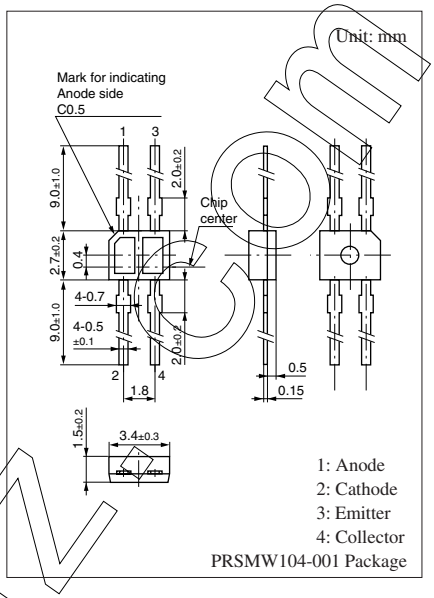
CNB1302 (ON2170)

Reflective photosensor

Non-contact point SW, object sensing



■ Overview

CNB1302 is a small, thin reflective photosensor consisting of a high efficiency GaAs infrared light emitting diode which is integrated with a high sensitivity Si phototransistor in a single resin package.

■ Features

- Ultraminiature, thin type: 2.7 mm × 3.4 mm (height: 1.5 mm)
- Visible light cutoff resin is used
- Fast response: t_r , t_f = 20 µs (typ.)
- Easy interface for control circuit

■ Applications

- Control of motor and other rotary units
- Detection of position and edge
- Detection of paper, film and cloth
- Start, end mark detection of magnetic tape

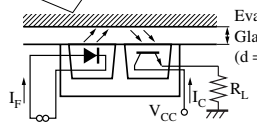
■ Absolute Maximum Ratings T_a = 25°C

Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Reverse voltage	V_R	3	V
	Forward current	I_F	50	mA
	Power dissipation	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	P_C	50	mW
Temperature	Operating ambient temperature	T_{opr}	−25 to +85	°C
	Storage temperature	T_{stg}	−30 to +100	°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 = 50 mA		1.3	1.5	V
	Reverse current	I_R	V_R = 3 V		0.01	10.00	µA
	Terminal capacitance	C_t	V_R = 0 V, f = 1 MHz		30		pF
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = 10 V			200	nA
Transfer characteristics	Collector current *1, 2	I_C	V_{CC} = 5 V, I_F = 10 mA, R_L = 100 Ω, d = 1 mm	90		880	µA
	Dark current	I_D	V_{CC} = 5 V, I_F = 10 mA, R_L = 100 Ω			200	nA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F = 20 mA, I_C = 0.1 mA			0.4	V
	Rise time	t_r	V_{CC} = 5 V, I_C = 0.1 mA		20		µs
	Fall time	t_f	R_L = 100 Ω		20		µs

Note) 1. Input and output are handled electrically.
2. This product is not designed to withstand radiation
3. *1: Output current measurement method

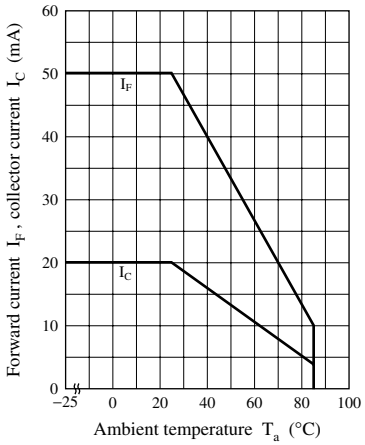


*2: Rank classification

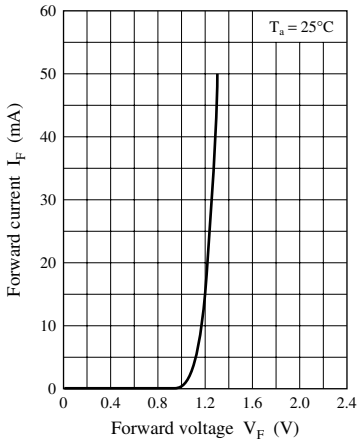
Rank	Q	R	S
I_C (µA)	90 to 220	180 to 440	360 to 880
Color	Orange	White	Blue

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

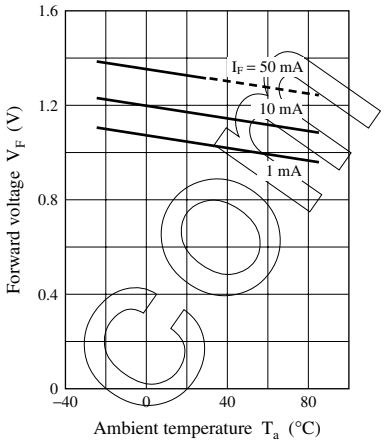
I_F , I_C — T_a



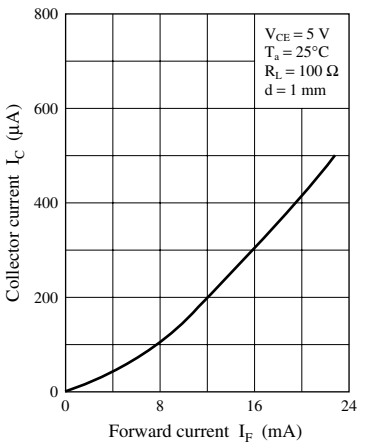
I_F — V_F



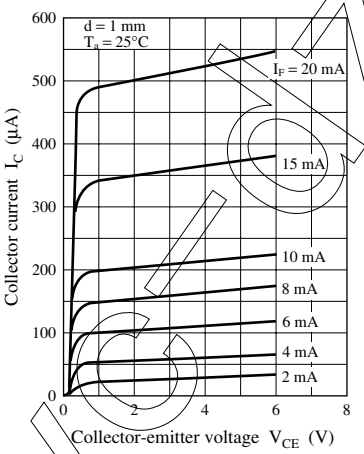
V_F — T_a



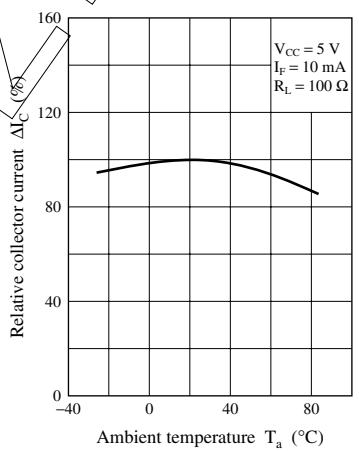
I_C — I_F



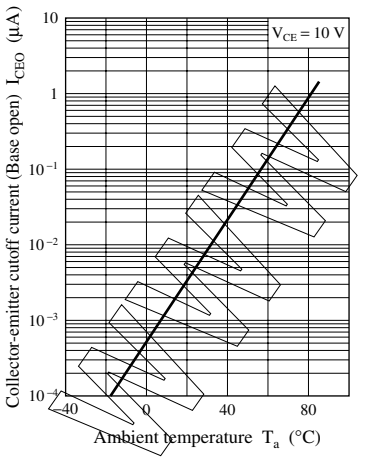
I_C — V_{CE}



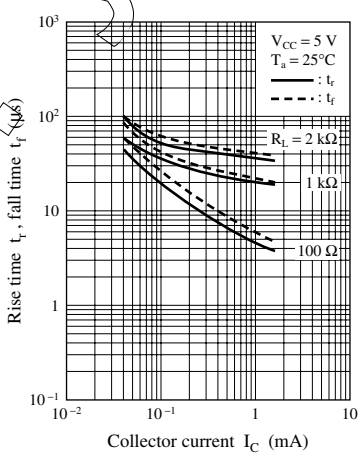
ΔI_C — T_a



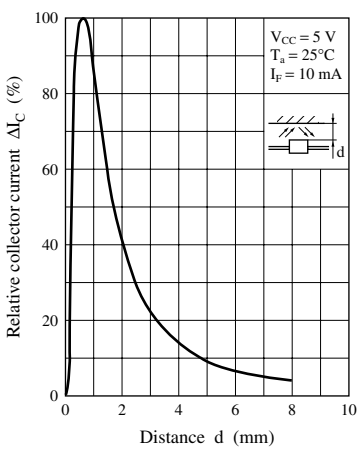
I_{CEO} — T_a



t_r , t_f — I_C



ΔI_C — d



⚠ Caution for Safety

⚠ DANGER

■ This product contains Gallium Arsenide (GaAs).

GaAs powder and vapor are hazardous to human health if inhaled or ingested. Do not burn, destroy, cut, cleave off, or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded form general industrial waste or household garbage.

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