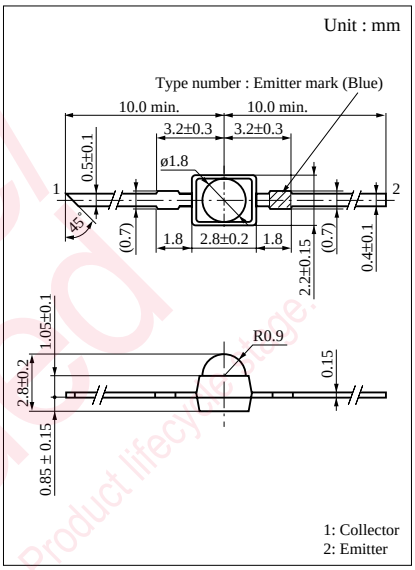
PNZ1270

Silicon NPN Phototransistor

For optical control systems



Features

- High sensitivity
- Good collector photo current linearity with respect to optical power input
- Fast response : t_r = 2.5 µs (typ.)
- Small size designed for easier mounting to printed circuit board

Absolute Maximum Ratings (Ta = 25˚C)

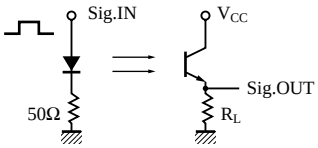
Parameter	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CEO}	20	V
Emitter to collector voltage	V_{ECO}	5	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	50	mW
Operating ambient temperature	T_{opr}	–25 to +85	˚C
Storage temperature	T_{stg}	–30 to +100	˚C

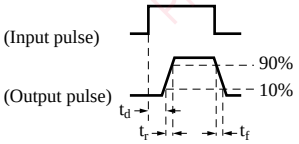
Electro-Optical Characteristics (Ta = 25˚C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	V_{CE} = 10V		1	100	nA
Collector photo current	$I_{CE(L)}$ *3	V_{CE} = 10V, L = 1000 lx*1	0.8		19.2	mA
Peak sensitivity wavelength	λ_P	V_{CE} = 10V		800		nm
Acceptance half angle	θ	Measured from the optical axis to the half power point		14		deg.
Rise time	t_r*2	V_{CC} = 10V, $I_{CE(L)}$ = 1mA, R_L = 100Ω		2.5		µs
Fall time	t_f*2			3.5		µs

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

*2 Switching time measurement circuit



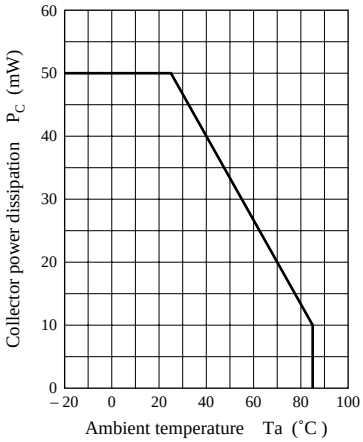


t_d: Delay time
t_r: Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)
t_f: Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

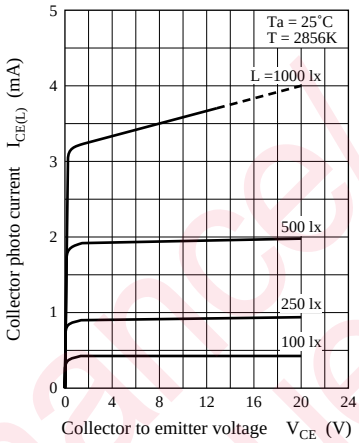
*3 $I_{CE(L)}$ Classifications

Class	Q	R	S	T
$I_{CE(L)}$ (mA)	0.8 to 2.4	1.6 to 4.8	3.2 to 9.6	6.4 to 19.2

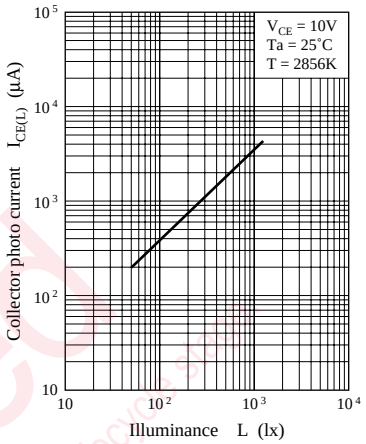
P_C — Ta



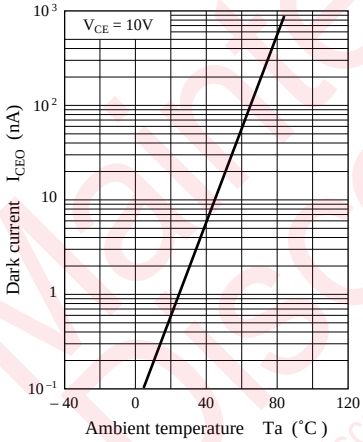
$I_{CE(L)}$ — V_{CE}



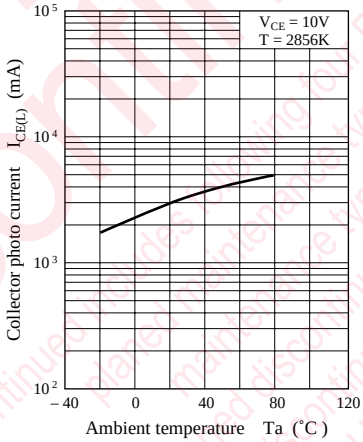
$I_{CE(L)}$ — L



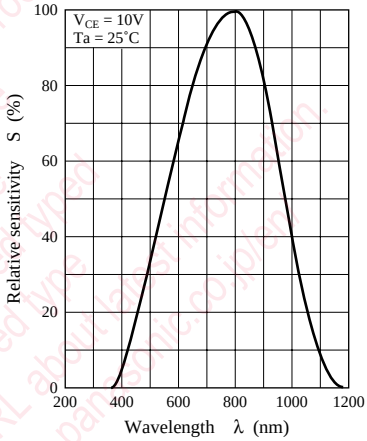
I_{CEO} — Ta



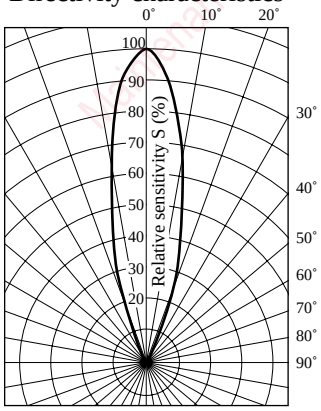
$I_{CE(L)}$ — Ta



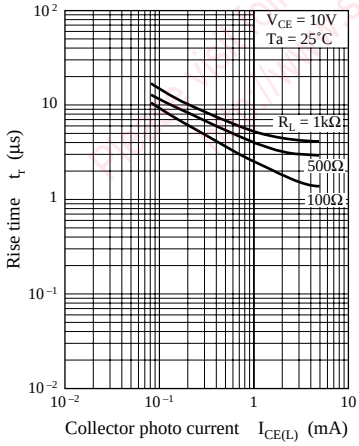
Spectral sensitivity characteristics



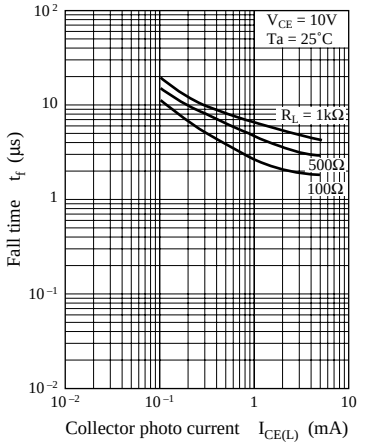
Directivity characteristics



t_r — $I_{CE(L)}$



t_f — $I_{CE(L)}$



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