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CNA1011K (ON1113)

Photo Interrupter

For contactless SW and object detection

■ Overview

CNA1011K is a small size photocoupler package consisting of a high efficiency GaAs infrared light emitting diode used as the light emitting element, and a high sensitivity phototransistor is used as the light detecting element.

■ Features

- Highly precise position detection: 0.3 mm
- Wide gap between emitting and detecting elements, suitable for thick plate detection
- Fast response: $t_r, t_f = 6.0 \mu s$ (typ.)
- Small output current variation against change in temperature

■ Absolute Maximum Ratings $T_a = 25^\circ C$

| 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 | $^\circ C$ |
| Storage temperature | | T_{stg} | -30 to +100 | $^\circ C$ |

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

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

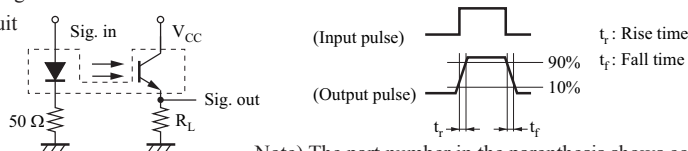
■ Electrical-Optical Characteristics $T_a = 25^\circ C \pm 3^\circ C$

| Parameter | | Symbol | Conditions | Min | Typ | Max | Unit |
|--------------------------|---|---------------|--|-----|-----|-----|---------|
| Input characteristics | Reverse current | I_R | $V_R = 3 V$ | | | 10 | μA |
| | Forward voltage | V_F | $I_F = 50 mA$ | | 1.2 | 1.5 | V |
| | Terminal capacitance | C_t | $V_R = 0 V, f = 1 MHz$ | | 35 | | pF |
| 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 | $V_{CC} = 10 V, I_F = 20 mA, R_L = 100 \Omega$ | 0.3 | | | mA |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F = 50 mA, I_C = 0.1 mA$ | | | 0.5 | V |
| | Rise time * | t_r | $V_{CC} = 10 V, I_C = 1 mA, R_L = 100 \Omega$ | | 6.0 | | μs |
| | Fall time * | t_f | $R_L = 100 \Omega$ | | 6.0 | | μs |

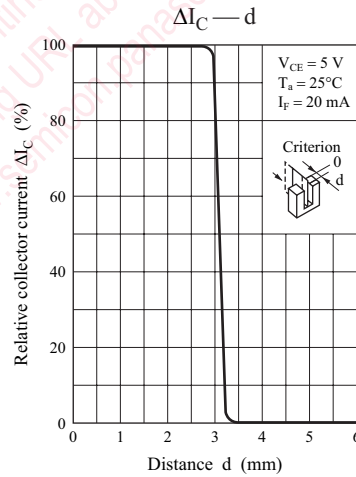
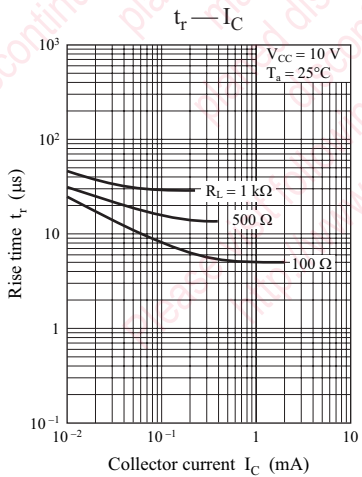
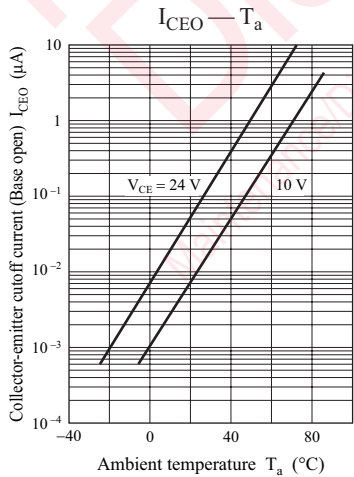
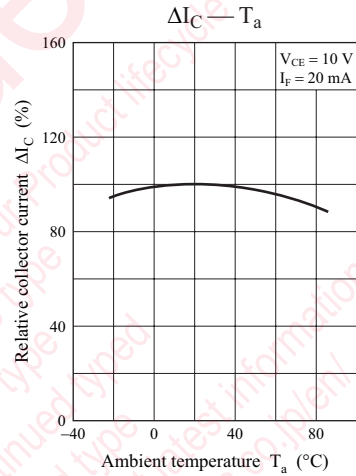
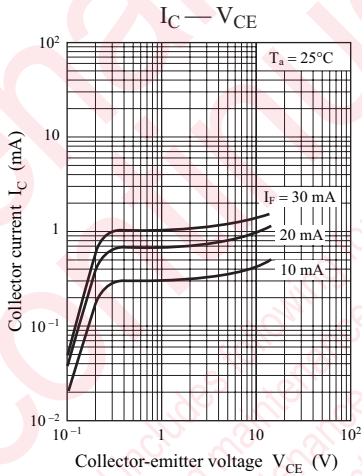
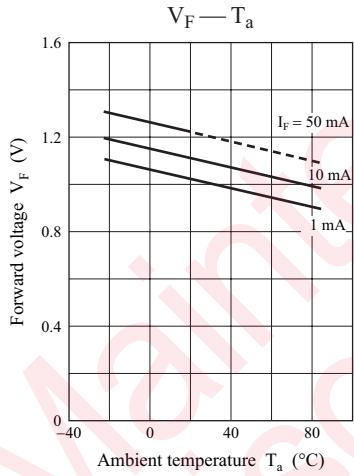
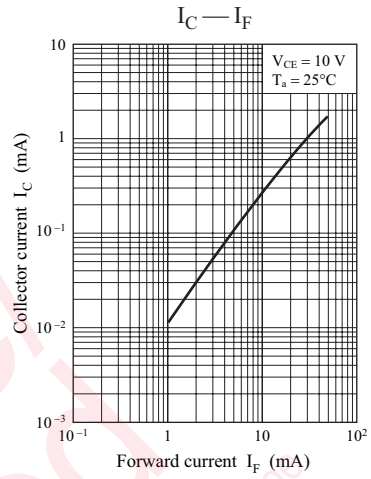
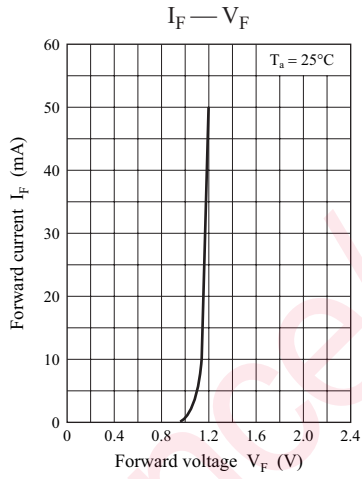
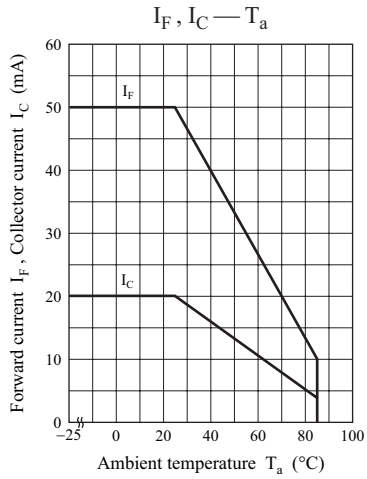
Note) 1. Input and output are practiced by electricity.

2. This device is designed by disregarding radiation.

3. *: Switching time measurement circuit



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



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