

PNZ107F, PNZ108F

Silicon NPN Phototransistors

For optical control systems

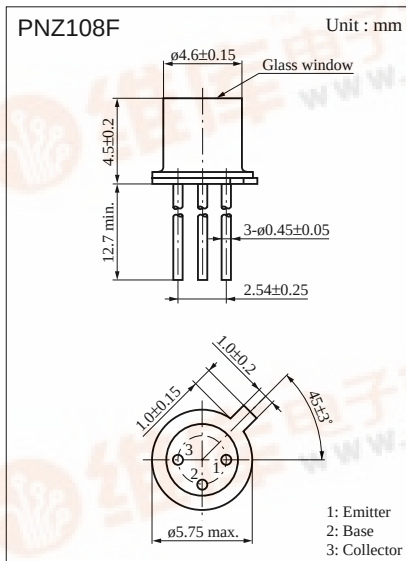
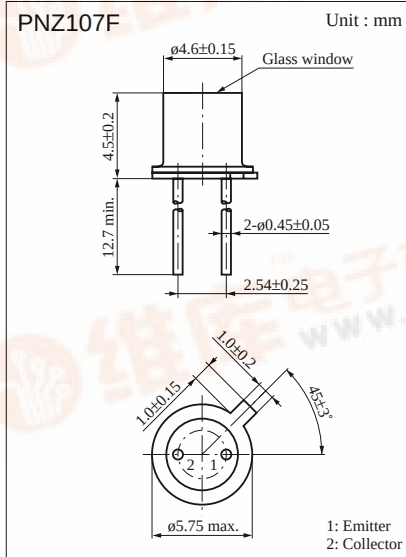
Features

- Flat window design which is suited to optical systems
- Wide directional sensitivity for easy use
- Fast response : $t_r = 8 \mu s$ (typ.)
- Signal mixing capability using base pin (PNZ108F)
- TO-18 standard type package

Absolute Maximum Ratings (Ta = 25°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	°C
Storage temperature	T_{stg}	-30 to +100	°C

* PNZ108F only

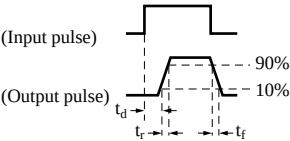
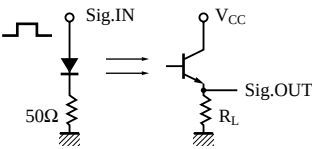


■ Electro-Optical Characteristics (Ta = 25°C)

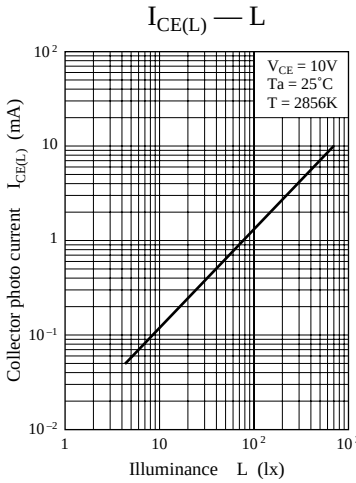
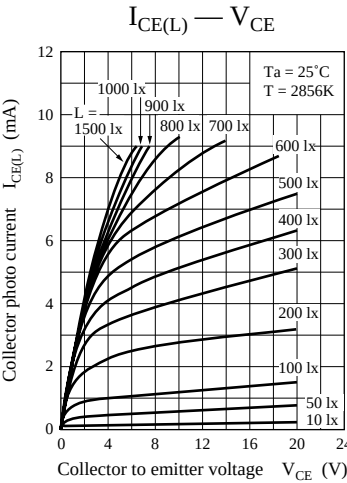
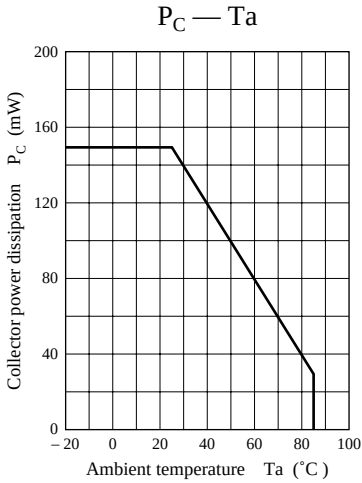
Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{CE} = 10V$		0.05	2	μA
Collector photo current	$I_{CE(L)}$	$V_{CE} = 10V, L = 100 \text{ lx}^{*1}$	0.4		4	mA
Peak sensitivity wavelength	λ_p	$V_{CE} = 10V$		900		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		40		deg.
Rise time	t_r^{*2}	$V_{CC} = 10V, I_{CE(L)} = 5mA$ $R_L = 100\Omega$		8		μs
Fall time	t_f^{*2}			9		μs
Collector saturation voltage	$V_{CE(sat)}$	$I_{CE(L)} = 1mA, L = 1000 \text{ lx}^{*1}$		0.3	0.6	V

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

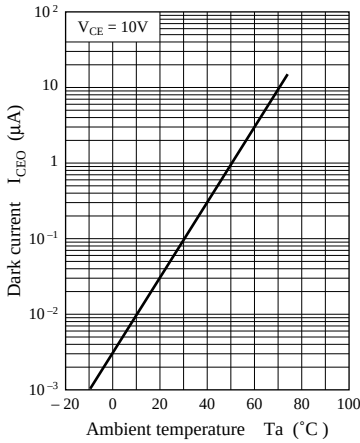
*2 Switching time measurement circuit



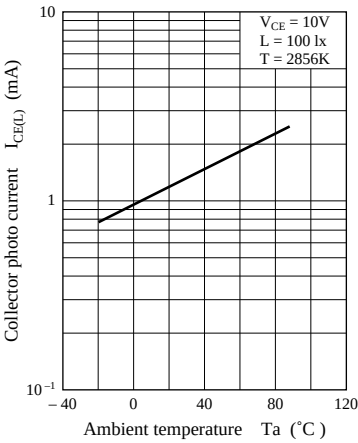
t_d : Delay time
 t_r : Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)
 t_f : Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)



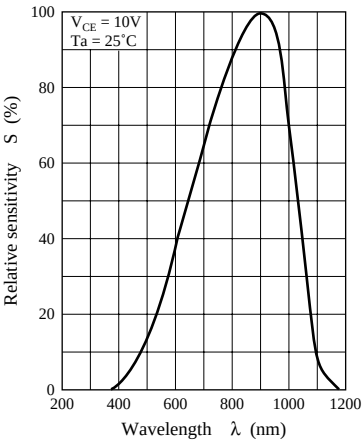
$I_{CEO} - T_a$



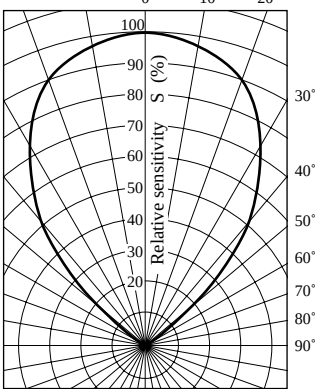
$I_{CE(L)} - T_a$



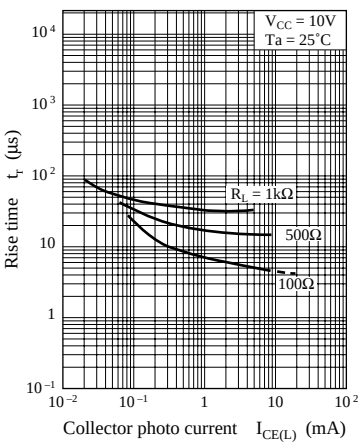
Spectral sensitivity characteristics



Directivity characteristics



$t_r - I_{CE(L)}$



$t_f - I_{CE(L)}$

