

CNA1012K (ON1114)

Photo Interrupter

For contactless SW and object detection

■ Overview

CNA1012K is 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: $t_r, t_f = 6 \mu\text{s}$ (typ.)
- Small output current variation against change in temperature
- Large output current

■ Absolute Maximum Ratings $T_a = 25 \Sigma \Delta \gamma \rho C$

Parameter	Symbol	Rating	Unit
Input (Light emitting diode)	Power dissipation ^{*1}	P_D	75 mW
	Forward current	I_F	50 mA
	Reverse voltage	V_R	3 V
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
Operating ambient temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-30 to +100	°C

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

*2: Output power derating ratio is 1.34 mW/°C at $T_a \geq 25^\circ\text{C}$.

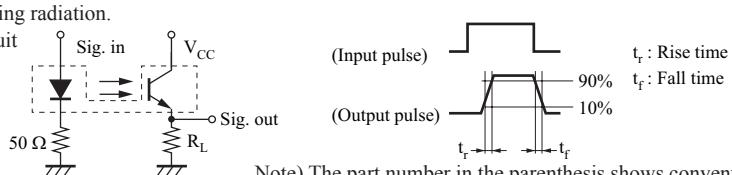
■ Electrical-Optical Characteristics $T_a = 25 \Sigma \Delta \gamma \rho C \pm 3 \Sigma \Delta \gamma \rho C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Reverse current	I_R	$V_R = 3 \text{ V}$			10 μA
	Forward voltage	V_F	$I_F = 50 \text{ mA}$		1.2	1.5 V
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 10 \text{ V}$			200 nA
	Collector-emitter capacitance	C_C	$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}$		5	pF
Transfer characteristics	Collector current	I_C	$V_{CE} = 10 \text{ V}, I_F = 20 \text{ mA}$	0.7		mA
	Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_F = 50 \text{ mA}, I_C = 0.1 \text{ mA}$			0.3 V
	Rise time *	t_r	$V_{CC} = 10 \text{ V}, I_C = 1 \text{ mA}, R_L = 100 \Omega$		6.0	μs
	Fall time *	t_f			6.0	μs

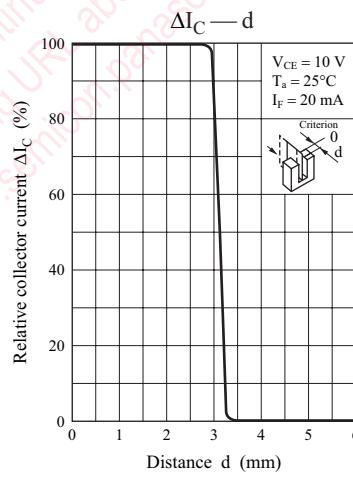
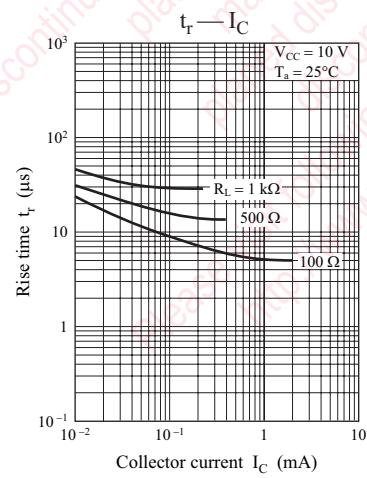
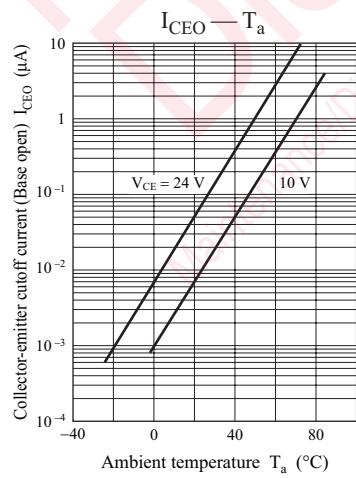
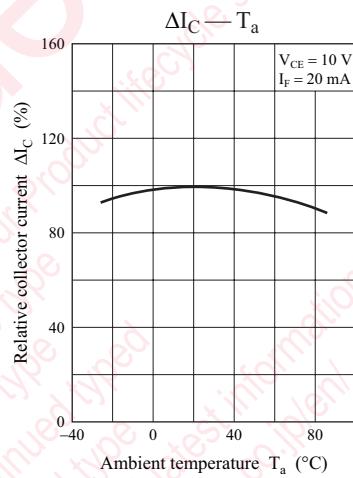
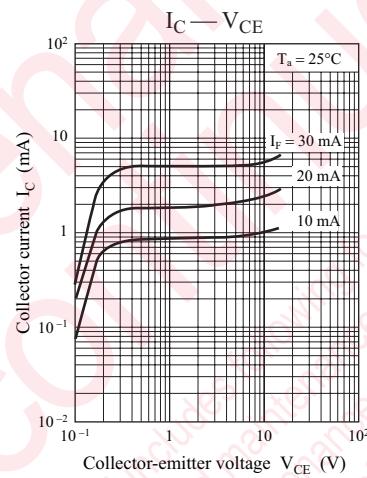
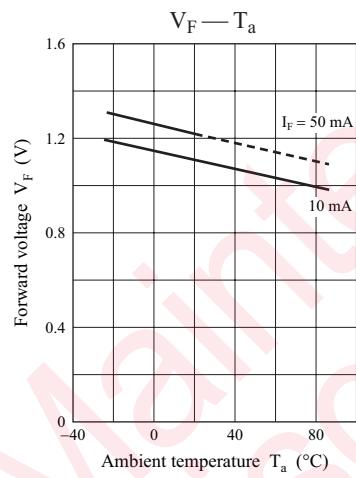
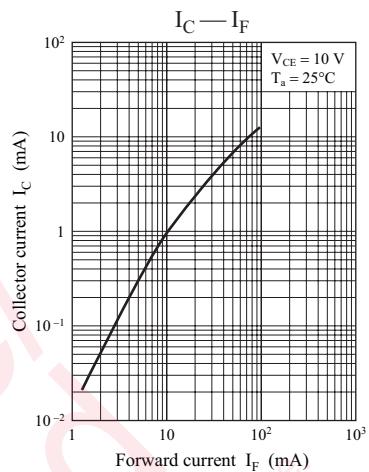
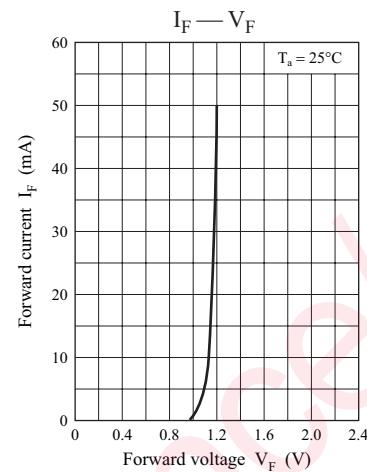
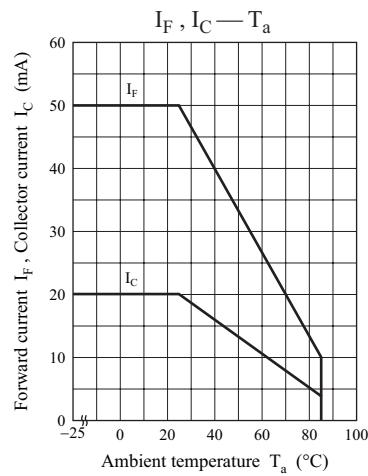
Note) 1. Input and output are practiced by electricity.

2. This device is designed by disregarding radiation.

3. *: Switching time measurement circuit

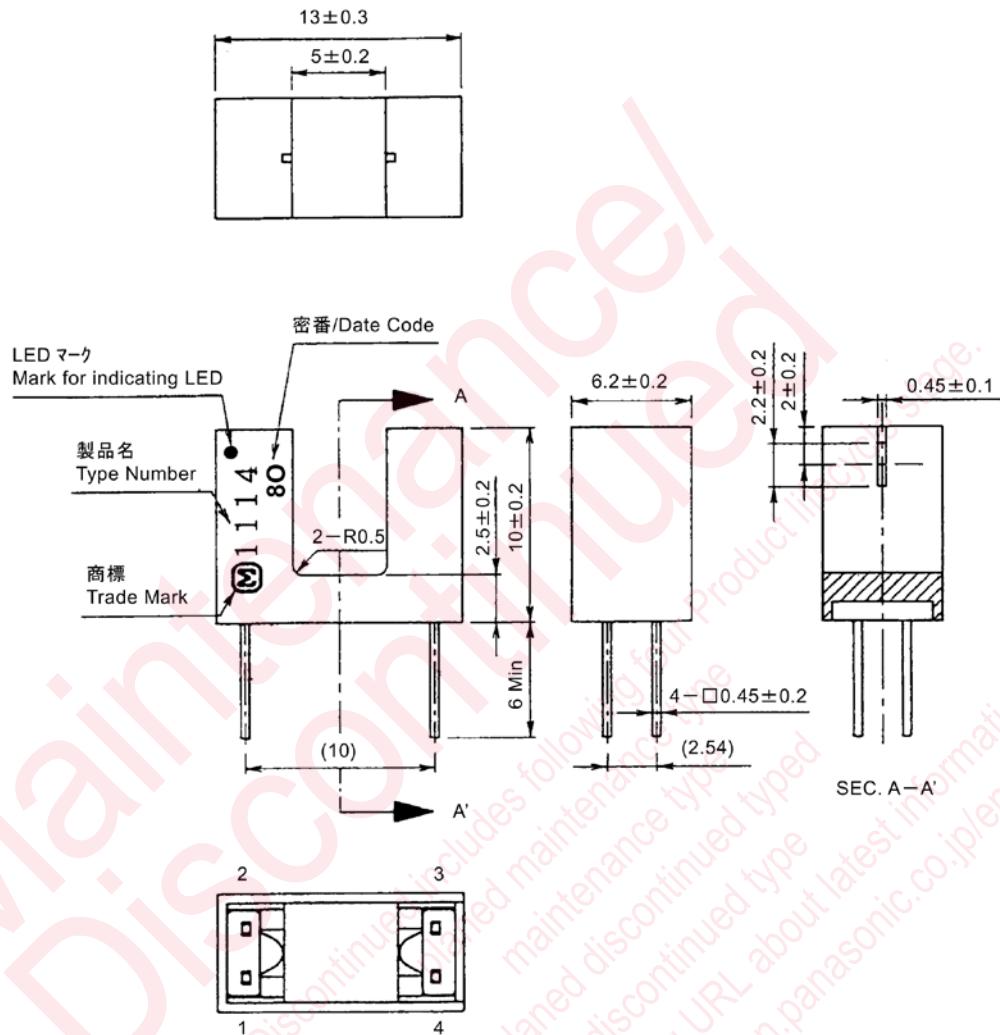


Note) The part number in the parenthesis shows conventional part number.



■ Package (Unit: mm)

LSSSIR4S0005



(注 1) マークは、目視又は顕微鏡に於いて解読できる事。
(Note1) The marks can be identified either with eyes or a microscope.

- Pin name
- 1: Anode
- 2: Cathode
- 3: Collector
- 4: Emitter

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