

CNB1302 (ON2170)

Reflective Photosensor

For contactless SW and object detection

■ 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: $t_r, t_f = 20 \mu\text{s}$ (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 $T_a = 25^\circ\text{C}$

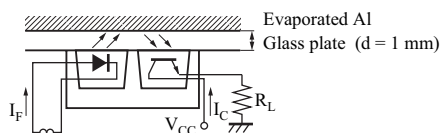
Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Power dissipation	P_D	75	mW
	Forward current	I_F	50	mA
	Reverse voltage	V_R	3	V
Output (Photo transistor)	Collector-emitter voltage (Base open)	V_{CEO}	30	V
	Emitter-collector voltage (Base open)	V_{ECO}	5	V
	Collector current	I_C	20	mA
	Collector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

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

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

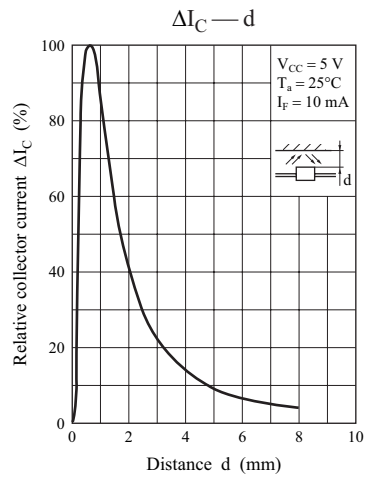
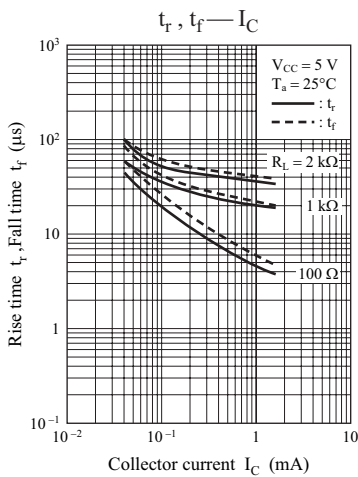
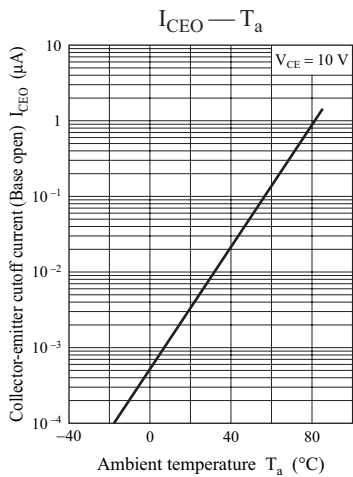
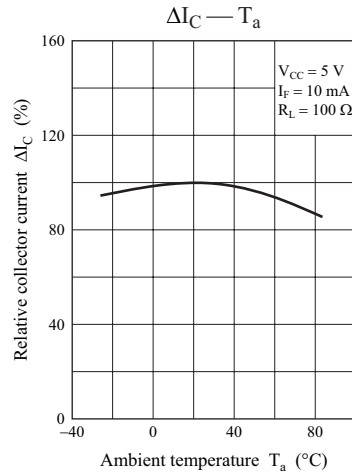
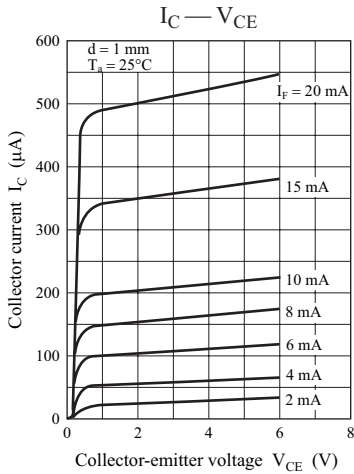
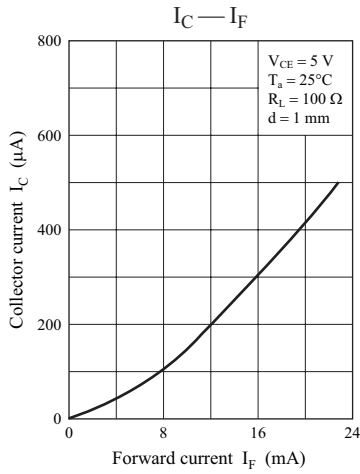
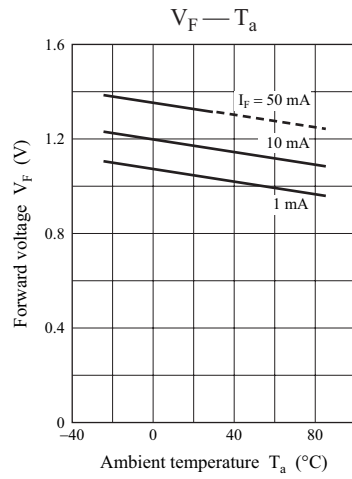
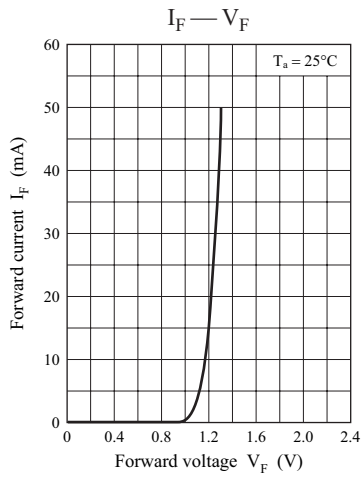
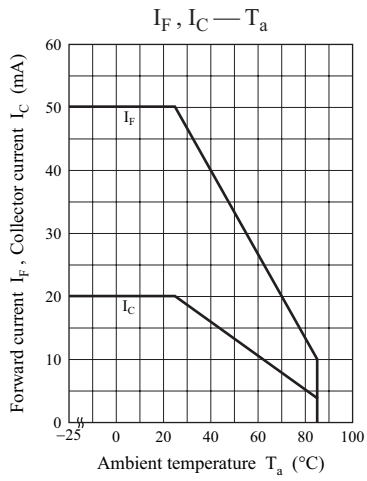
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Reverse current	I_R	$V_R = 3\text{ V}$		0.01	10	μA
	Forward voltage	V_F	$I_F = 50\text{ mA}$		1.3	1.5	V
	Terminal capacitance	C_T	$V_R = 0\text{ V}, f = 1\text{ MHz}$		30		pF
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 10\text{ V}$			200	nA
Transfer characteristics	Collector current *1, *2	I_C	$V_{CC} = 5\text{ V}, I_F = 10\text{ mA}, R_L = 100\ \Omega, d = 1\text{ mm}$	90		880	μA
	Drain current	I_D	$V_{CC} = 5\text{ V}, I_F = 10\text{ mA}, R_L = 100\ \Omega$			200	nA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{ mA}, I_C = 0.1\text{ mA}$			0.4	V
	Rise time	t_r	$V_{CC} = 5\text{ V}, I_C = 0.1\text{ mA}, R_L = 100\ \Omega$		20		μs
	Fall time	t_f	$R_L = 100\ \Omega$		20		μs

- Note) 1. Input and output are practiced by electricity.
 2. This device is designed by disregarding radiation.
 3. *1: Output current measurement circuit



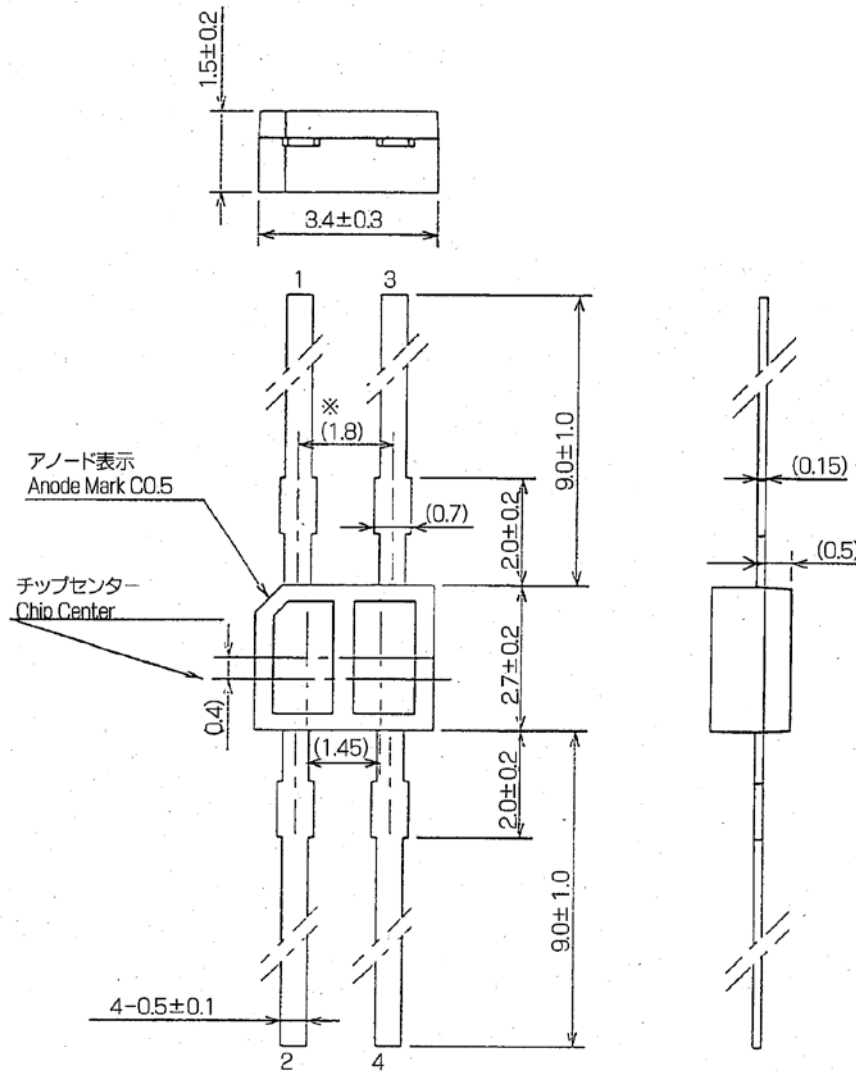
*2: Rank classification

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



■ Package (Unit: mm)

LSMFRN4S0001



(注 1) ※リード根元寸法とします。／(Note1) ※Indicates root dimensions of lead.
 (注 2) ランク色表示は、目視又は顕微鏡に於いて解読できる事。
 (Note2) What rank color a sees an attention and can decode in a microscope.

- Pin name
- 1: Anode
- 2: Cathode
- 3: Emitter
- 4: Collector

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