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°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	°C
Storage temperature		T_{stg}	–30 to +100	°C

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

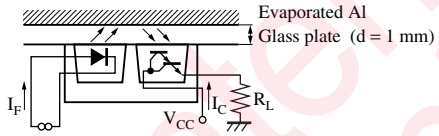
■ Electrical-Optical Characteristics T_a = 25°C±3°C

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Reverse current	I_R	V_R = 3 V		0.01	10	µA
	Forward voltage	V_F	I_F = 50 mA		1.3	1.5	V
	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			1.0	µA
Transfer characteristics	Collector current *1, *2	I_C	V_{CC} = 5 V, I_F = 2 mA, R_L = 100 Ω, d = 1 mm	0.46		12.0	mA
	Drain current	I_D	V_{CC} = 5 V, I_F = 2 mA, R_L = 100 Ω			2.0	µA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F = 5 mA, I_C = 0.5 mA			1.5	V
	Rise time	t_r	V_{CC} = 10 V, I_C = 1 mA, R_L = 100 Ω		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.

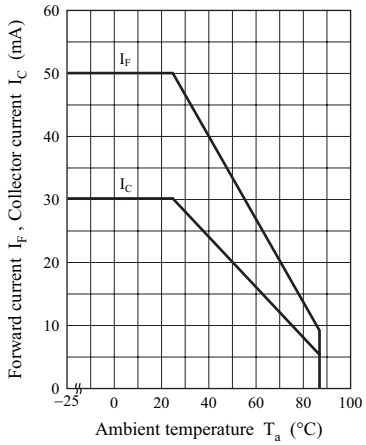
3. *1: Output current measurement circuit



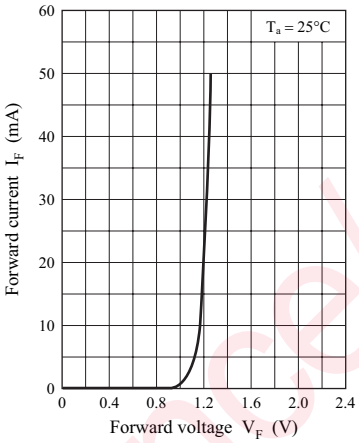
*2: Rank classification

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

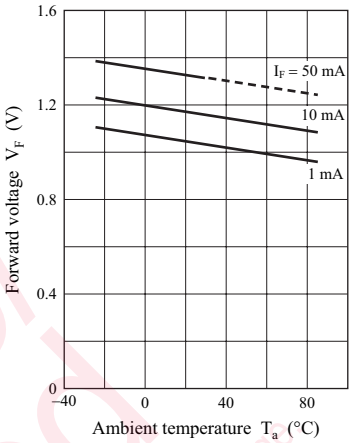
I_F , I_C — T_a



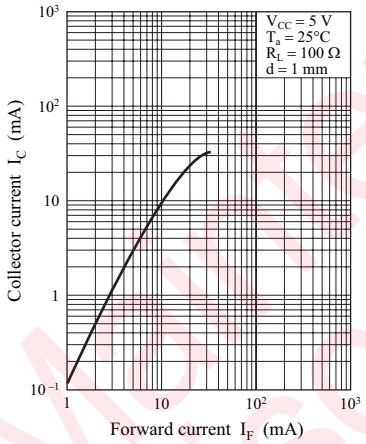
I_F — V_F



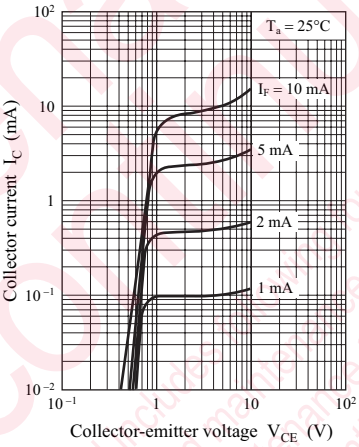
V_F — T_a



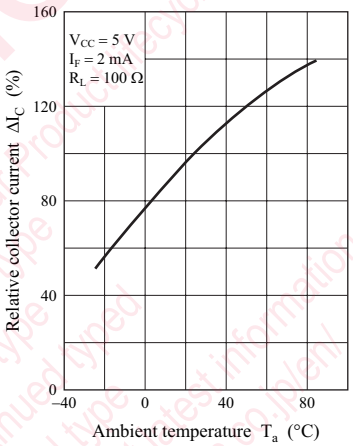
I_C — I_F



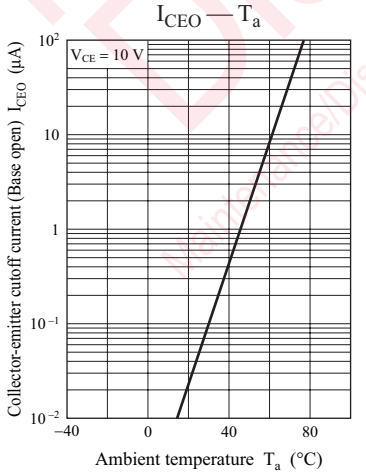
I_C — V_{CE}



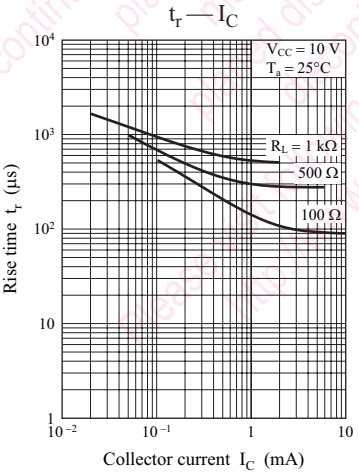
ΔI_C — T_a



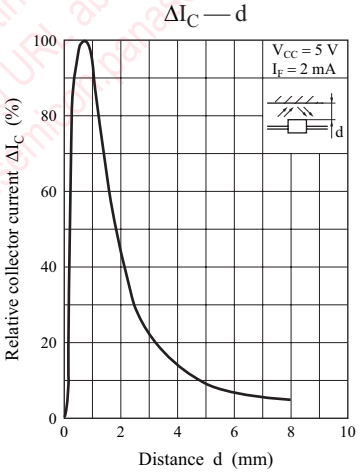
I_{CEO} — T_a



t_r — I_C

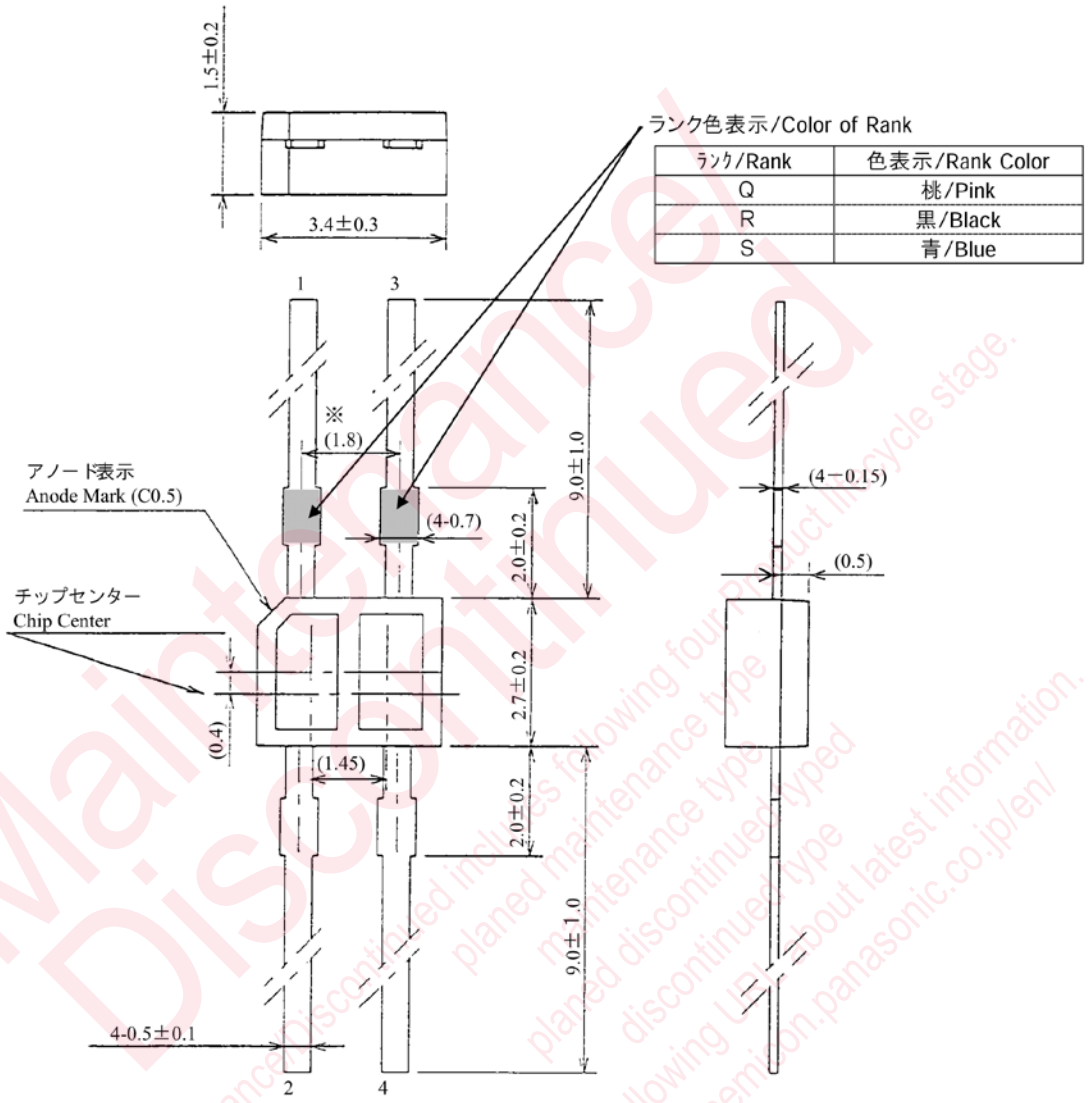


ΔI_C — d



■ 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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