

CNA1311K

Photo Interrupter

For contactless SW, object detection

Overview

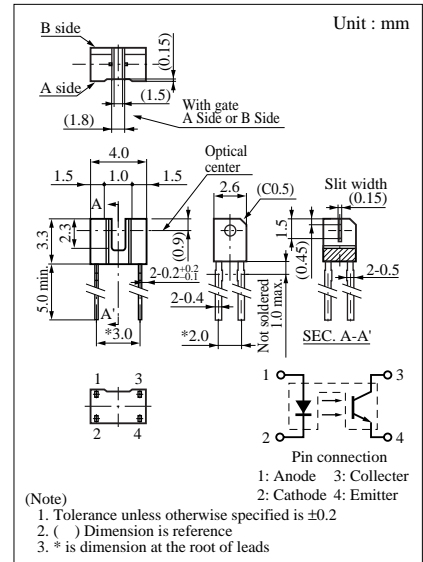
CNA1311K is an ultraminiature, highly reliable transmissive photosensor in which a high efficiency GaAs infrared light emitting diode chip and a high sensitivity Si phototransistor chip are integrated in a double molded resin package.

Features

- Ultraminiature : 2.6 × 4.0 mm (height : 3.3 mm)
- Highly precise position detection : 0.05 mm
- Gap width : 1.0 mm

Absolute Maximum Ratings (Ta = 25°C)

| Parameter | | Symbol | Ratings | Unit |
|------------------------------|-------------------------------|----------------|-------------|------|
| Input (Light emitting diode) | Reverse voltage (DC) | V_R | 6 | V |
| | Forward current (DC) | I_F | 50 | mA |
| | Power dissipation | P_D^{*1} | 75 | mW |
| Output (Photo transistor) | Collector current | I_C | 20 | mA |
| | Collector to emitter voltage | V_{CEO} | 35 | V |
| | Emitter to collector voltage | V_{ECO} | 6 | V |
| Temperature | Collector power dissipation | P_C^{*2} | 75 | mW |
| | Operating ambient temperature | T_{opr} | -25 to +85 | °C |
| | Storage temperature | T_{stg} | -40 to +100 | °C |
| | Soldering temperature | T_{sol}^{*3} | 260 | °C |



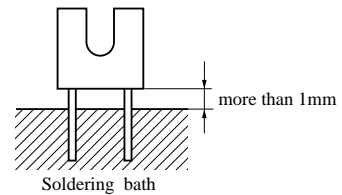
*1 Input power derating ratio is

1.0W/°C at $T_a \geq 25^\circ\text{C}$.

*2 Output power derating ratio is

1.0W/°C at $T_a \geq 25^\circ\text{C}$.

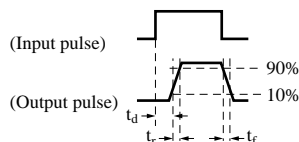
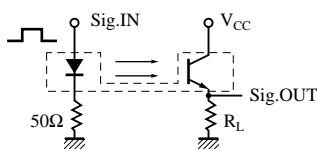
*3 Soldering time is within 5 seconds.



Electrical Characteristics (Ta = 25°C)

| Parameter | | Symbol | Conditions | min | typ | max | Unit |
|--------------------------|---|----------------|--|-----|-----|-----|---------------|
| Input characteristics | Forward voltage (DC) | V_F | $I_F = 20\text{mA}$ | | 1.2 | 1.4 | V |
| | Reverse current (DC) | I_R | $V_R = 3\text{V}$ | | | 10 | μA |
| Output characteristics | Collector cutoff current | I_{CEO} | $V_{CE} = 20\text{V}$ | | | 100 | nA |
| Transfer characteristics | Collector current | I_C | $V_{CE} = 5\text{V}, I_F = 5\text{mA}$ | 50 | | 600 | μA |
| | Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_F = 10\text{mA}, I_C = 40\mu\text{A}$ | | | 0.4 | V |
| | Response time | t_r, t_f^{*} | $V_{CC} = 5\text{V}, I_C = 0.1\text{mA}, R_L = 1000\Omega$ | | 50 | | μs |

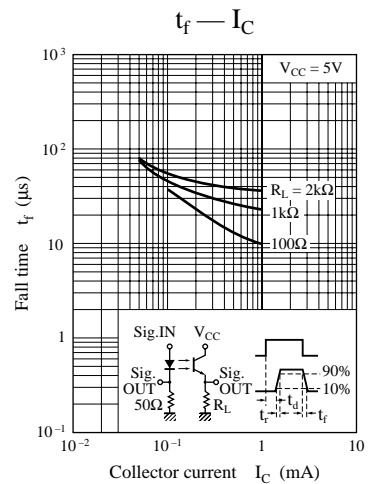
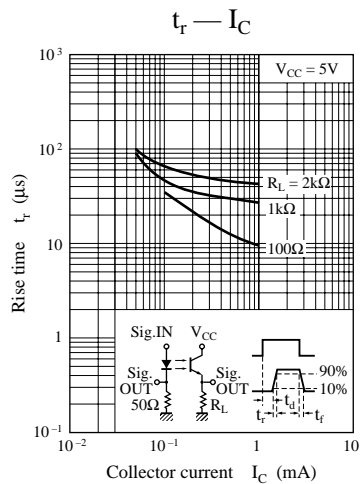
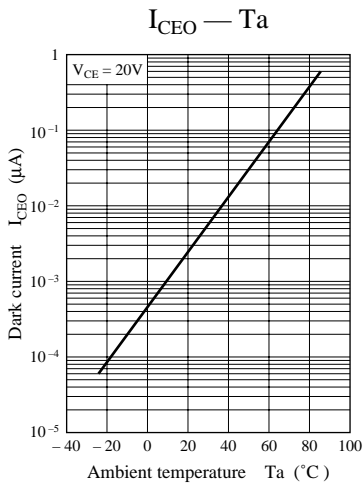
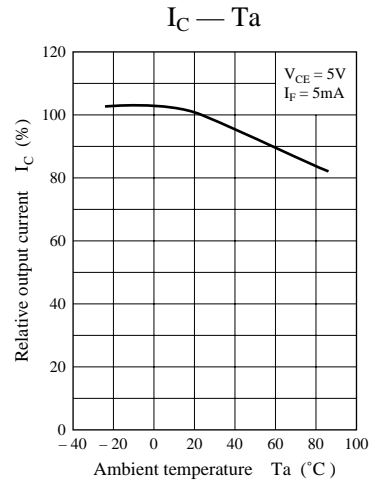
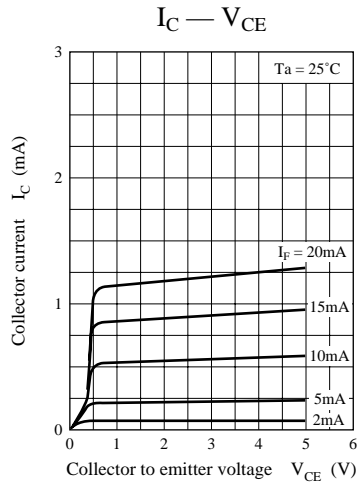
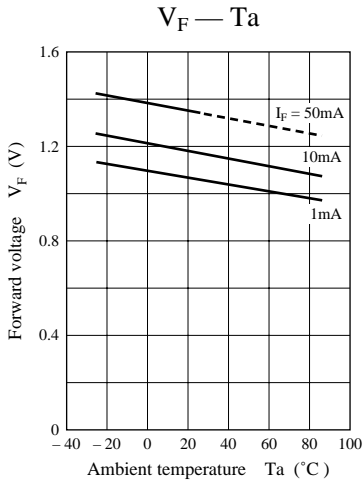
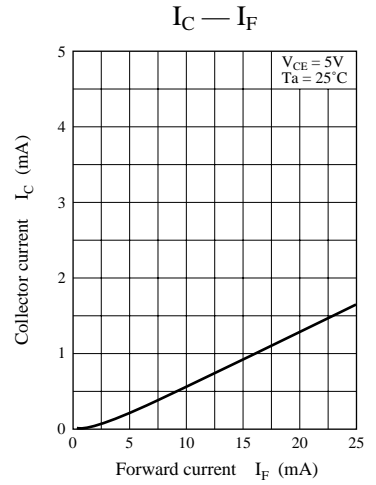
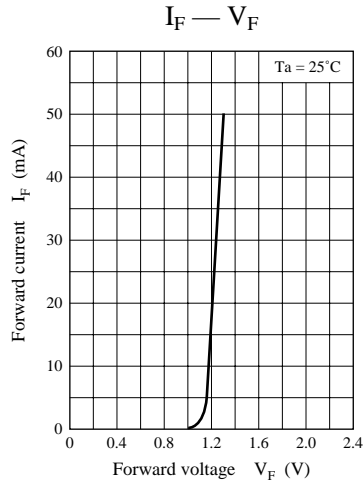
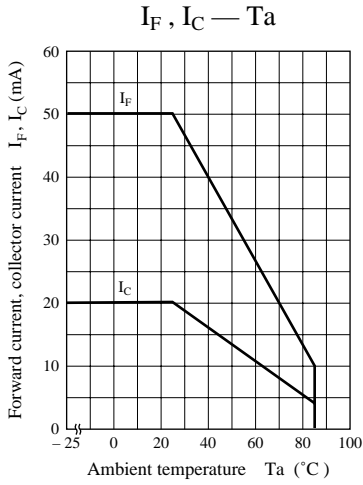
* Switching time measurement circuit

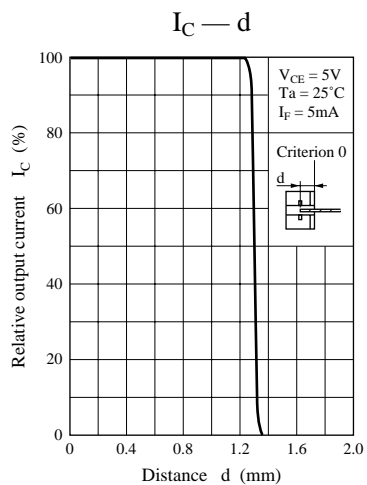
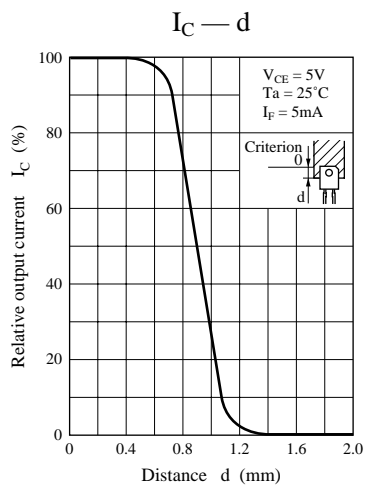


t_d : Delay time

t_r : Rise time (Time required for the collector current to increase from 10% to 90% of its final value)

t_f : Fall time (Time required for the collector current to decrease from 90% to 10% of its initial value)





Caution for Safety

 **DANGER**

Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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