# **CNZ1111** (ON1111), **CNZ1112** (ON1112)

## Photo Interrupters

For contactless SW, object detection

#### Overview

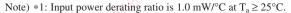
CNZ1111 and CNZ1112 are a photocoupler in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

#### ■ Features

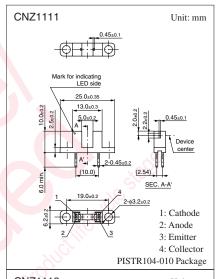
- Highly precise position detection: 0.3 mm
- Wide gap between emitting and detecting elements, suitable for thick plate detection
- Fast response :  $t_r$ ,  $t_f = 6 \mu s$  (typ.)
- Small output current variation against change in temperature

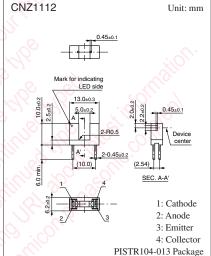
#### ■ Absolute Maximum Ratings T<sub>a</sub> = 25°C

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	Parameter	Symbol	Rating	Unit
Input (Light	Reverse voltage	$V_R$	3	V
emitting diode)	Forward current	$I_{F}$	50	mA
	Power dissipation *1	P <sub>D</sub>	75	mW
Output (Photo	Collector-emitter voltage	V <sub>CEO</sub>	30	V
transistor)	(Base open)		100,70	
	Emitter-collector voltage	V <sub>ECO</sub>	5	V
	(Base open)		18/	
	Collector current	$I_{C}$	20	mA
	Collector power dissipation *2	$P_{C}$	100	mW
Temperature	Operating ambient temperature	Topr	-25 to +85	°C
	Storage temperature	T <sub>stg</sub>	-30 to +100	°C



<sup>\*2:</sup> Output power derating ratio is 1.34 mW/°C at  $T_a \ge 25$ °C.



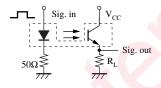


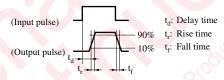
#### $\blacksquare$ Electrical-Optical Characteristics $T_a\!=\!25^{\circ}\!C\pm3^{\circ}\!C$

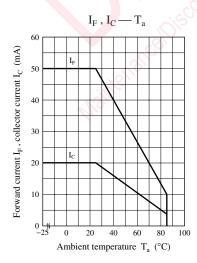
	Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Input	Forward voltage $V_F = I_F = 50 \text{ mA}$			1.2	1.5	V	
characteristics	Reverse current	$I_R$	$V_R = 3 V$			10	μΑ
Output	Collector-emitter cutoff current		$V_{CE} = 10 \text{ V}$			200	nA
characteristics	(Base open)						
	Collector-emitter capacitance	$C_{C}$	$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}$		5		pF
Transfer	Collector current	$I_C$	$V_{CE} = 10 \text{ V}, I_F = 20 \text{ mA}$	0.3			mA
characteristics	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	$I_F = 50 \text{ mA}, I_C = 0.1 \text{ mA}$			0.3	V
	Rise time *	t <sub>r</sub>	$V_{CC} = 10 \text{ V}, I_C = 1 \text{ mA}, R_L = 100 \Omega$		6.0		μs
	Fall time *	$t_{\rm f}$			6.0		μs

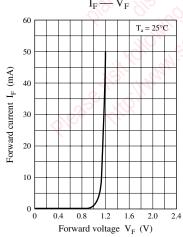
Note) 1. Input and output are practiced by electricity.

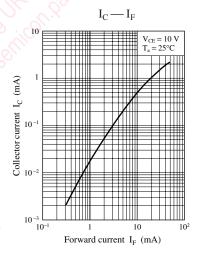
- 2. This device is designed be disregarded radiation.
- 3. \*: Switching time measurement circuit

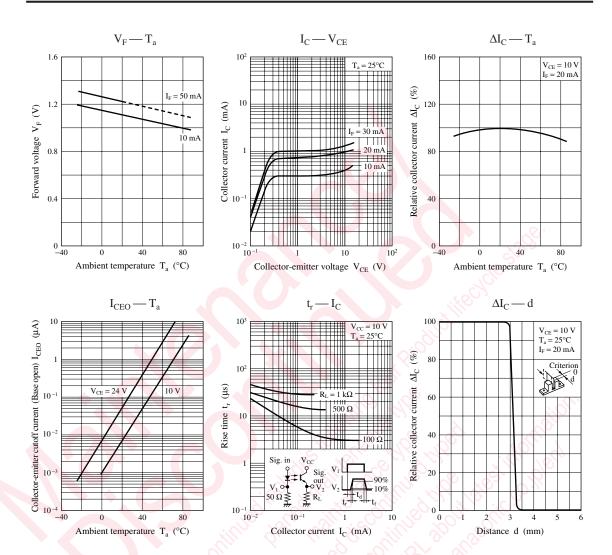












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## ■ This product contains Gallium Arsenide (GaAs).

GaAs powder and vapor are hazardous to human health if inhaled or ingested. Do not burn, destroy, cut, cleave off, or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.

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