

# CNA1303K (ON1003)

## Photo Interrupter

For contactless SW and object detection

### ■ Overview

CNA1302K 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: 4.2 mm × 4.2 mm (height: 5.2 mm)
- Fast response:  $t_r$ ,  $t_f$  = 35  $\mu$ s (typ.)
- Highly precise position detection: 0.15 mm
- Gap width: 1.2 mm

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

| Parameter                       |  | Symbol    | Rating      | Unit             |
|---------------------------------|--|-----------|-------------|------------------|
| Input<br>(Light emitting diode) | Power dissipation *1                     | $P_D$     | 75          | mW               |
|                                 | Forward current                          | $I_F$     | 50          | mA               |
|                                 | Reverse voltage                          | $V_R$     | 6           | V                |
| Output<br>(Photo transistor)    | Collector-emitter voltage<br>(Base open) | $V_{CEO}$ | 35          | V                |
|                                 | Emitter-collector voltage<br>(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  $T_a \geq 25^\circ\text{C}$

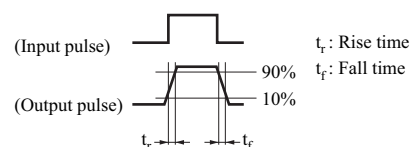
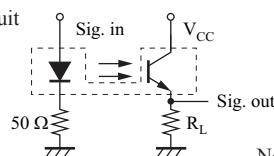
### ■ Electrical-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

| 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<br>(Base open) | $I_{CEO}$     | $V_{CE} = 20\text{ V}$   |     |     | 100   | nA            |
| Transfer characteristics | Collector current                               | $I_C$         | $V_{CE} = 5\text{ V}$ , $I_F = 5\text{ mA}$                                    | 100 |     | 1 300 | $\mu\text{A}$ |
|                          | Collector-emitter saturation voltage            | $V_{CE(sat)}$ | $I_F = 10\text{ mA}$ , $I_C = 40\text{ }\mu\text{A}$                           |     |     | 0.4   | V             |
|                          | Rise time *                                     | $t_r$         | $V_{CC} = 5\text{ V}$ , $I_C = 0.1\text{ mA}$ ,<br>$R_L = 1\text{ 000 }\Omega$ |     | 35  |       | $\mu\text{s}$ |
|                          | Fall time *                                     | $t_f$         |  |     | 35  |       | $\mu\text{s}$ |

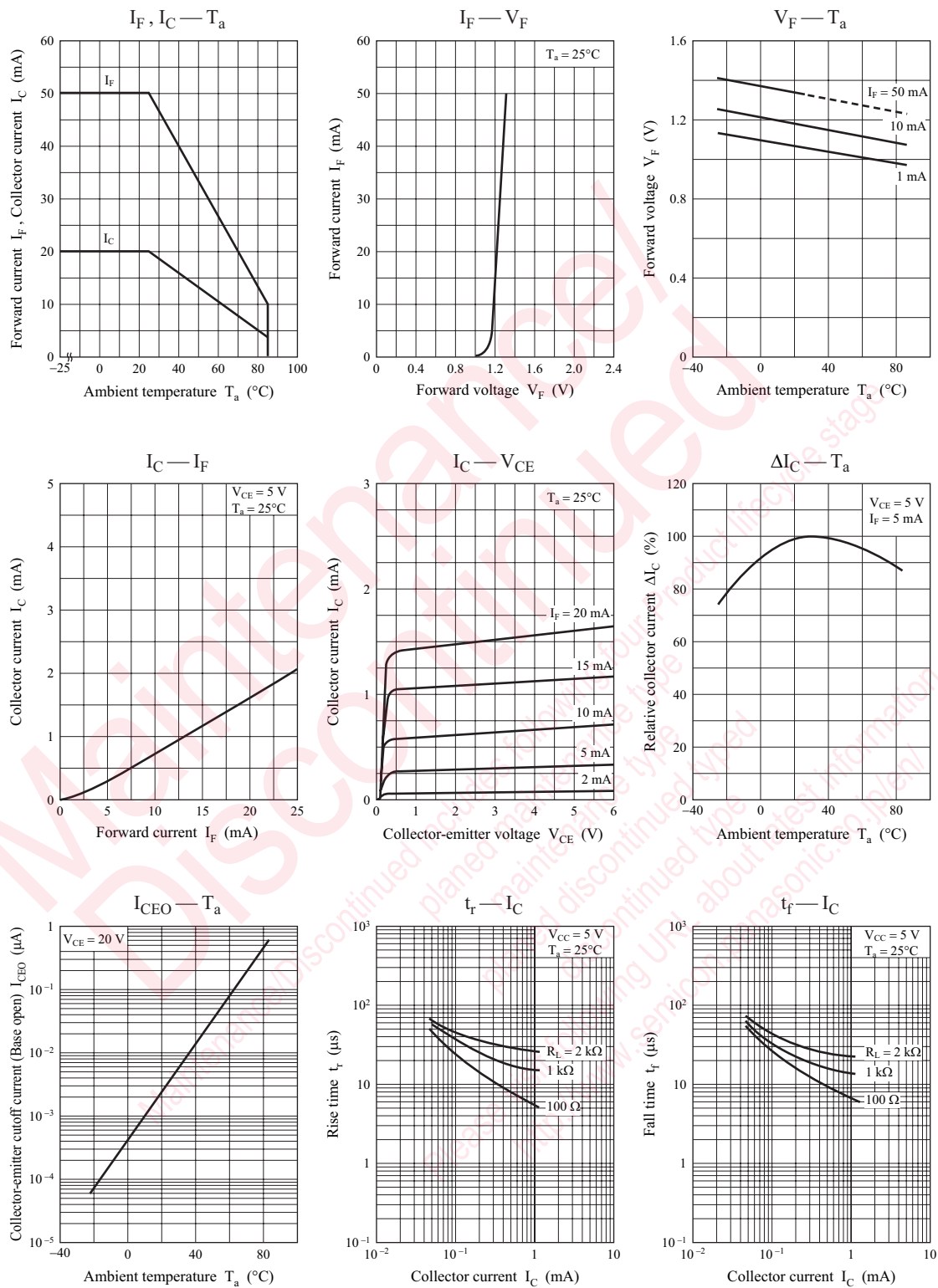
Note) 1. Input and output are practiced by electricity.

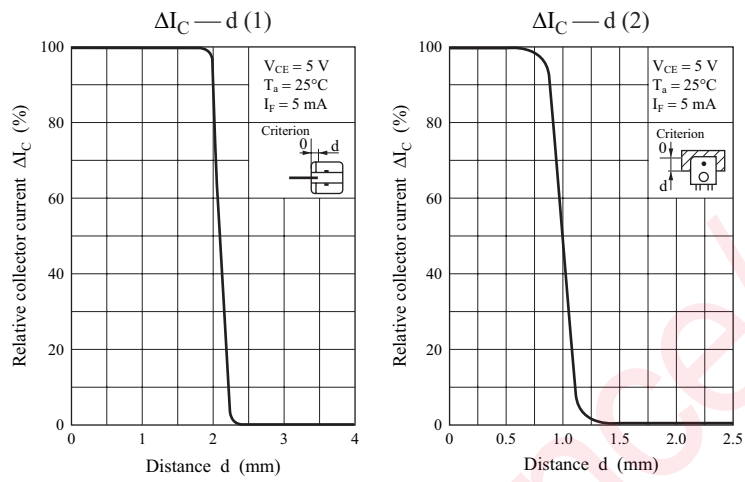
2. This device is designed by disregarding radiation.

3. \*: Switching time measurement circuit



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



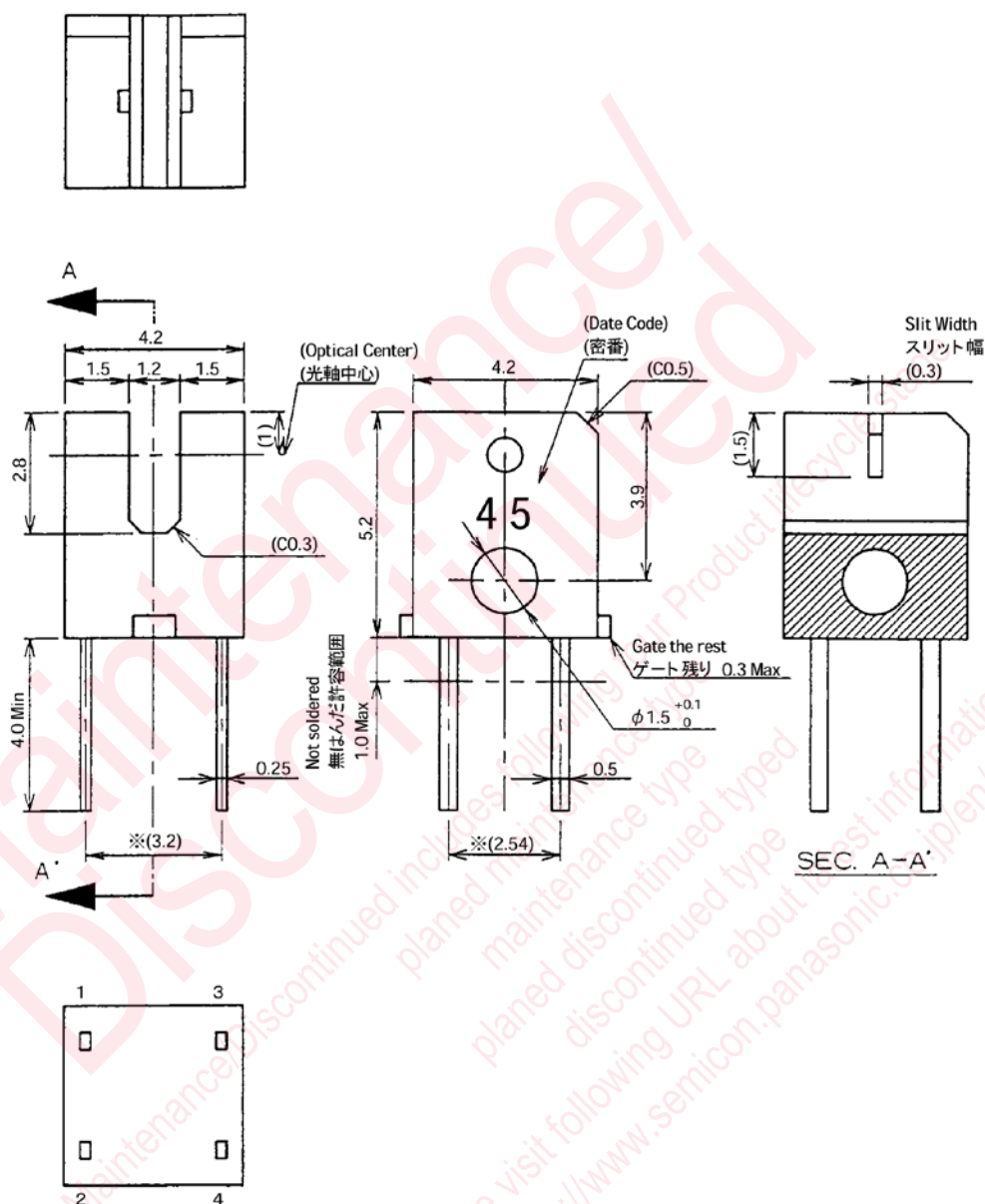


CNA1303K

**Panasonic**

■ Package (Unit: mm)

## LSMSIN4S0004



(注 1)(Note1)※リード根元寸法とします。／※Indicates root dimensions of lead.

(注 2)(Note2)指示無き寸法公差は±0.2。／Not appointment tolerance : ±0.2

(注 3)(Note3)バリ寸法は 0.15 Max./Barri measure : 0.15 Max.

(注 4) 上記寸法は、バリ・ゲート残り等を含んでおりません。

(Note4)An aforementioned dimension doesn't include projects and gate the rest remainder.

(注 5) 密番は、目視又は顕微鏡に於いて解読できる事。

(Note5)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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