

CNZ1021 (ON1021), CNZ1023 (ON1023), CNA1009H (ON1024)

Photo Interrupter

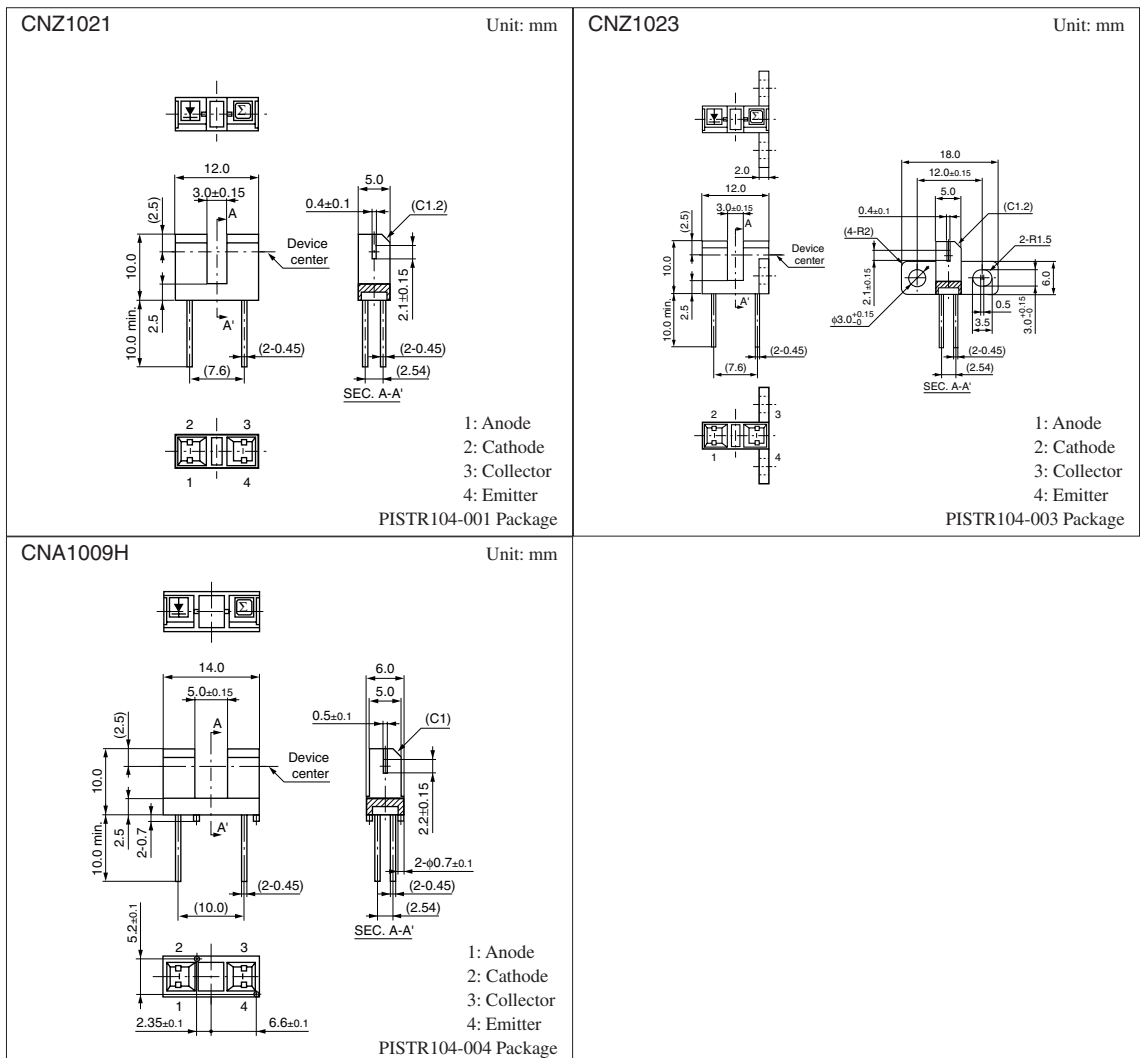
For contactless SW, object detection

■ Overview

CNZ1021, CNZ1023 and CNA1009H are a transmissive photosensor 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: 0.25 mm
- Gap width: 3 mm (CNZ1021, CNZ1023)
5 mm (CNA1009H)
- The type directly attached to PCB CNZ1021
Screw-fastened type (one side) CNZ1023
The type directly attached to PCB CNA1009H
(with a positioning pins)



(Note) 1. Tolerance unless otherwise specified is ± 0.3
2. () Dimension is reference

(Note) The part numbers in the parenthesis show conventional part number.

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

Parameter		Symbol	Rating	Unit	
Input (Light emitting diode)	Reverse voltage	CNZ1021	V_R	3	V
		CNZ1023		3	
		CNA1009H		5	
	Forward current	I_F	50	mA	
Power dissipation *1		P_D	75	mW	
Output (Photo transistor)	Collector-emitter voltage (Base open)	V_{CEO}	30	V	
	Emitter-collector voltage (Base open)	V_{ECO}	5	V	
	Collector current	I_C	20	mA	
	Collector power dissipation *2	P_C	100	mW	
Temperature	Operating ambient temperature	T_{opr}	-25 to +85	$^\circ\text{C}$	
	Storage temperature	T_{stg}	-40 to +100	$^\circ\text{C}$	

Note) *1: Input power derating ratio is 1.0 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

*2: Output power derating ratio is 1.33 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

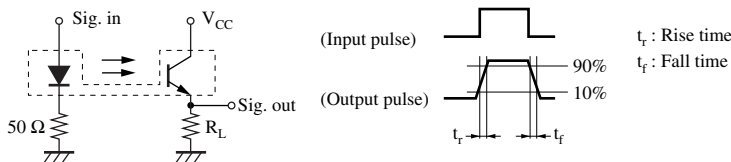
■ Electrical-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

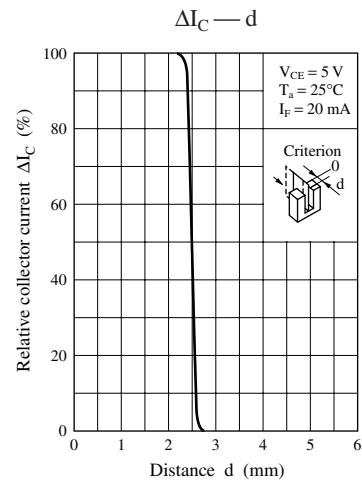
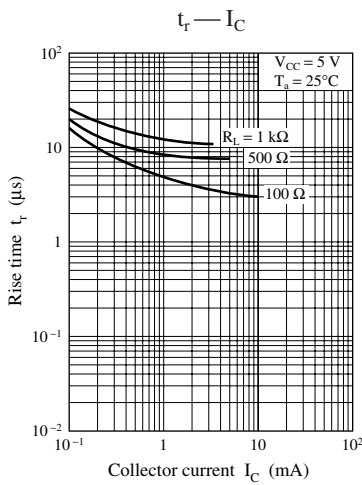
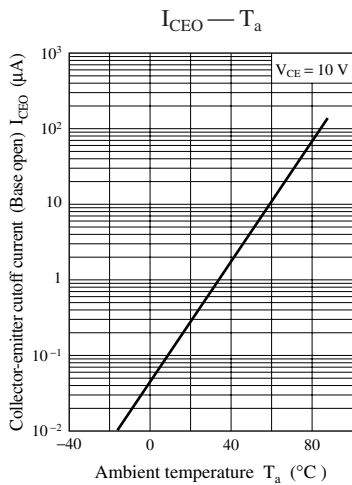
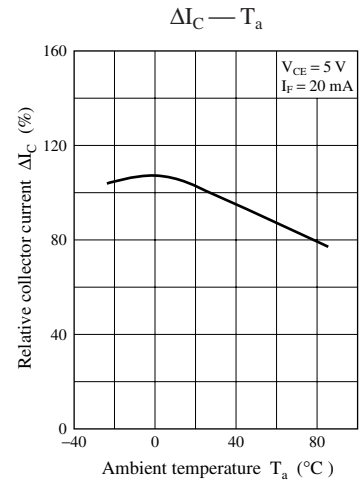
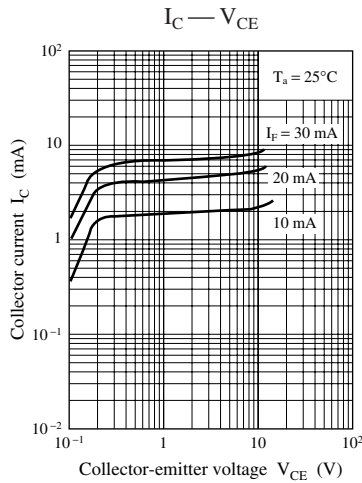
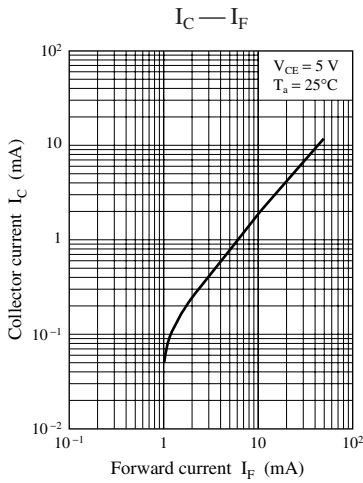
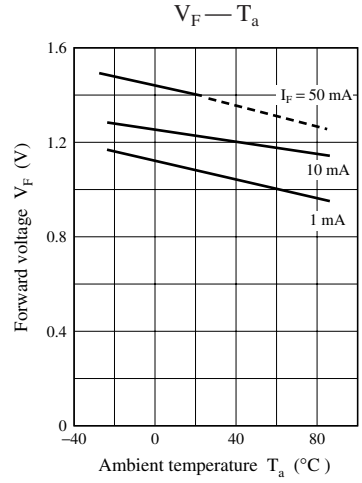
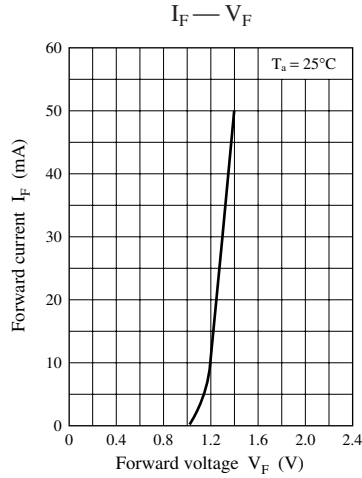
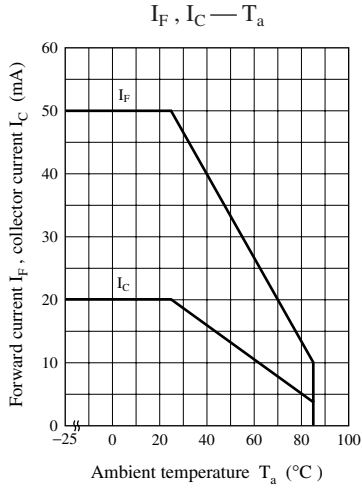
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Forward voltage	V_F	$I_F = 20 \text{ mA}$		1.25	1.40	V
	Reverse current	I_R	$V_R = 3 \text{ V}$			10	μA
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 10 \text{ V}$		10	200	nA
Transfer characteristics	Collector current	I_C	$V_{CC} = 5 \text{ V}, I_F = 20 \text{ mA}, R_L = 100 \Omega$	0.5		15.0	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 40 \text{ mA}, I_C = 1 \text{ mA}$			0.4	V
	Rise time *	t_r	$V_{CC} = 5 \text{ V}, I_C = 1 \text{ mA}$		5		μs
	Fall time *	t_f	$R_L = 100 \Omega$		5		μs

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

2. This device is designed be disregarded radiation.

3. *: Switching time measurement circuit





Caution for Safety

 **DANGER**

■ 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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