

CNZ1179 (ON1179)

Photo Interrupter

For contactless SW, object detection

■ Overview

CNZ1179 is a photocoupler in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

■ Features

- Highly precise position detection : 0.3 mm
- Wide gap between emitting and detecting elements, suitable for thick plate detection
- Fast response : $t_r, t_f = 6 \mu\text{s}$ (typ.)
- Small output current variation against change in temperature

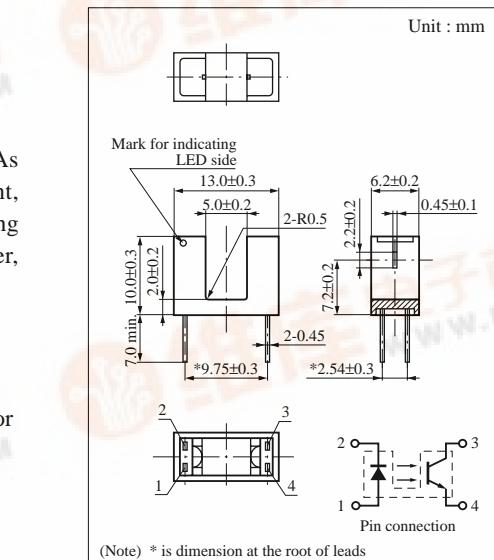
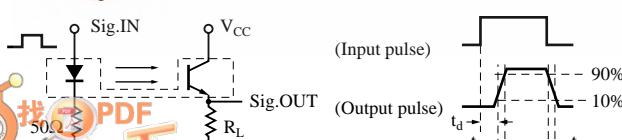
■ Absolute Maximum Ratings (Ta = 25°C)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V _R	3	V
	Forward current (DC)	I _F	50	mA
	Power dissipation	P _D ^{*1}	75	mW
Output (Photo transistor)	Collector current	I _C	20	mA
	Collector to emitter voltage	V _{CEO}	30	V
	Emitter to collector voltage	V _{ECO}	5	V
Temperature	Collector power dissipation	P _C ^{*2}	100	mW
	Operating ambient temperature	T _{opr}	-25 to +85	°C
	Storage temperature	T _{stg}	-30 to +100	°C

■ Electrical Characteristics (Ta = 25°C)

	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V _F	I _F = 50mA		1.2	1.5	V
	Reverse current (DC)	I _R	V _R = 3V		10		μA
Output characteristics	Collector cutoff current	I _{CEO}	V _{CE} = 10V		200		nA
	Collector to emitter capacitance	C _C	V _{CE} = 10V, f = 1MHz		5		pF
Transfer characteristics	Collector current	I _C	V _{CE} = 10V, I _F = 20mA, R _L = 100Ω	0.3			mA
	Response time	t _r , t _f [*]	V _{CC} = 10V, I _C = 1mA, R _L = 100Ω		6		μs
	Collector to emitter saturation voltage	V _{CE(sat)}	I _F = 50mA, I _C = 0.1mA			0.3	V

* Switching time measurement circuit



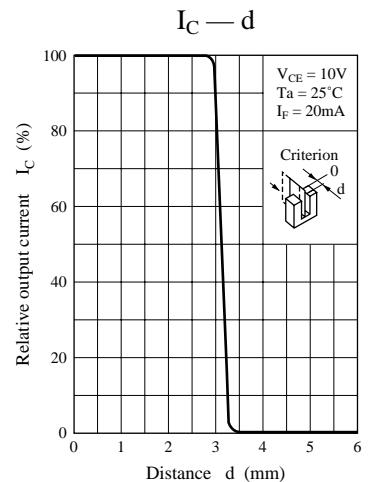
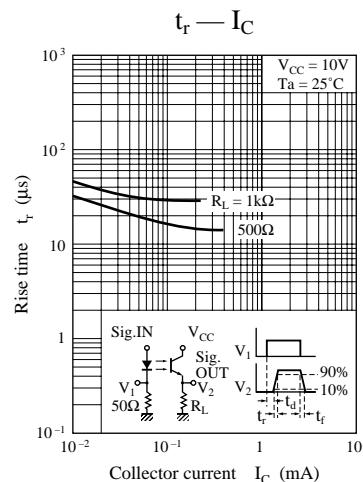
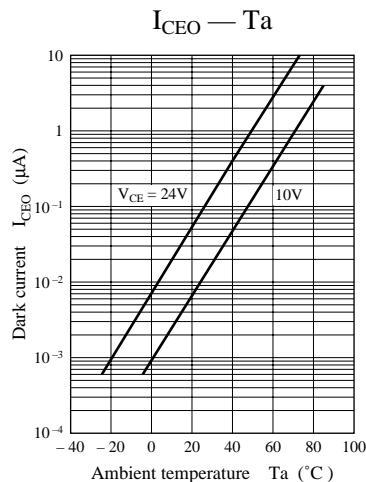
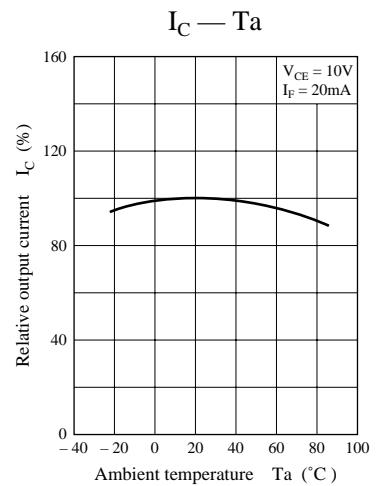
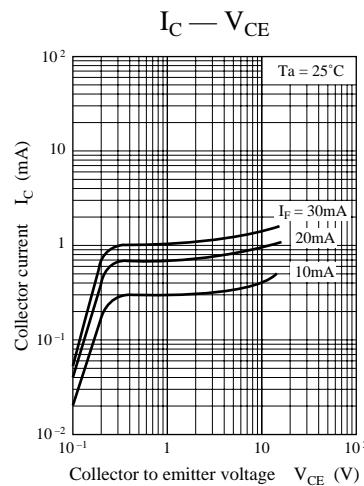
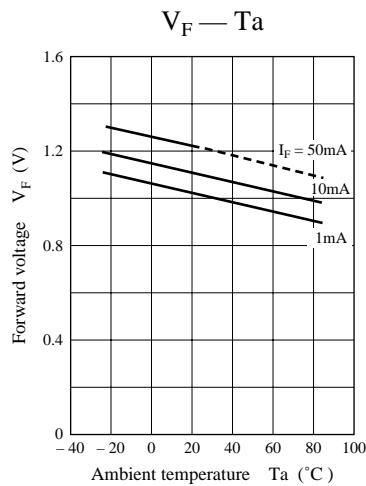
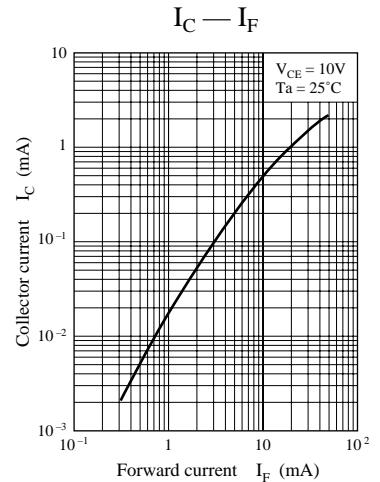
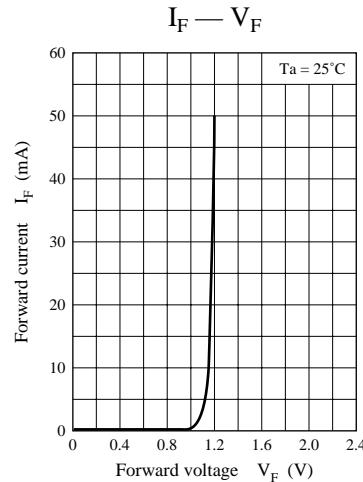
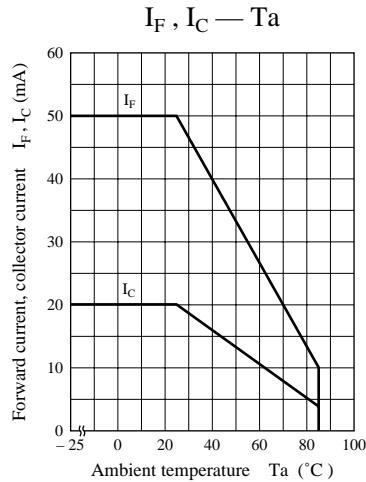
^{*1} Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

^{*2} Output power derating ratio is 1.33 mW/°C at Ta ≥ 25°C.

t_d : Delay time

t_r : Rise time (Time required for the collector current to increase from 10% to 90% of its final value)

t_f : Fall time (Time required for the collector current to decrease from 90% to 10% of its initial value)



⚠ Caution for Safety

⚠ DANGER

Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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