

CNZ1021, CNZ1022, CNZ1023, CNA1009

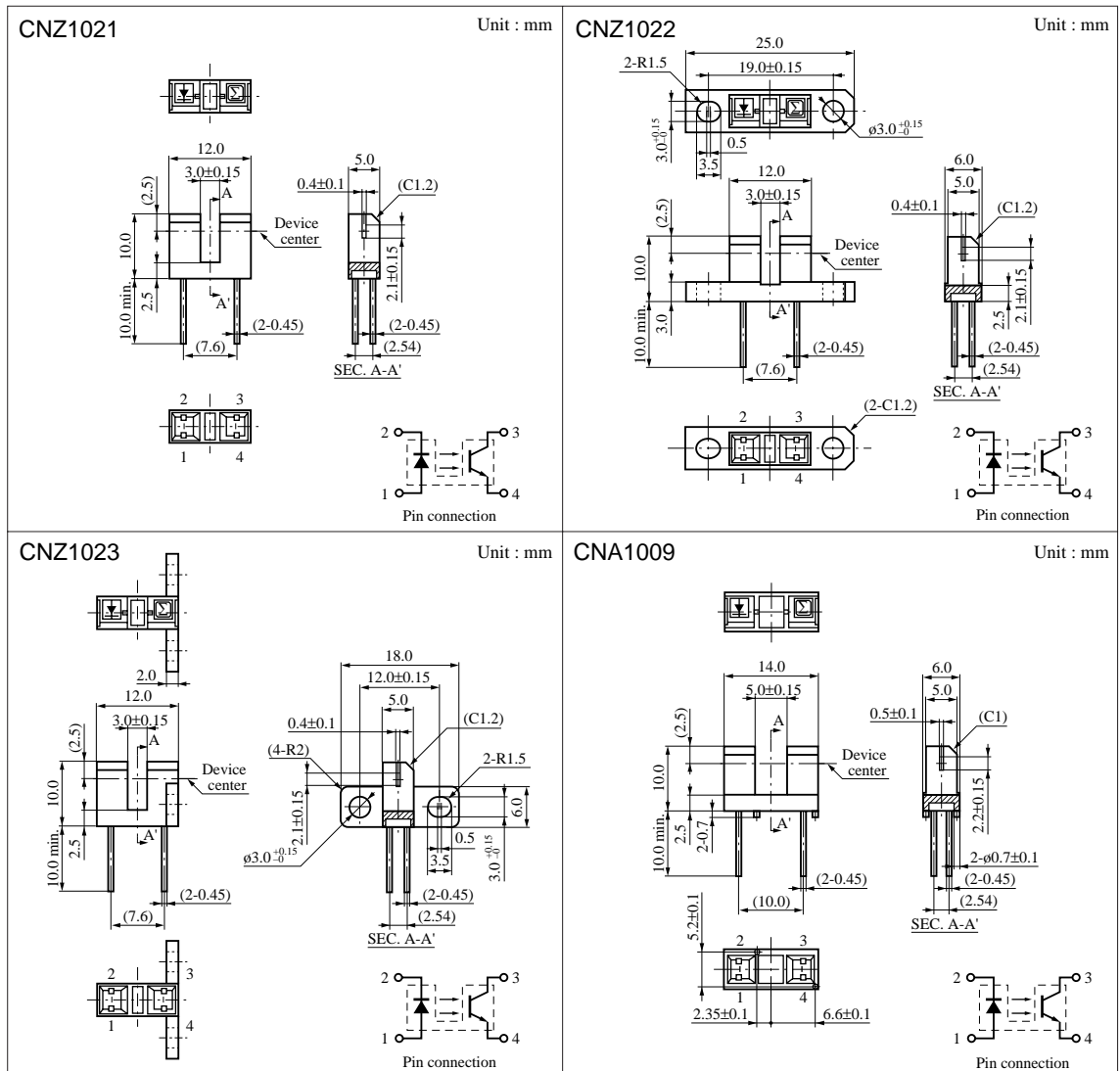
Photo Interrupters

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 (CNA1009)
- 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 CNA1009
(with a positioning pins)



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

■ 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

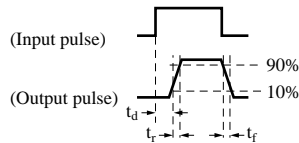
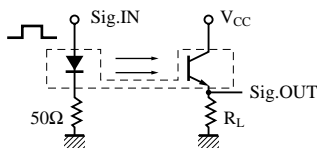
*1 Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

*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



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)

