

# CNA1312K

## Photo Interrupter

For contactless SW and object detection

### ■ Overview

CNA1312K is an ultraminiature, highly reliable transmissive photosensor in which a high efficiency GaAs infrared light emitting diode chip and a high sensitivity Si phototransistor chip are integrated in a double molded resin package.

### ■ Features

- Ultraminiature: 2.6 mm × 4.9 mm (height: 3.3 mm)
- Highly precise position detection: 0.1 mm
- Gap width: 2.0 mm

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Power dissipation *1	$P_D$	75	mW
	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	6	V
Output (Photo transistor)	Collector-emitter voltage (Base open)	$V_{CEO}$	35	V
	Emitter-collector voltage (Base open)	$V_{ECO}$	6	V
	Collector current	$I_C$	20	mA
	Collector power dissipation *2	$P_C$	75	mW
Operating ambient temperature		$T_{opr}$	-25 to +85	$^\circ\text{C}$
Storage temperature		$T_{stg}$	-40 to +100	$^\circ\text{C}$

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

\*2: Output power derating ratio is 1.0 mW/ $^\circ\text{C}$  at  $T_a \geq 25^\circ\text{C}$

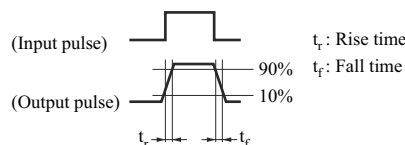
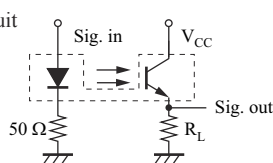
### ■ Electrical-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

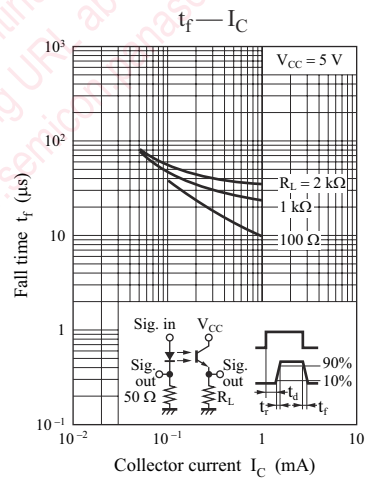
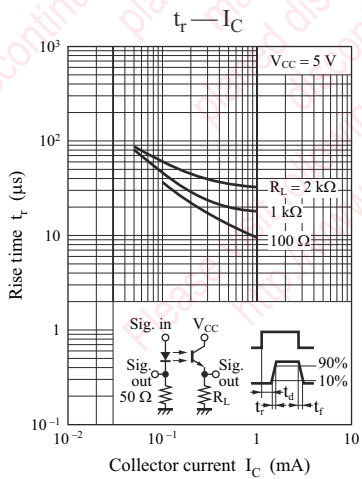
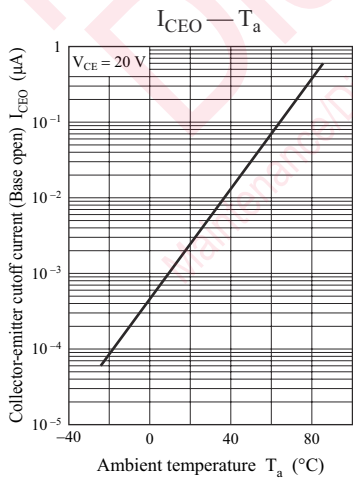
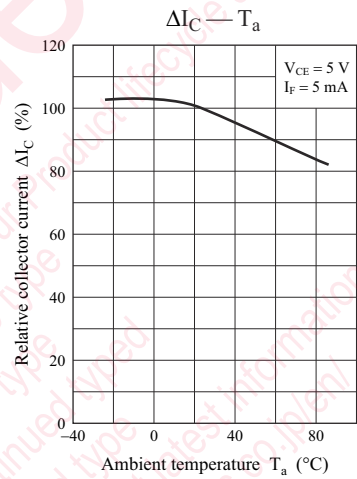
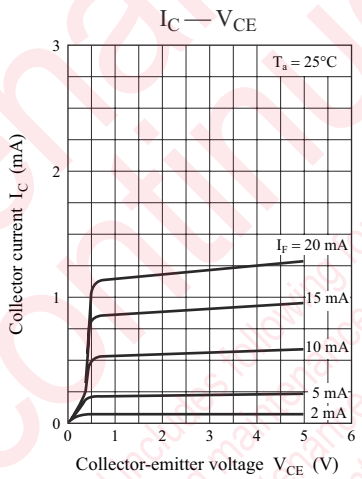
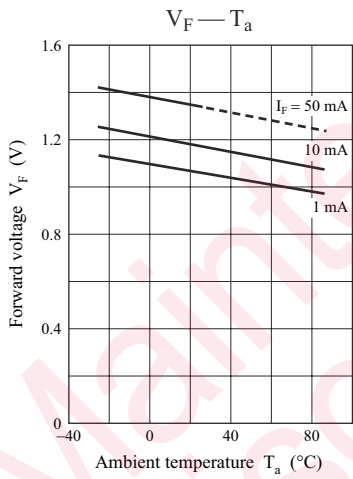
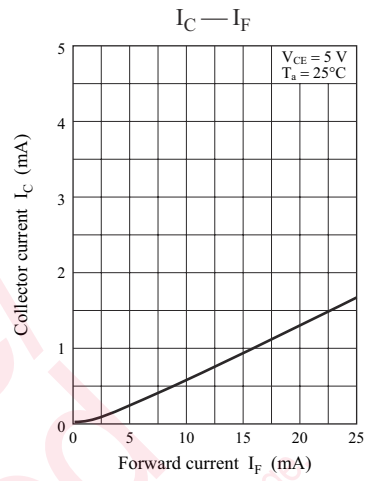
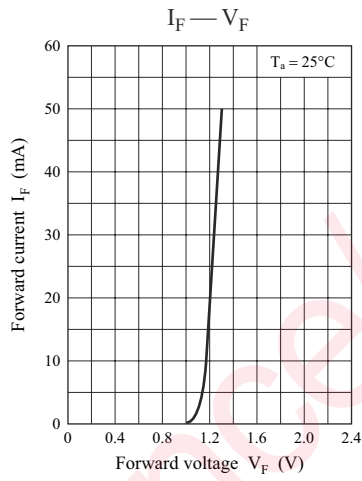
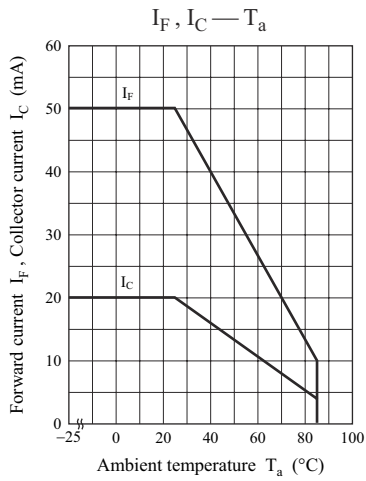
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Reverse current	$I_R$	$V_R = 3\text{ V}$			10	$\mu\text{A}$
	Forward voltage	$V_F$	$I_F = 20\text{ mA}$		1.2	1.4	V
Output characteristics	Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = 20\text{ V}$			100	nA
Transfer characteristics	Collector current	$I_C$	$V_{CE} = 5\text{ V}, I_F = 5\text{ mA}$	40		400	$\mu\text{A}$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 10\text{ mA}, I_C = 50\text{ }\mu\text{A}$			0.4	V
	Rise time *	$t_r$	$V_{CC} = 5\text{ V}, I_C = 0.1\text{ mA},$ $R_L = 1000\text{ }\Omega$		50		$\mu\text{s}$
	Fall time *	$t_f$			50		$\mu\text{s}$

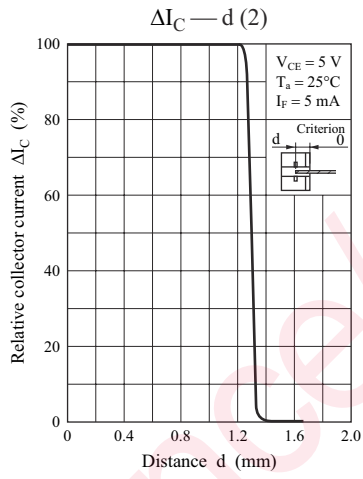
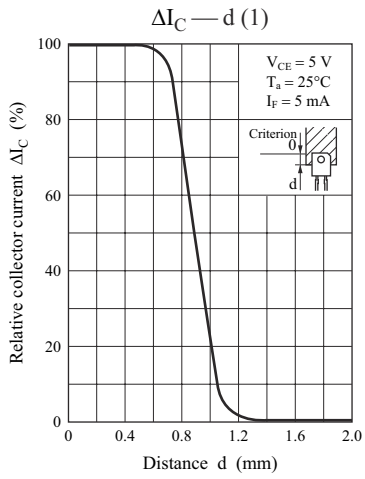
Note) 1. Input and output are practiced by electricity.

2. This device is designed by disregarding radiation.

3. \*: Switching time measurement circuit



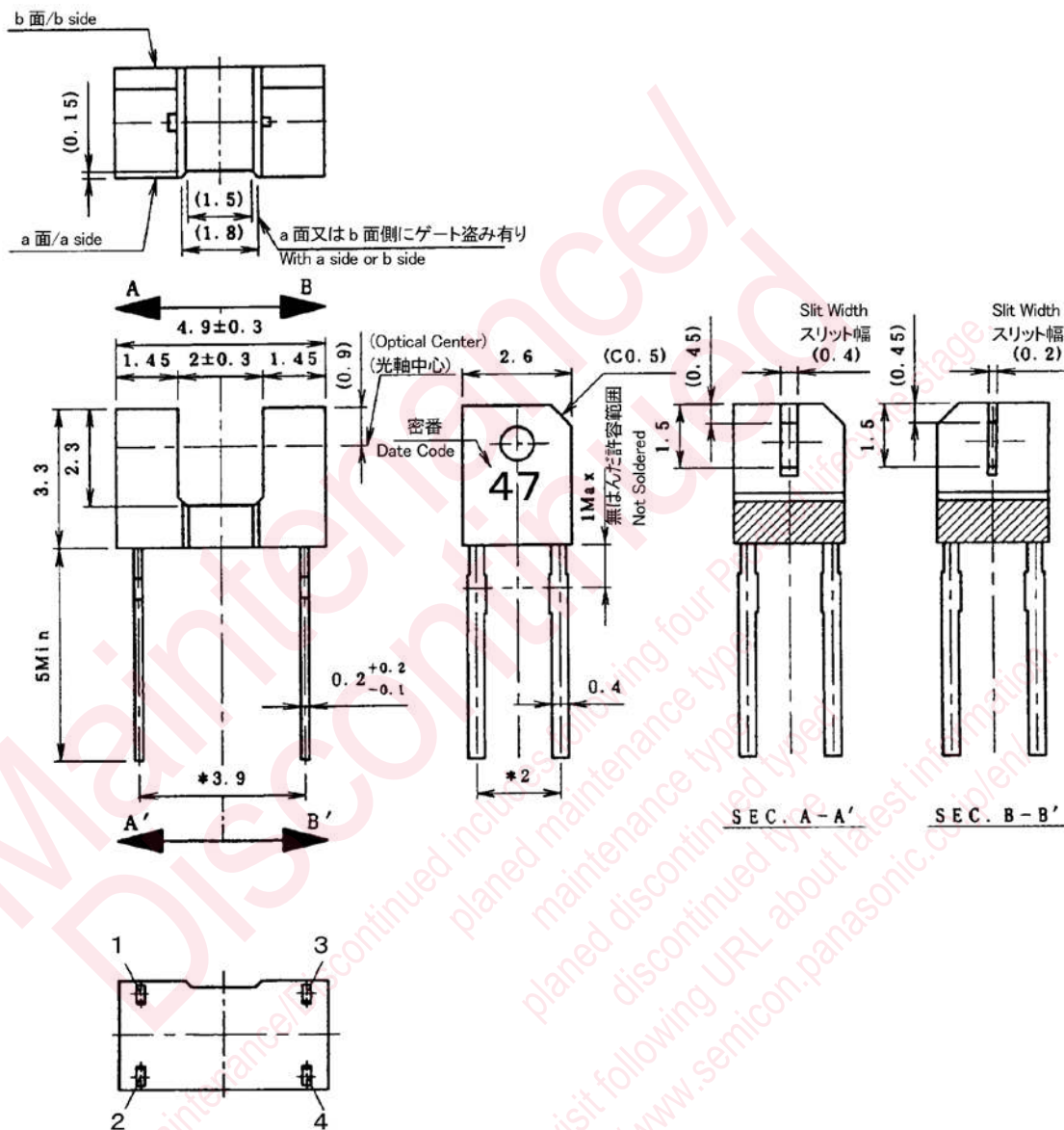




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planned maintenance type  
maintenance type  
planned discontinued type  
discontinued type  
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■ Package (Unit: mm)

LSMSIN4S0003



- (注 1) \*リード根元寸法とします。/(Note1) \* Indicates root dimensions of lead.
- (注 2) 指示無き寸法公差は $\pm 0.2$ 。/(Note2) Not appointment tolerance :  $\pm 0.2$ .
- (注 3) 密番は、目視又は顕微鏡に於いて解読できる事。(Note3) What a date code sees an attention and can decode in a microscope.

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

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