

PNZ109CL (PN109CL)

Silicon planar type

For optical control systems

■ Features

- High sensitivity: $I_{CE(L)} = 2 \text{ mA (min.)}$
- Wide directivity characteristics for easy use
- Fast response: $t_r = 5 \mu\text{s (typ.)}$
- Signal mixing capability using base pin
- Small size (low in height) package
- Resin to cutoff visible light is used

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

Parameter	Symbol	Rating	Unit
Collector-emitter voltage (Base open)	V_{CEO}	20	V
Collector-base voltage (Emitter open)	V_{CBO}	30	V
Emitter-collector voltage (Base open)	V_{ECO}	3	V
Emitter-base voltage (Collector open)	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	$^\circ\text{C}$
Storage temperature	T_{stg}	-30 to +100	$^\circ\text{C}$

■ Electrical-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Photocurrent *1	$I_{CE(L)}$	$V_{CE} = 10 \text{ V}, L = 500 \text{ lx}$	2.5	4.0		mA
Dark current	I_{CEO}	$V_{CE} = 10 \text{ V}$		0.05	2.00	μA
Peak emission wavelength	λ_p	$V_{CE} = 10 \text{ V}$		900		nm
Half-power angle	θ	The angle from which photocurrent becomes 50%		80		$^\circ$
Rise time *2	t_r	$V_{CC} = 10 \text{ V}, I_{CE(L)} = 5 \text{ mA}, R_L = 100 \Omega$		5		μs
Fall time *2	t_f			6		μs
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	$I_{CE(L)} = 1 \text{ mA}, L = 1000 \text{ lx}$		0.3	0.6	V

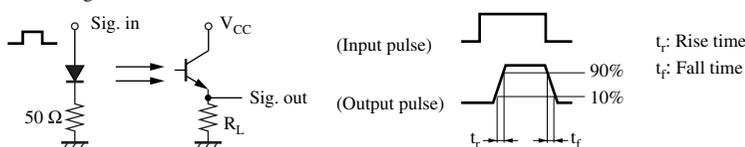
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. Spectral sensitivity characteristics: Sensitivity for wave length over 400 nm maximum sensitivity ratio is 100%.

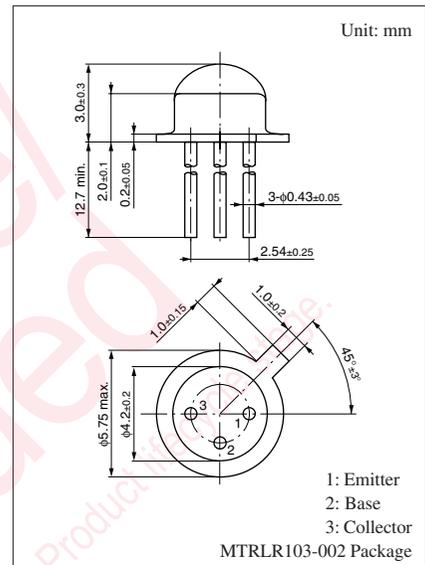
3. This device is designed be disregarded radiation.

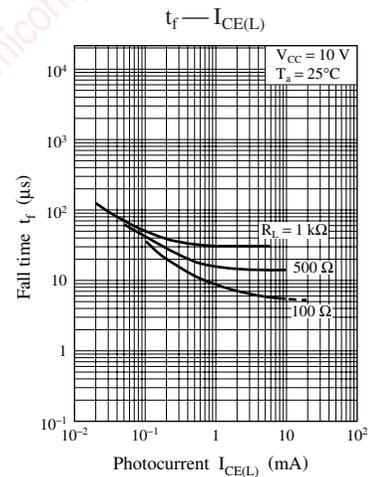
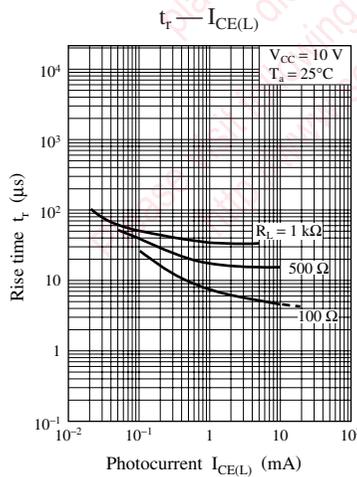
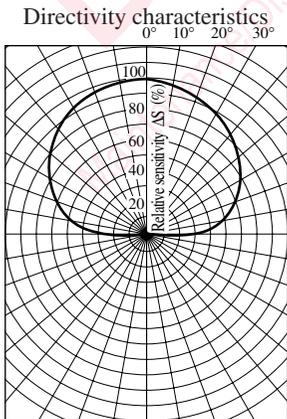
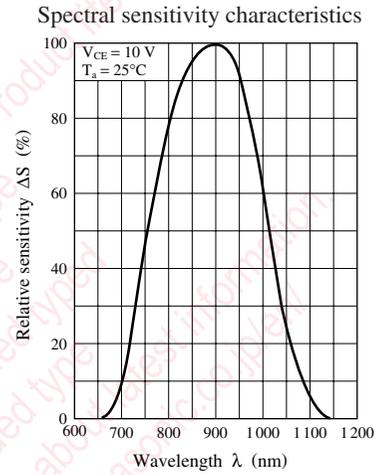
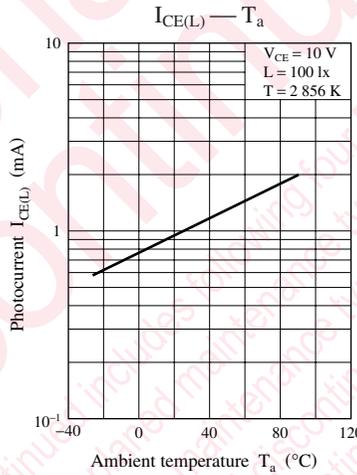
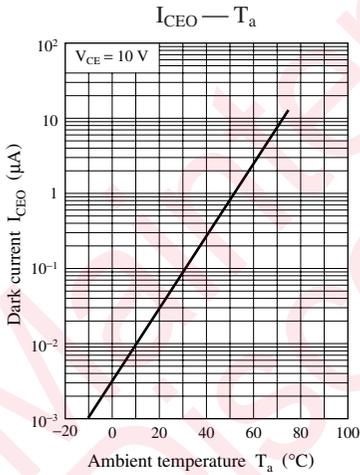
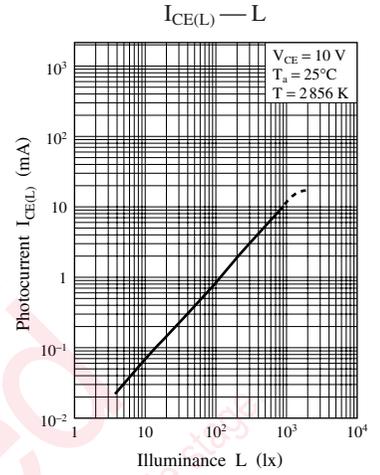
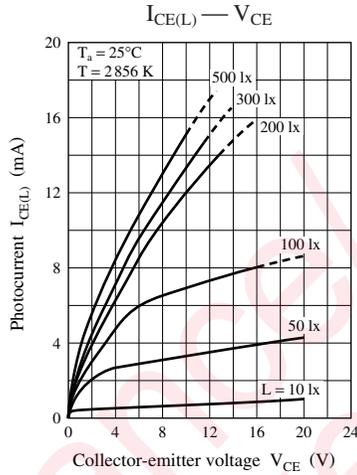
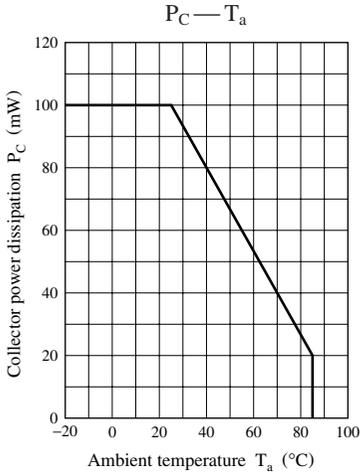
4. *1: Source: Tungsten (color temperature 2856 K)

*2: Switching time measurement circuit



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





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