

PNZ106 (PN106)

Silicon NPN Phototransistor

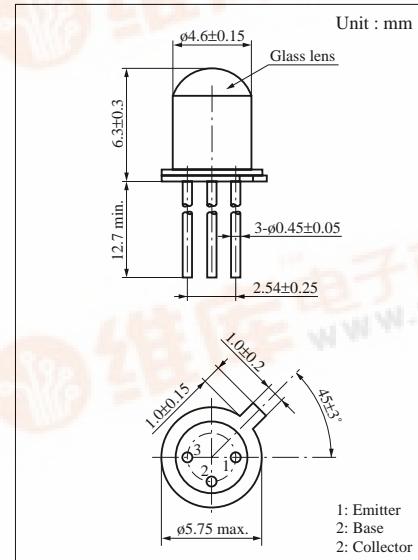
For optical control systems

■ Features

- High sensitivity
- Fast response : $t_r = 3.5 \mu s$ (typ.)
- Narrow directional sensitivity for effective use of light input
- Signal mixing capability using base pin

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

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	20	mA
Collector power dissipation	P_C	100	mW
Operating ambient temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-30 to +100	°C

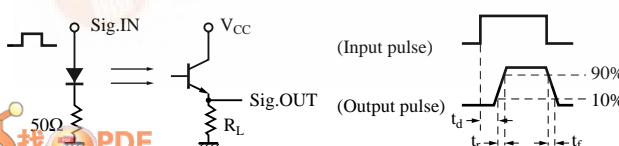


■ Electro-Optical Characteristics ($T_a = 25^\circ C$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Dark current	I_{CEO}	$V_{CE} = 10V$		1	100	nA
Collector photo current	$I_{CE(L)}$	$V_{CE} = 10V, L = 100 \text{ lx}^{*1}$	0.3	0.6		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		10		deg.
Rise time	t_r^{*2}	$V_{CC} = 10V, I_{CE(L)} = 1\text{mA}, R_L = 100\Omega$		3.5		μs
Fall time	t_f^{*2}			5.0		μs
Collector saturation voltage	$V_{CE(\text{sat})}$	$I_{CE(L)} = 1\text{mA}, L = 1000 \text{ lx}^{*1}$		0.2	0.4	V

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

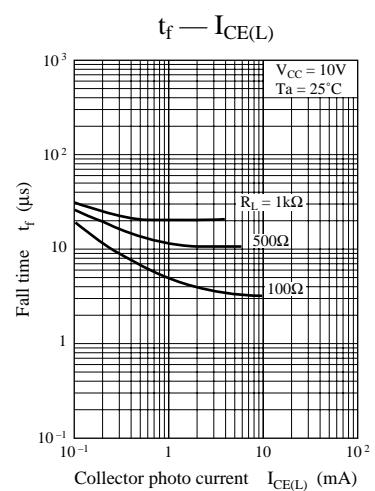
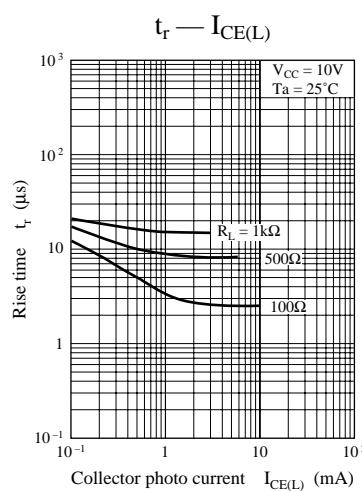
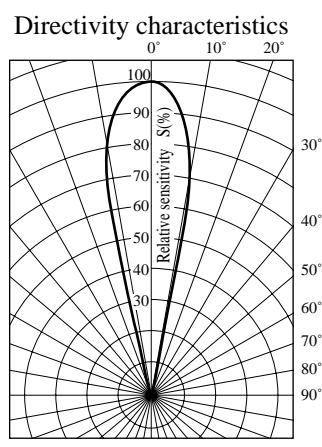
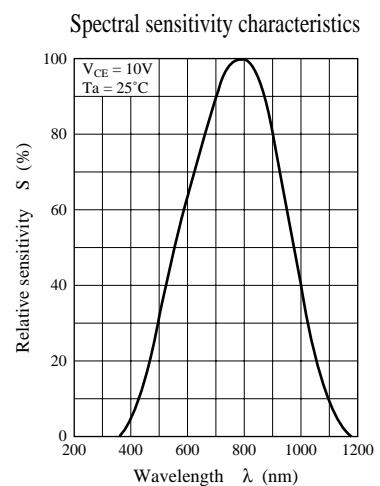
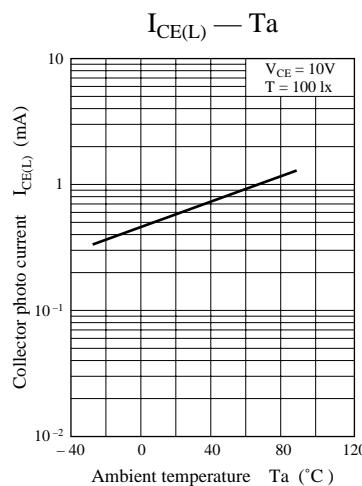
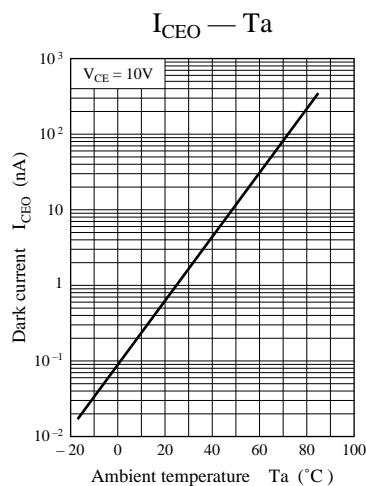
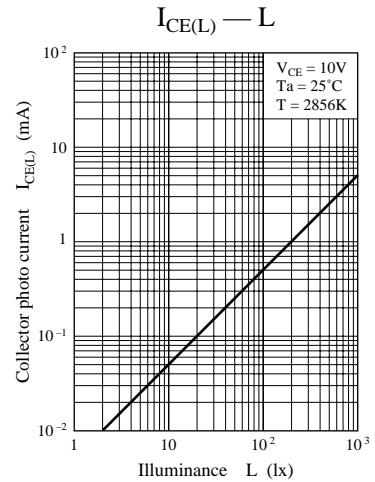
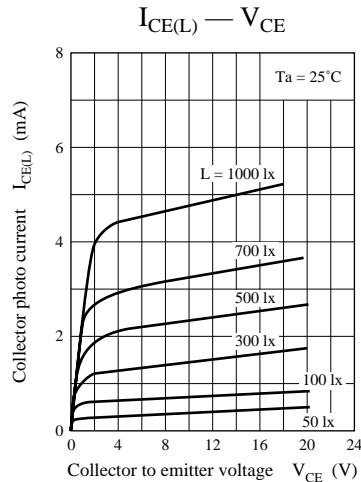
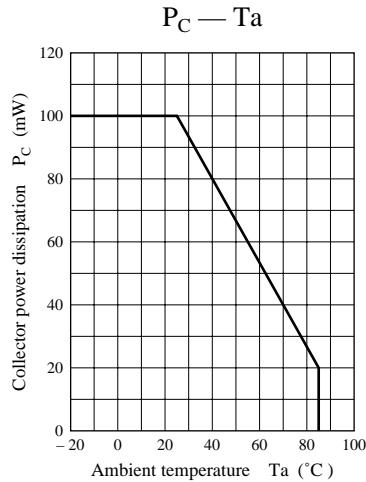
^{*2} Switching time measurement circuit



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)



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