

CNZ1122, CNZ1128

Photo Interrupters

For contactless SW, object detection

Overview

CNZ1122 and CNZ1128 are a photocoupler in which a visible 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

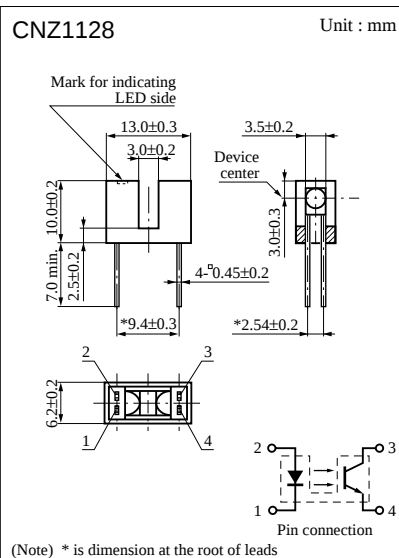
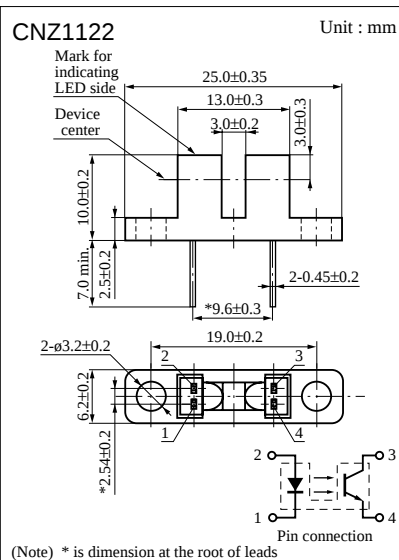
- Highly precise position detection : 1.2 mm
- Fast response : $t_r, t_f = 6 \mu s$ (typ.)
- Using small package for saving mounting space (CNZ1128)
- Small output current variation against change in temperature

Absolute Maximum Ratings ($T_a = 25^\circ C$)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	3	V
	Forward current (DC)	I_F	25	mA
	Power dissipation	P_D * ¹	70	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	$^\circ C$
	Storage temperature	T_{stg}	-30 to +100	$^\circ C$

*¹ Input power derating ratio is 0.93 mW/ $^\circ C$ at $T_a \geq 25^\circ C$.

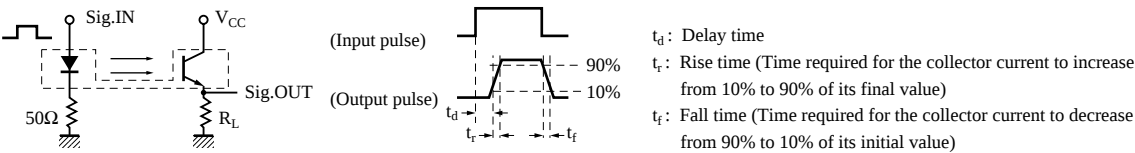
*² Output power derating ratio is 1.33 mW/ $^\circ C$ at $T_a \geq 25^\circ C$.



■ Electrical Characteristics (Ta = 25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 20\text{mA}$		2.1	2.8	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			5	μA
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10\text{V}$			200	nA
	Collector to emitter capacitance	C_C	$V_{CE} = 10\text{V}, f = 1\text{MHz}$		5		pF
Transfer characteristics	Collector current	I_C^{*2}	$V_{CE} = 10\text{V}, I_F = 15\text{mA}$	0.3			mA
	Response time	t_r, t_f^{*1}	$V_{CC} = 10\text{V}, I_C = 1\text{mA}, R_L = 100\Omega$		6		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 25\text{mA}, I_C = 0.1\text{mA}$			0.5	V

*1 Switching time measurement circuit



*2 I_C classifications

Class	Q	R	S
I_C (mA)	0.3 to 0.75	0.55 to 1.30	>1.10

