

CNB2301 (ON2270)

Reflective Photosensor

For contactless SW and object detection

■ Overview

CNB2301 is a small, thin reflective photosensor consisting of a high efficiency GaAs infrared light emitting diode which is integrated with a high sensitivity darlington phototransistor used as the photo detector in a single resin package.

■ Features

- Ultraminiature: 2.7 mm × 3.4 mm
- Visible light cutoff resin is used
- High current transfer ratio

■ Applications

- Detection of paper, film and cloth
- Detection of position and edge
- Liquid level sensor
- Detection of rotary positioning
- 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}	20	V
	Emitter-collector voltage (Base open)	V_{ECO}	5	V
	Collector current	I_C	30	mA
	Collector power dissipation	P_C	75	mW
	Total power dissipation	P_T	100	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.

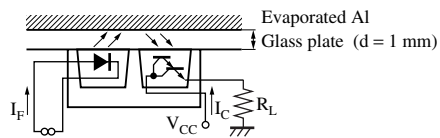
■ Electrical-Optical Characteristics $T_a = 25^{\circ}\text{C} \pm 3^{\circ}\text{C}$

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}	$V_{\text{CE}} = 10 \text{ V}$			1.0	μA
Transfer characteristics	Collector current *1, *2	I_C	$V_{\text{CC}} = 5 \text{ V}, I_F = 2 \text{ mA}, R_L = 100 \Omega, d = 1 \text{ mm}$	0.46		12.0	mA
	Drain current	I_D	$V_{\text{CC}} = 5 \text{ V}, I_F = 2 \text{ mA}, R_L = 100 \Omega$			2.0	μA
	Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_F = 5 \text{ mA}, I_C = 0.5 \text{ mA}$			1.5	V
	Rise time	t_r	$V_{\text{CC}} = 10 \text{ V}, I_C = 1 \text{ mA}, R_L = 100 \Omega$		150		μs
	Fall time	t_f			150		μs

Note) 1. Input and output are practiced by electricity.

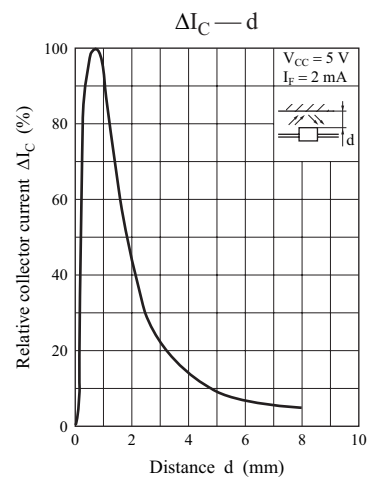
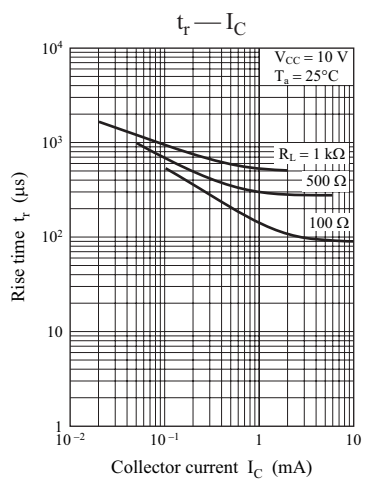
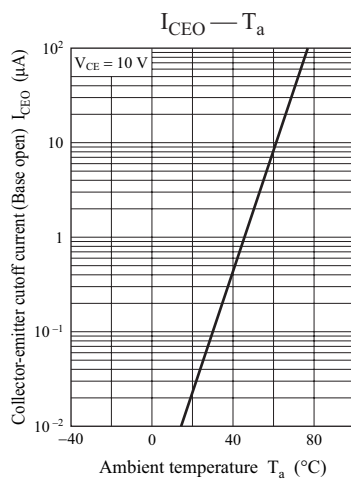
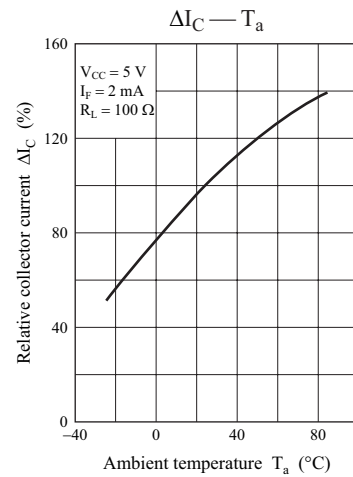
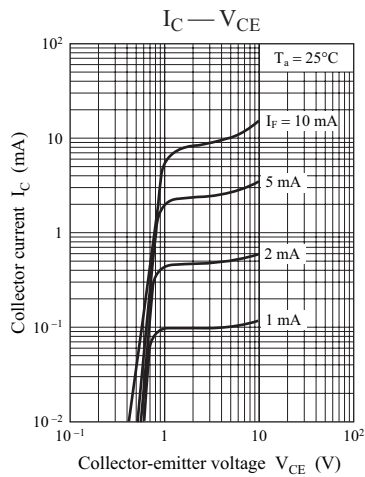
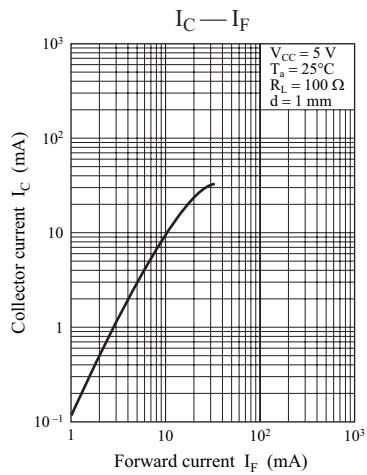
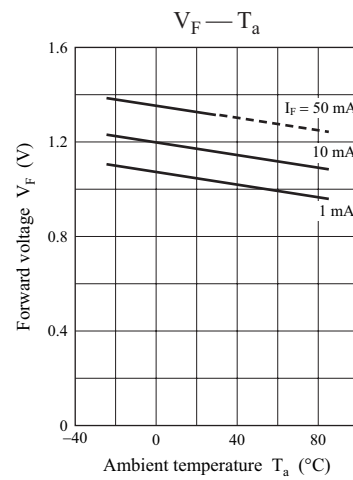
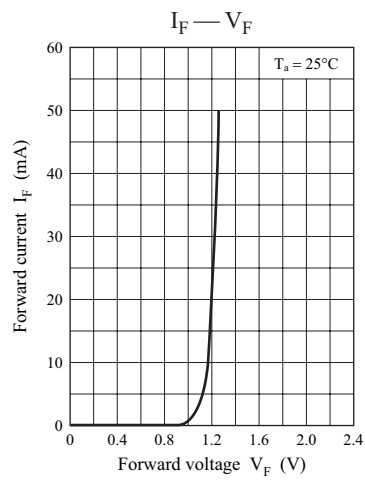
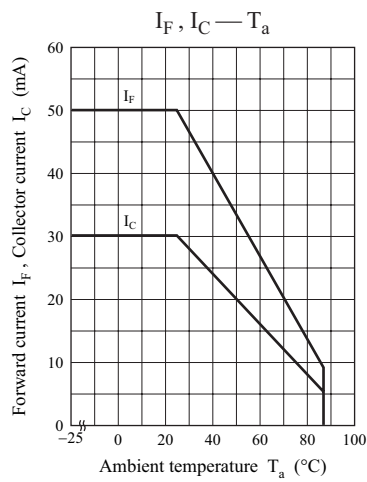
2. This device is designed by disregarding radiation.

3. *1: Output current measurement circuit



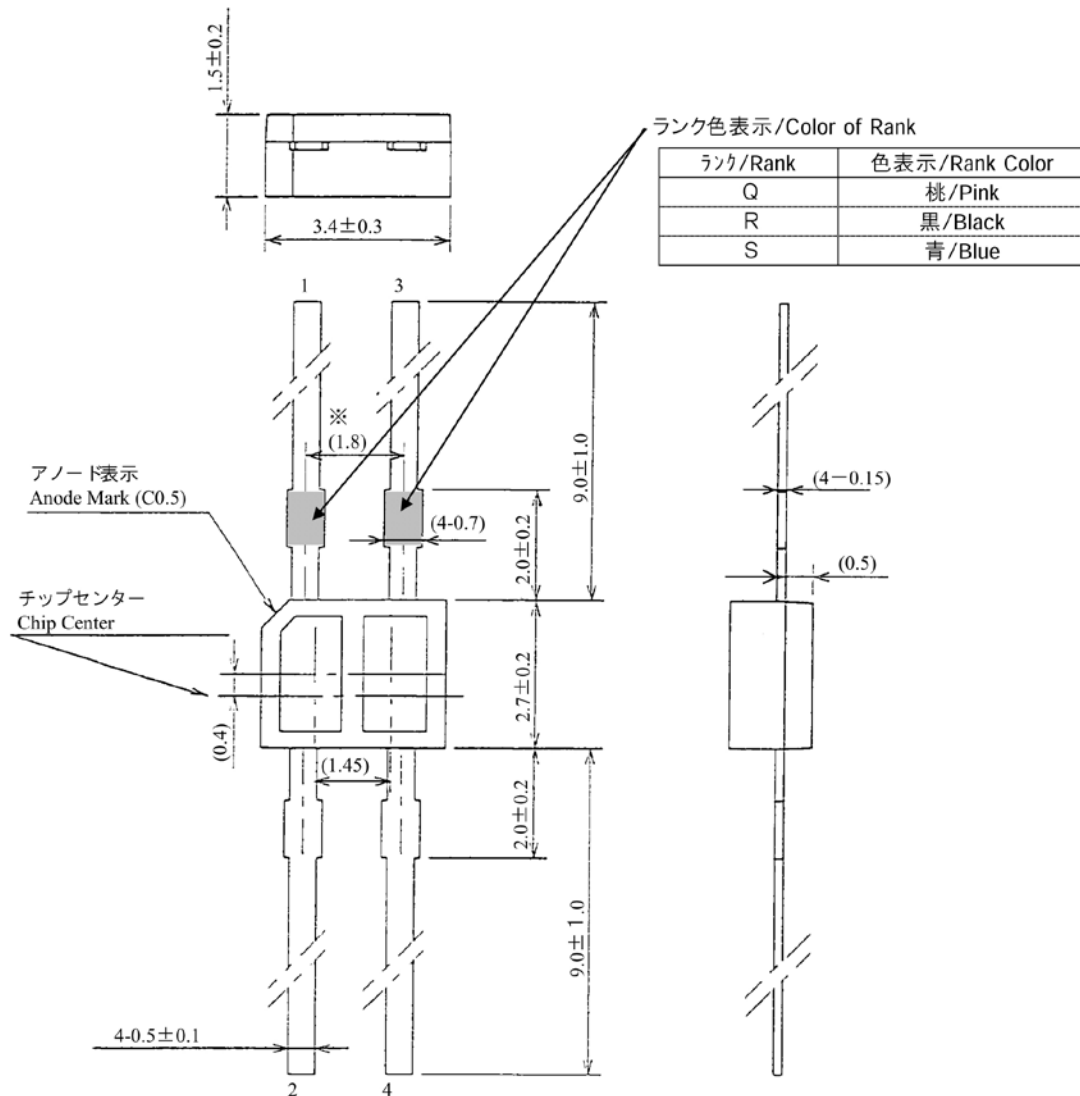
*2: Rank classification

Rank	Q	R	S
I_C (mA)	0.46 to 1.75	1.30 to 4.95	3.15 to 12.0
Color	Pink	Black	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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