## **CNA1015**

#### Photo Interrupters

#### Overview

CNA1015 series is a transmissive photosensor series 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

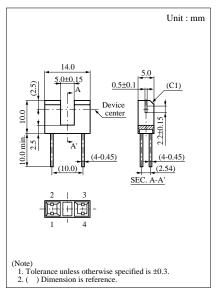
• Position detection accuracy: 0.3 mm

• Gap width: 5 mm

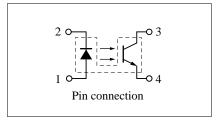
• The type directly attached to PCB

#### Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol Ratings		Unit
Reverse voltage (DC)	V <sub>R</sub>	5	V
Forward current (DC)	$I_F$	50	mA
Power dissipation	$P_D^{*1}$	75	mW
Collector current I		20	mA
Collector to emitter voltage	V <sub>CEO</sub>	30	V
Emitter to collector voltage	V <sub>ECO</sub>	5	V
Collector power dissipation	P <sub>C</sub> *2	100	mW
Operating ambient temperature	Topr	-25 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +100	°C
	Reverse voltage (DC) Forward current (DC) Power dissipation Collector current Collector to emitter voltage Emitter to collector voltage Collector power dissipation Operating ambient temperature	$ \begin{array}{c cccc} Reverse \ voltage \ (DC) & V_R \\ \hline Forward \ current \ (DC) & I_F \\ \hline Power \ dissipation & P_D^{*1} \\ \hline Collector \ current & I_C \\ \hline Collector \ to \ emitter \ voltage & V_{CEO} \\ \hline Emitter \ to \ collector \ voltage & V_{ECO} \\ \hline Collector \ power \ dissipation & P_C^{*2} \\ \hline Operating \ ambient \ temperature & T_{opr} \\ \hline \end{array} $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$



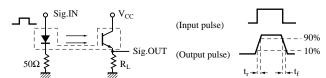
#### Internal connector



#### $\blacksquare$ Electrical Characteristics (Ta = 25°C)

	Parameter	Symbol	Conditions	min	typ	max	Unit
Input	Forward voltage (DC)	V <sub>F</sub>	$I_F = 20mA$		1.25	1.4	V
characteristics	Reverse current (DC)	I <sub>R</sub>	$V_R = 3V$			10	μΑ
Output characteristics	Collector cutoff current	I <sub>CEO</sub>	$V_{CE} = 10V$		10	200	nA
Transfer characteristics	Collector current	$I_{C}$	$V_{CC} = 5V, I_F = 20mA, R_L = 100\Omega$	0.5		10	mA
	Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	$I_F = 40 \text{mA}, I_C = 1 \text{mA}$			0.4	V
	Response time	$t_r, t_f^*$	$V_{CC} = 5V, I_C = 1mA, R_L = 100\Omega$		5		μs

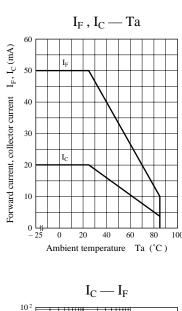
<sup>\*</sup> Switching time measurement circuit

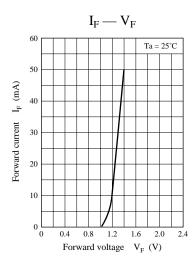


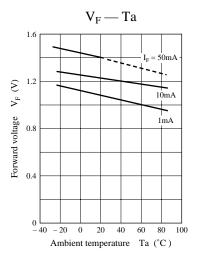
- ${\rm t_r}$ : Rise time (Time required for the collector photo current to increase from 10% to 90% of its final value)
- ${\rm t_f}$ : Fall time (Time required for the collector photo current to decrease from 90% to 10% of its initial value)

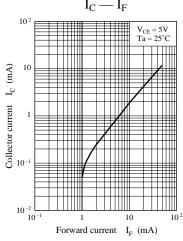
<sup>\*1</sup> Input power derating ratio is 1.0 mW/°C at Ta = 25°C.

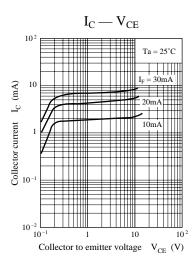
<sup>\*2</sup> Output power derating ratio is 1.33 mW/°C at Ta = 25°C.

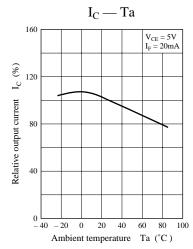


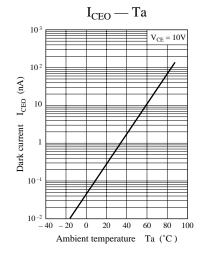


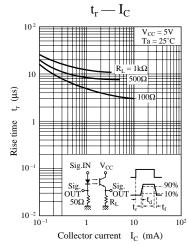


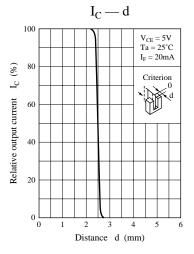












# Caution for Safety



# 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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