

CNB1009 (ON2173)

Reflective photosensor

Non-contact point SW, object sensing

Overview

CNB1009 is a photosensor detecting the change of reflective light in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity Si phototransistor is used as the light detecting element. The two elements are located parallel in the same direction and objects are detected when passing in front of the device.

Features

- Fast response: t_r , t_f = 6 μ s (typ.)
- Small size, light weight

Applications

- Detection of paper, film and cloth
- Optical mark reading
- Detection of coin and bill
- Detection of position and edge
- Start, end mark detection of magnetic tape

Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

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

Electrical-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Forward voltage	V_F $I_F = 50$ mA		1.2	1.5	V
	Reverse current	I_R $V_R = 3$ V			10	μ A
	Terminal capacitance	C_t $V_R = 0$ V, $f = 1$ MHz		50		pF
Output characteristics	Collector-emitter cutoff current	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 *1, 2	I_C $V_{CC} = 10$ V, $I_F = 20$ mA, $R_L = 100 \Omega$, $d = 5$ mm	100	500		μ A
	Collector-emitter saturation voltage	$V_{CE(sat)}$ $I_F = 50$ mA, $I_C = 0.1$ mA			0.3	V
	Rise time	t_r $V_{CC} = 10$ V, $I_C = 1$ mA, $R_L = 100 \Omega$		6.0		μ s
	Fall time	t_f		6.0		μ s

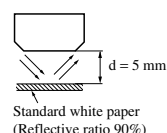
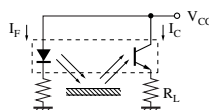
Note) 1. Input and output are handled electrically.

2. This product is not designed to withstand radiation

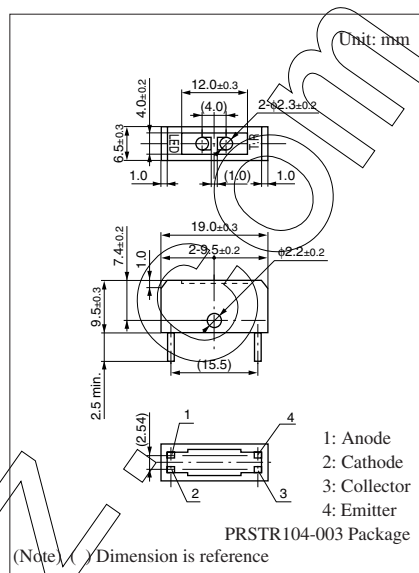
3. *1: Output current measurement circuit
(Ambient light is shut off completely)

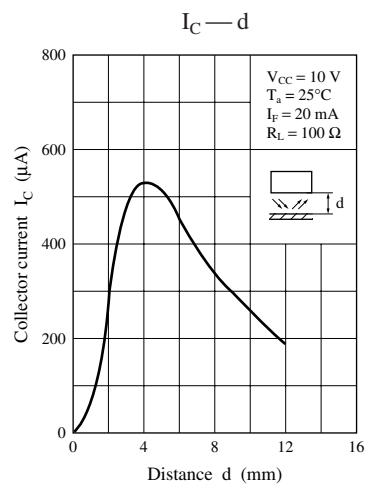
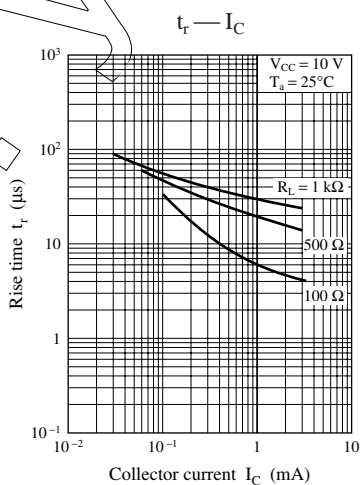
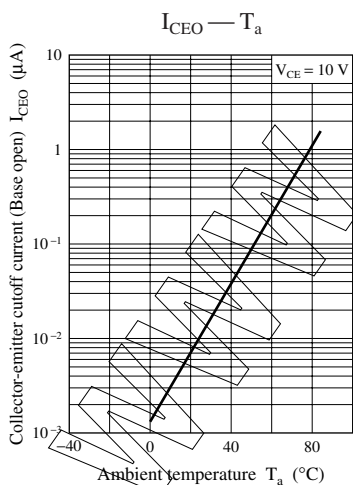
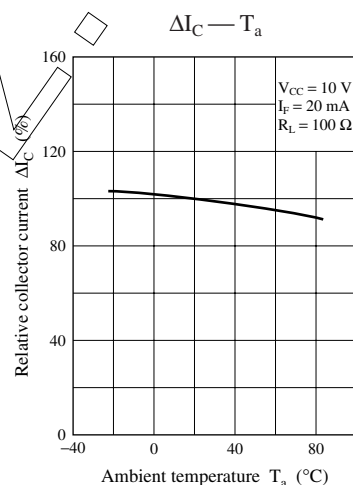
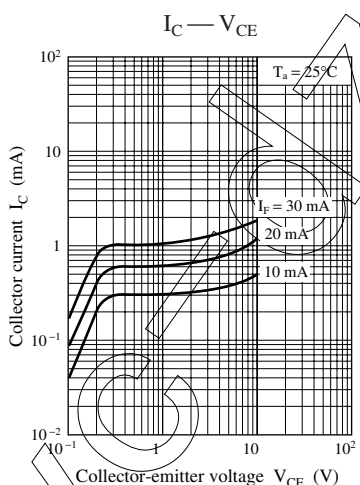
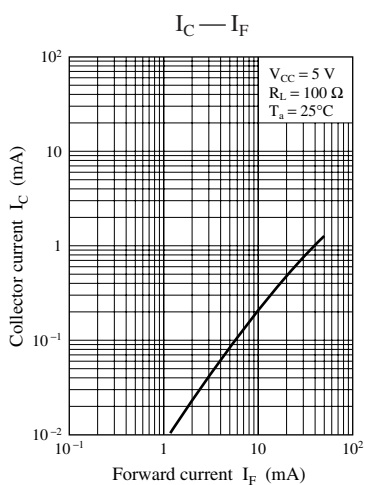
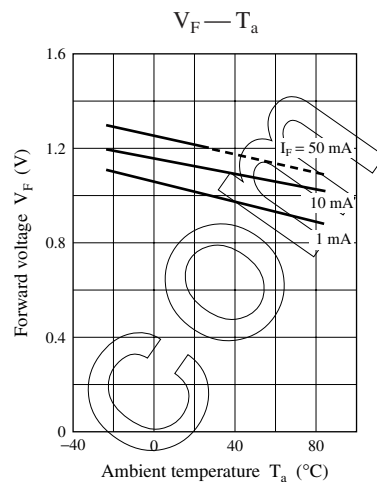
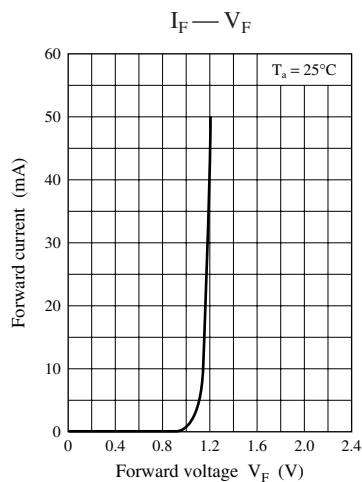
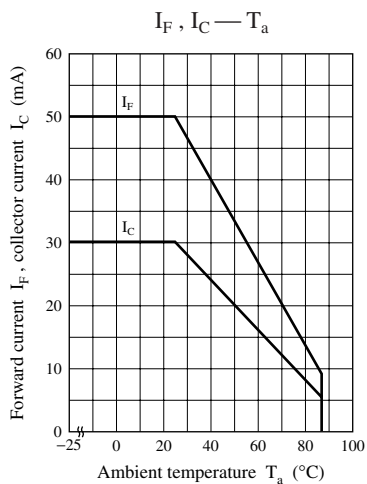
*2: Rank classification

Rank	Q	R	S	No-rank
I_C (μ A)	100 to 500	350 to 750	600 \leq	100 \leq



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





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 from general industrial waste or household garbage.

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