

# CNZ1021, CNZ1022, CNZ1023, CNA1009H (ON1021, ON1022, ON1023, ON1024)

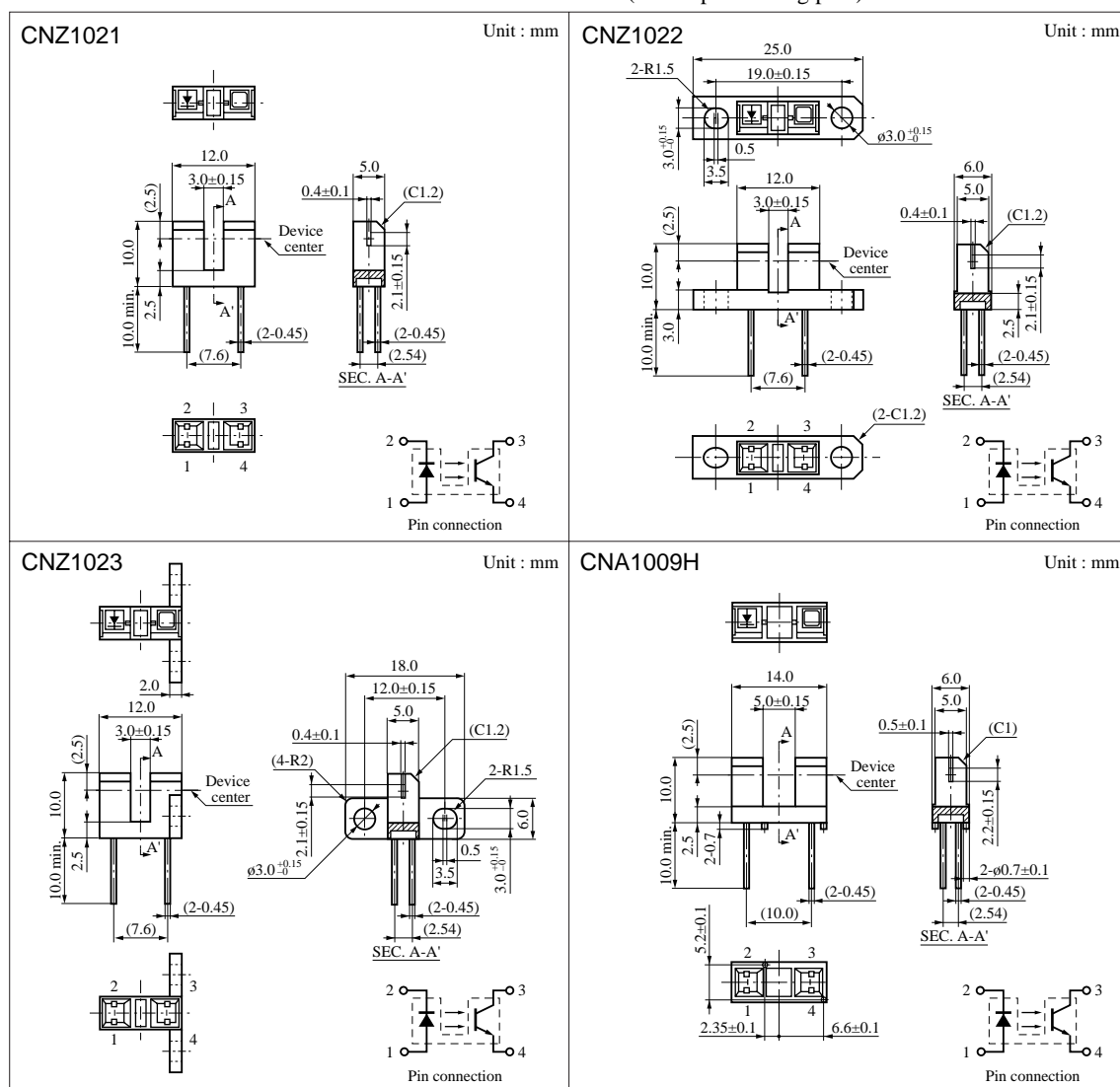
## Photo Interrupters

### Overview

CNZ1021 series is a transmissive photosensor series 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

- Position detection accuracy : 0.25 mm
- Gap width : 3 mm (CNZ1021, CNZ1022, CNZ1023)  
5 mm (CNA1009H)
- The type directly attached to PCB ..... CNZ1021  
Screw-fastened type (both sides) ..... CNZ1022  
Screw-fastened type (one side) ..... CNZ1023  
The type directly attached to PCB ..... CNA1009H  
(with a positioning pins)



(Note) 1. Tolerance unless otherwise specified is  $\pm 0.3$ .

2. ( ) Dimension is reference.

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

# Absolute Maximum Ratings (Ta = 25°C)

Parameter		Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	$V_R$	5	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
	Collector power dissipation	$P_C^{*2}$	100	mW
Temperature	Operating ambient temperature	$T_{opr}$	-25 to +85	°C
	Storage temperature	$T_{stg}$	-40 to +100	°C

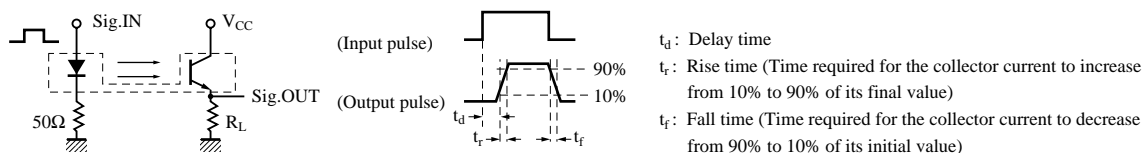
\*1 Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

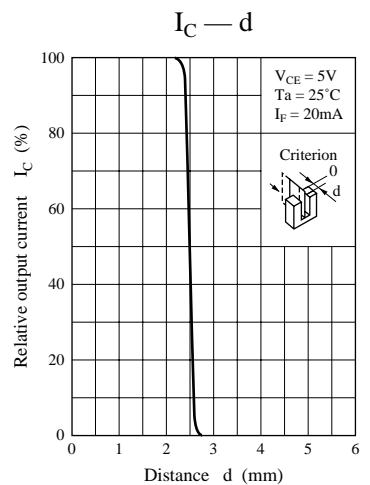
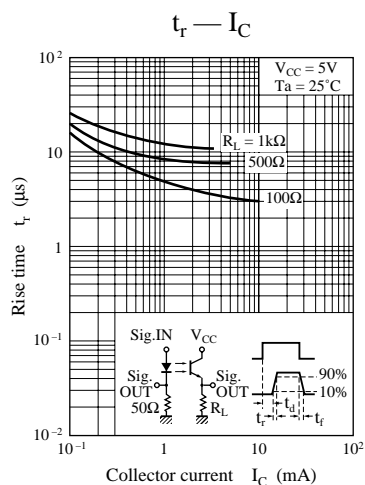
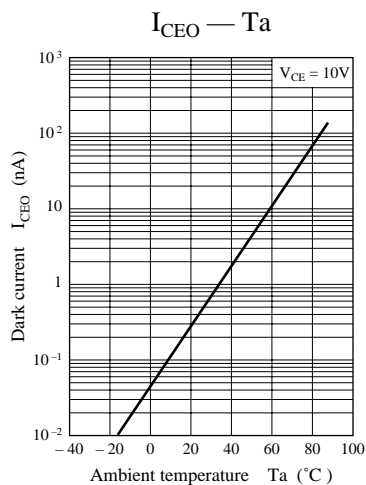
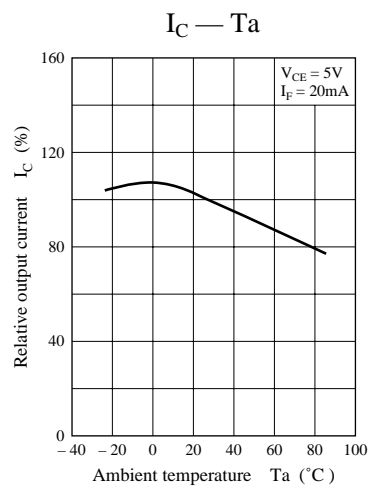
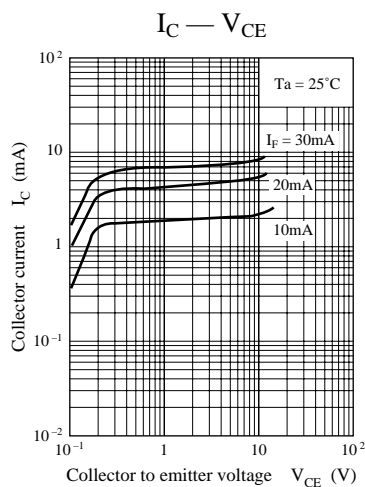
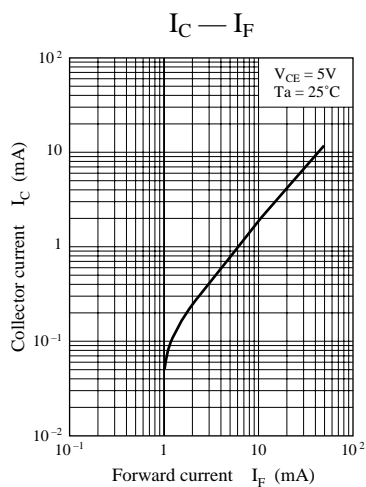
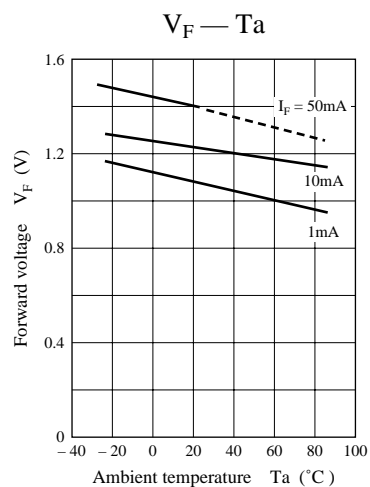
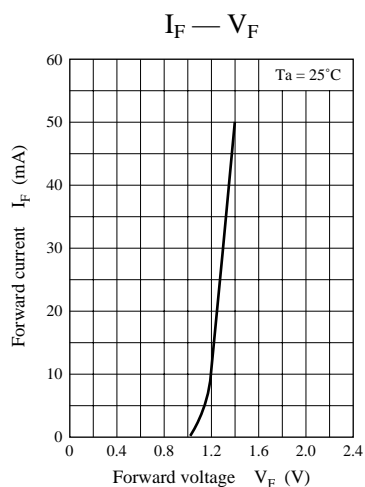
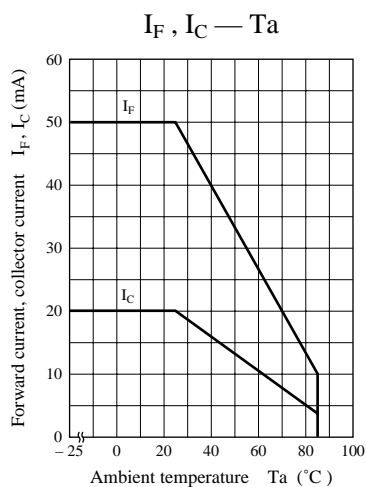
\*2 Output power derating ratio is 1.33 mW/°C at Ta ≥ 25°C.

# Electrical Characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	$V_F$ $I_F = 20\text{mA}$		1.25	1.4	V
	Reverse current (DC)	$I_R$ $V_R = 3\text{V}$			10	μA
Output characteristics	Collector cutoff current	$I_{CEO}$ $V_{CE} = 10\text{V}$		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	mA
	Collector to emitter saturation voltage	$V_{CE(sat)}$ $I_F = 40\text{mA}$ , $I_C = 1\text{mA}$			0.4	V
	Response time	$t_r, t_f^*$ $V_{CC} = 5\text{V}$ , $I_C = 1\text{mA}$ , $R_L = 100\Omega$		5		μs

\* Switching time measurement circuit





# 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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