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

### Absolute Maximum Ratings $T_a = 25 \Sigma \Delta \gamma p C$

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  $T_a \geq 25^\circ C$ .

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

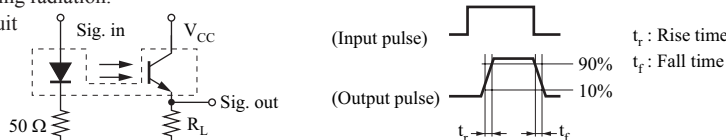
### Electrical-Optical Characteristics $T_a = 25 \Sigma \Delta \gamma p C \pm 3 \Sigma \Delta \gamma p C$

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

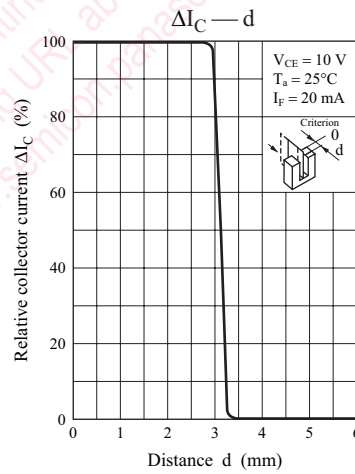
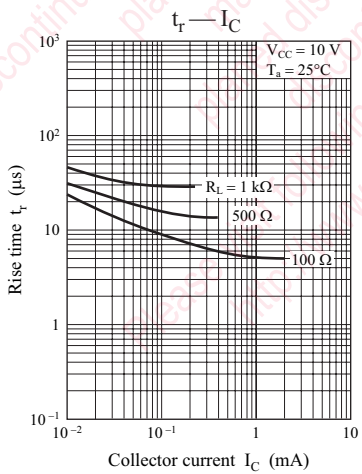
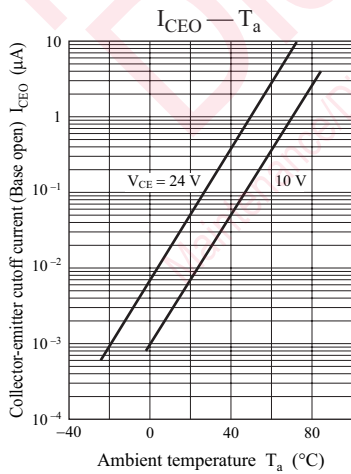
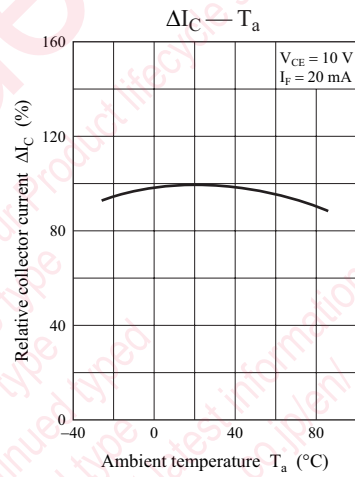
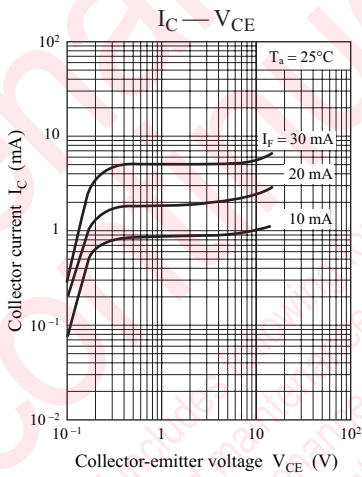
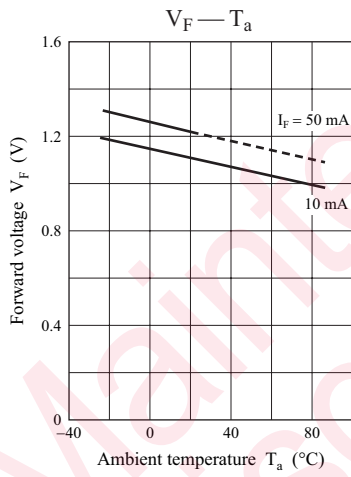
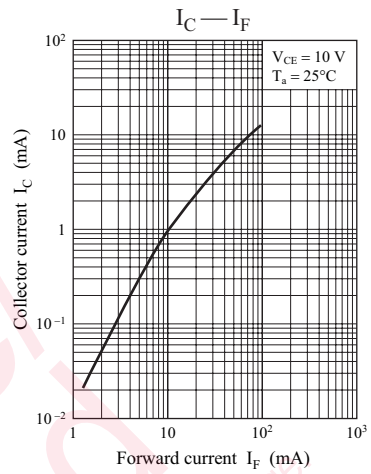
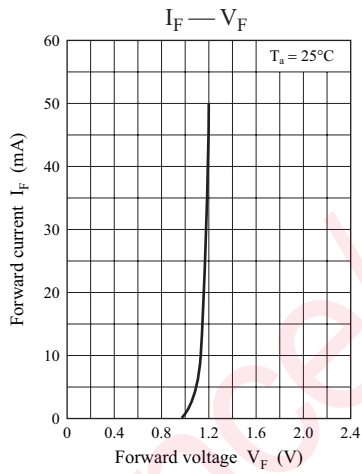
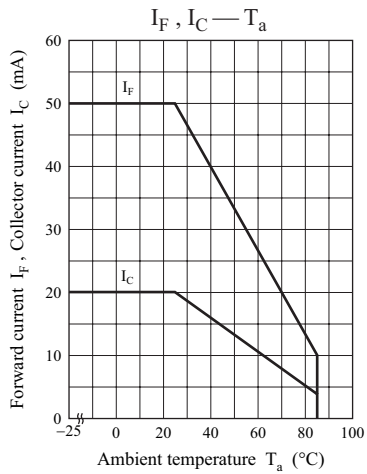
Note) 1. Input and output are practiced by electricity.

2. This device is designed by disregarding radiation.

3. \*: Switching time measurement circuit

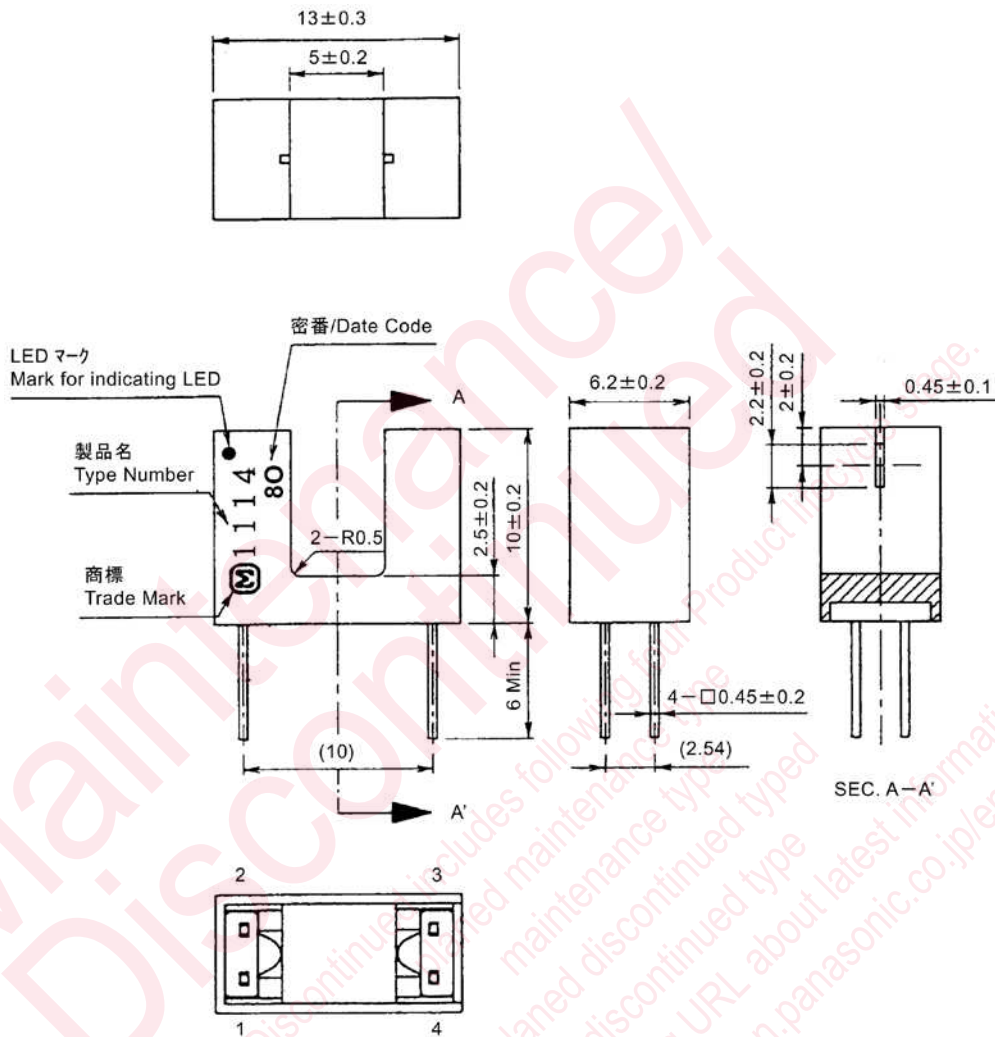


Note) The part number in the parenthesis shows conventional part number.



■ 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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