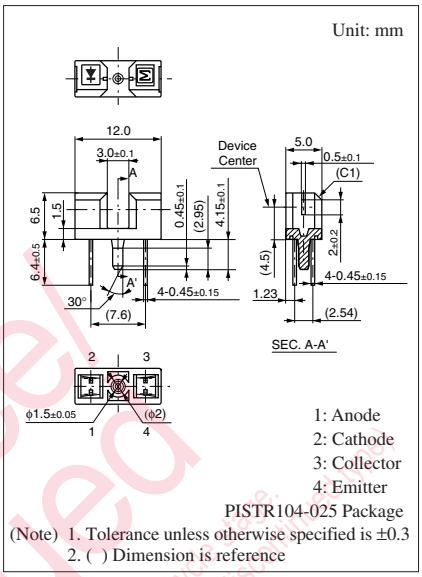
CNA1014H (ON1387)

Photo Interrupter

For contactless SW, object detection



■ Overview

CNA1014H is a transmittive 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

- Highly precise position detection: 0.3 mm
- With attachment positioning boss
- Fast response: t_r , t_f = 5 µs (typ.)

■ Adsolute Maximum Ratings T_a = 25°C

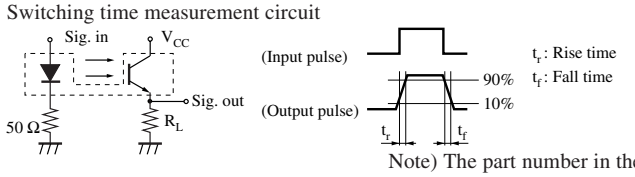
Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Reverse voltage	V_R	3	V
	Forward current	I_F	50	mA
	Power dissipation *1	P_D	75	mW
Output (Photo transistor)	Collector-emitter voltage (Base open)	V_{CEO}	30	V
	Emitter-collector voltage (Base open)	V_{ECO}	5	V
	Collector current	I_C	20	mA
	Collector power dissipation *2	P_C	100	mW
Temperature	Operating ambient temperature	T_{opr}	−25 to +85	°C
	Storage temperature	T_{stg}	−40 to +100	°C

Note) ∗1: Input power derating ratio is 1.0 mW/°C at $T_a \geq 25°C$.
∗2: Output power derating ratio is 1.33 mW/°C at $T_a \geq 25°C$.

■ Electrical-Optical Characteristics T_a = 25°C ± 3°C

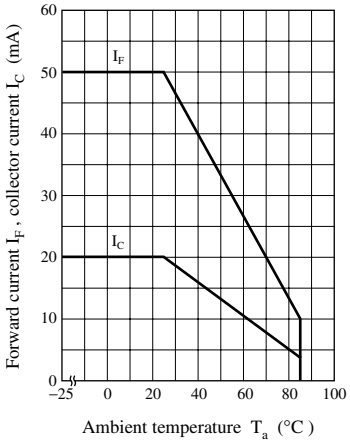
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Forward voltage	V_F	I_F = 20 mA		1.25	1.40	V
	Reverse current	I_R	V_R = 3 V			10	µA
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = 10 V		10	200	nA
Transfer characteristics	Collector current	I_C	V_{CE} = 5 V, I_F = 20 mA	1.5		12.0	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F = 40 mA, I_C = 1 mA			0.4	V
	Rise time *	t_r	V_{CC} = 5 V, I_C = 1 mA		5		µs
	Fall time *	t_f	R_L = 100 Ω		5		µs

Note) 1. Input and output are practiced by electricity.
2. This device is designed be disregarded radiation.
3. ∗: Switching time measurement circuit

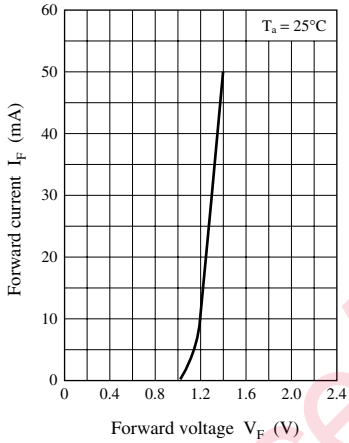


Note) The part number in the parenthesis shows conventional part number.

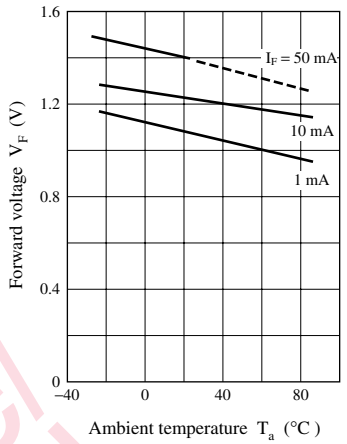
I_F , I_C — T_a



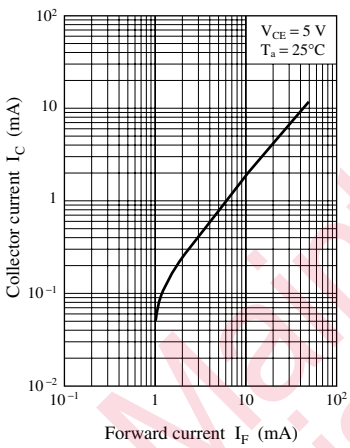
I_F — V_F



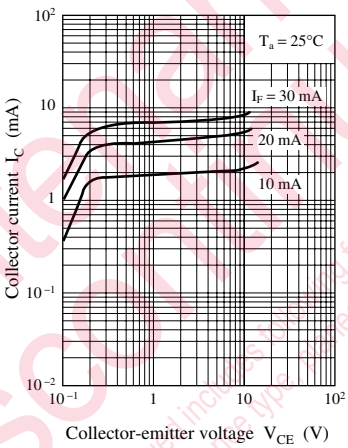
V_F — T_a



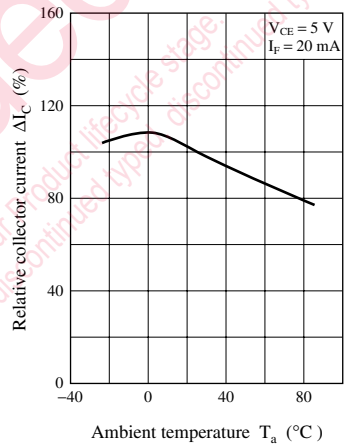
I_C — I_F



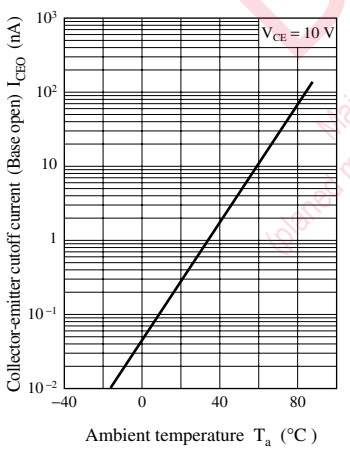
I_C — V_{CE}



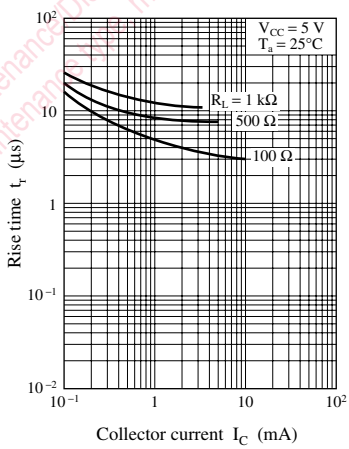
ΔI_C — T_a



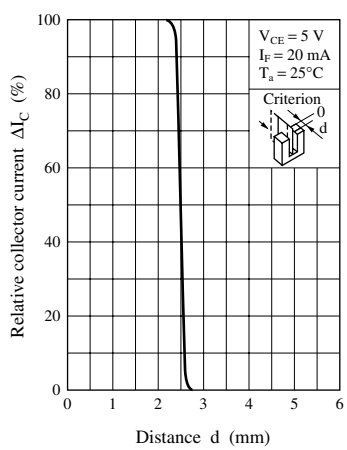
I_{CEO} — T_a



t_r — I_C



ΔI_C — d



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⚠DANGER

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