

# PNZ109F (PN109F)

## Silicon planar type

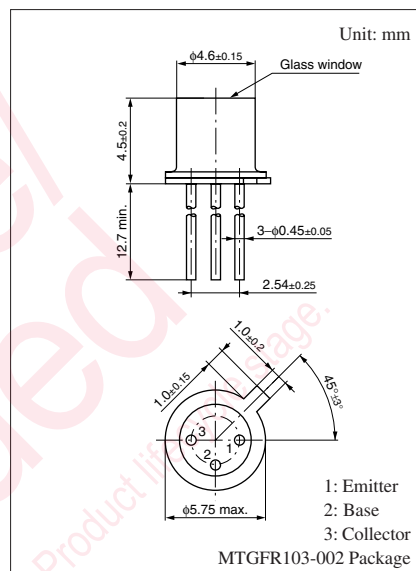
For optical control systems

## ■ Features

- Flat window design which is suited to optical systems
- Built-in filter to cutoff visible light for reducing ambient light noise
- Peak sensitivity wavelength matched with infrared light emitting devices:  $\lambda_p = 900 \text{ nm}$  (typ.)
- Fast response:  $t_r = 8 \mu\text{s}$  (typ.)
- Long lifetime, high reliability

■ 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	$I_C$	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



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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Photocurrent <sup>*1</sup>	$I_{CE(L)}$	$V_{CE} = 10 \text{ V}$ , $L = 100 \text{ lx}$	0.3			mA
Dark current	$I_{CEO}$	$V_{CE} = 10 \text{ V}$		0.05	2.00	$\mu\text{A}$
Peak emission wavelength	$\lambda_p$	$V_{CE} = 10 \text{ V}$		900		nm
Half-power angle	$\theta$	The angle from which photocurrent becomes 50%		40		$^\circ$
Rise time <sup>*2</sup>	$t_r$	$V_{CC} = 10 \text{ V}$ , $I_{CE(L)} = 1 \text{ mA}$ , $R_L = 100 \Omega$		8		$\mu\text{s}$
Fall time <sup>*2</sup>	$t_f$			9		$\mu\text{s}$
Collector-emitter saturation voltage <sup>*1</sup>	$V_{CE(sat)}$	$I_{CE(L)} = 1 \text{ mA}$ , $L = 1000 \text{ lx}$		0.3	0.6	V

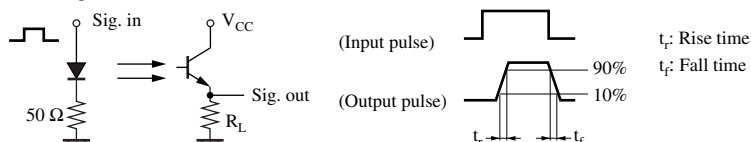
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

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

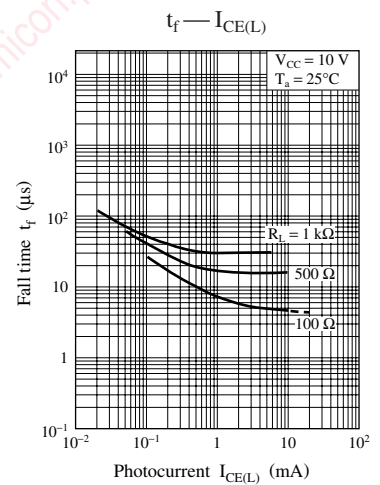
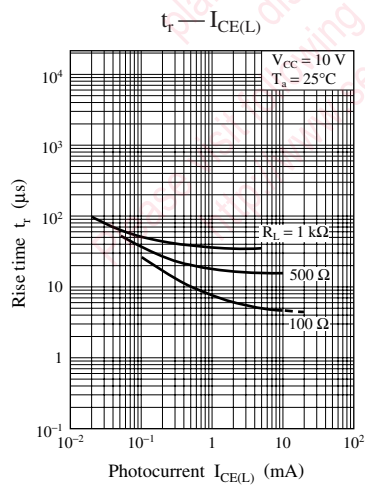
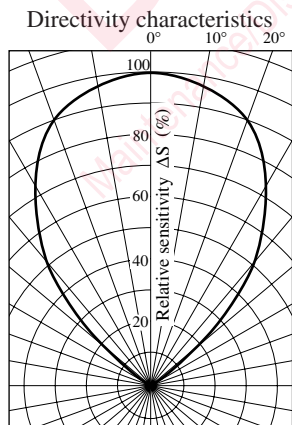
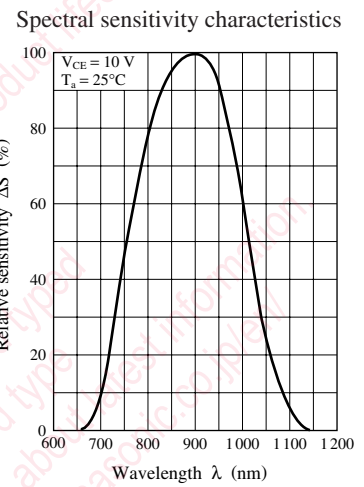
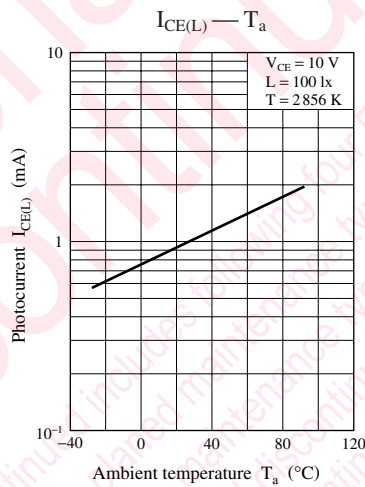
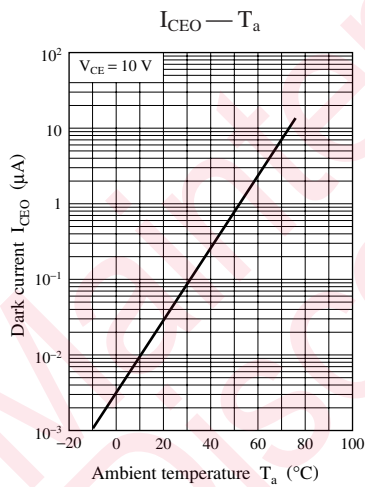
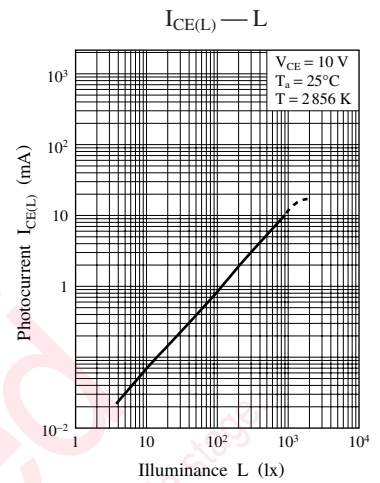
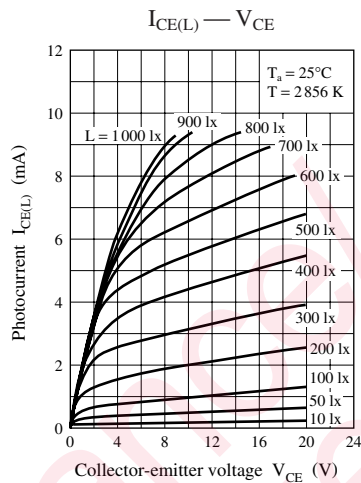
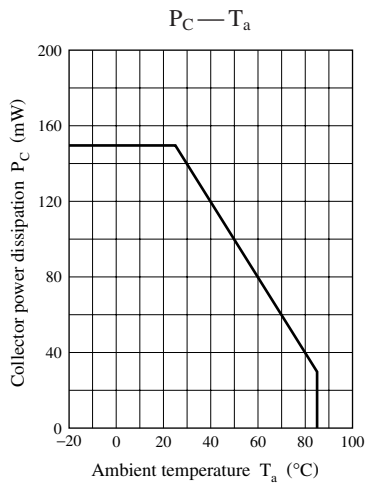
3. This device is designed be disregarded radiation.

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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