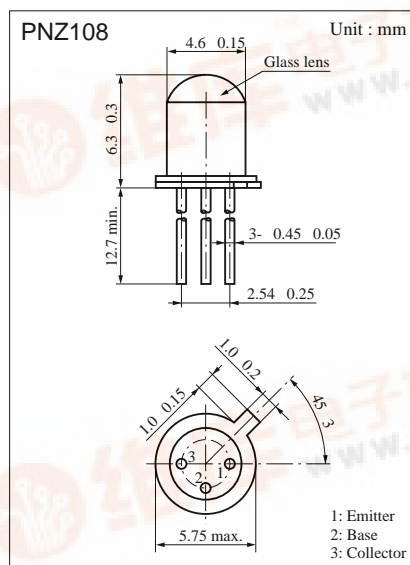
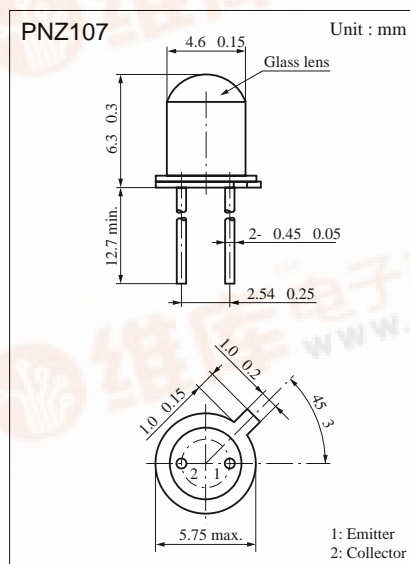
Features

- High sensitivity : $I_{CE(L)} = 5 \text{ mA (min.)}$ (at $L = 100 \text{ lx}$)
- Narrow directional sensitivity for effective use of light input
- Fast response : $t_r = 5 \mu\text{s (typ.)}$
- Signal mixing capability using base pin (PNZ0108)
- TO-18 standard type package

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

Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	20	V
Collector to base voltage	V_{CBO}^*	30	V
Emitter to collector voltage	V_{ECO}	3	V
Emitter to base voltage	V_{EBO}^*	5	V
Collector current	I_C	30	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	$^\circ\text{C}$

* PNZ108 only

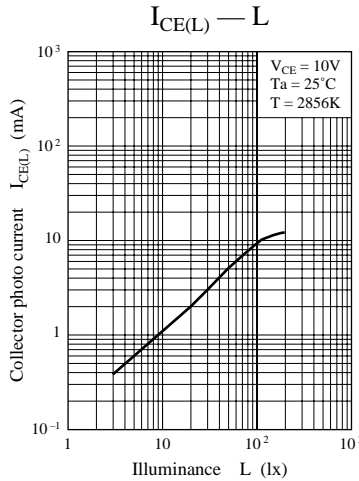
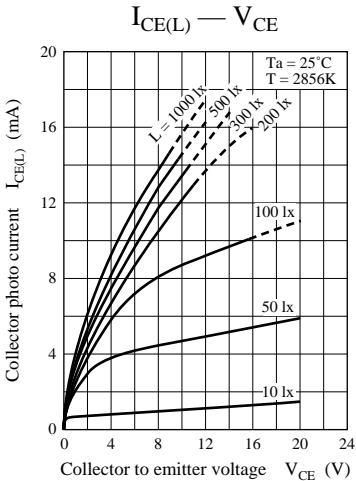
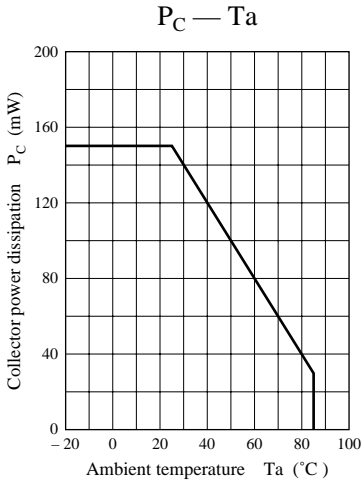
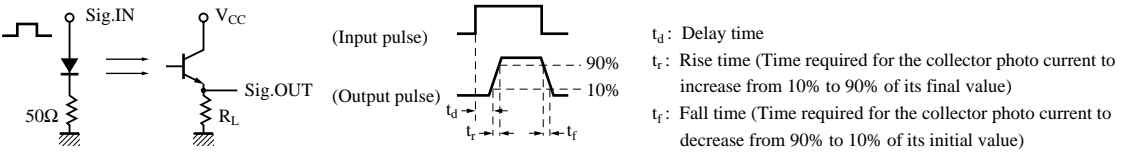


Electro-Optical Characteristics (Ta = 25°C)

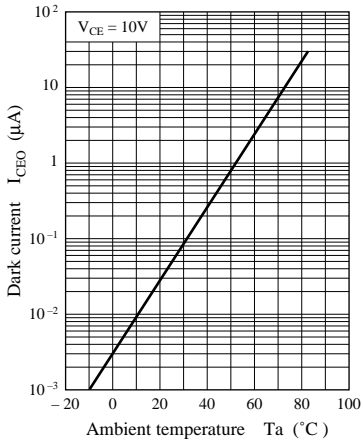
Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{CE} = 10V$		0.05	2	μA
Collector photo current	$I_{CE(L)}$	$V_{CE} = 10V, L = 100\text{ lx}^{*1}$	5		15	mA
Peak sensitivity wavelength	λ_P	$V_{CE} = 10V$		900		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		10		deg.
Rise time	t_r^{*2}	$V_{CC} = 10V, I_{CE(L)} = 5mA$ $R_L = 100\Omega$		5		μs
Fall time	t_f^{*2}			6		μs
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 1mA, L = 500\text{ lx}^{*1}$		0.3	0.6	V

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

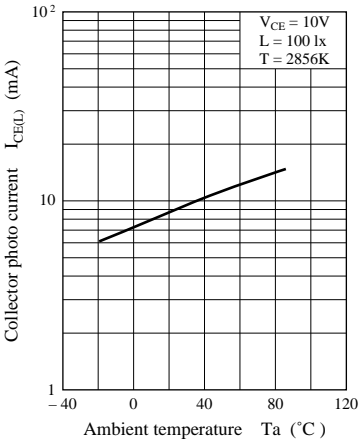
*2 Switching time measurement circuit



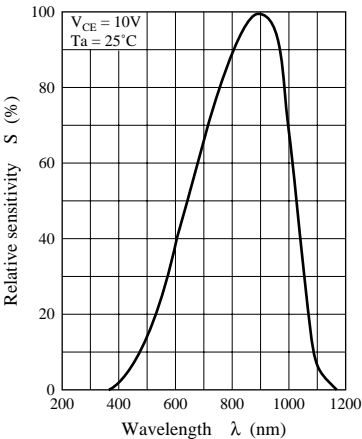
$I_{CEO} - T_a$



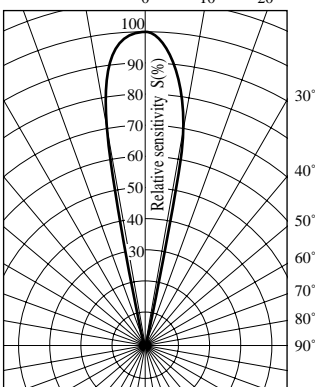
$I_{CE(L)} - T_a$



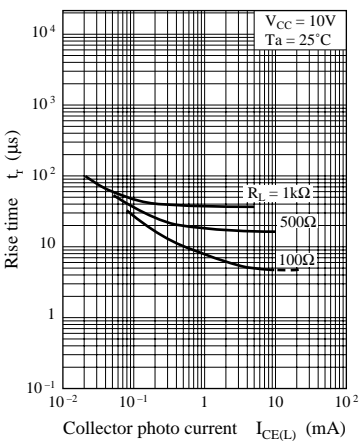
Spectral sensitivity characteristics



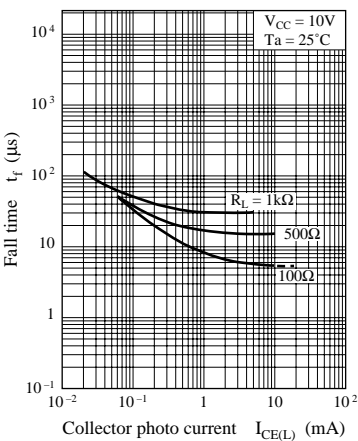
Directivity characteristics



$t_r - I_{CE(L)}$



$t_f - I_{CE(L)}$



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