CNB2001

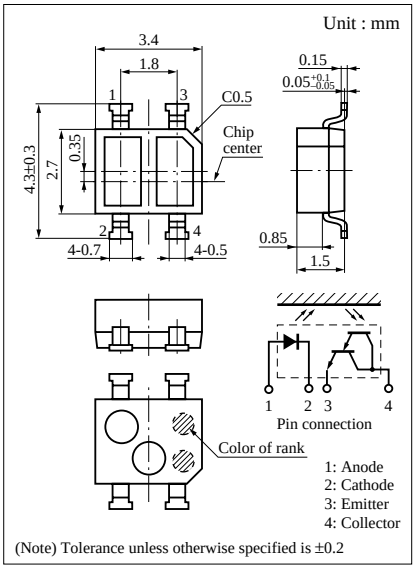
Reflective Photosensor

■ Overview

CNB2001 is a small, thin SMD-compatible reflective photosensor consisting of a high efficiency GaAs infrared light emitting diode which is integrated with a high sensitivity Darlington phototransistor in a single resin package.

■ Features

- Reflow-compatible reflective photosensor
- Ultraminiature, thin type : 2.7 × 3.4 mm (height : 1.5 mm)
- Visible light cutoff resin is used
- High current-transfer ratio



(Note) Tolerance unless otherwise specified is ±0.2

■ Absolute Maximum Ratings (Ta = 25˚C)

Parameter		Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	6	V
	Forward current (DC)	I_F	50	mA
	Power dissipation	P_D *1	75	mW
Output (Photo transistor)	Collector current	I_C	30	mA
	Collector to emitter voltage	V_{CEO}	35	V
	Emitter to collector voltage	V_{ECO}	6	V
	Collector power dissipation	P_C *2	75	mW
Temperature	Operating ambient temperature	T_{opr}	–25 to +85	˚C
	Storage temperature	T_{stg}	–40 to +100	˚C

*1 Input power derating ratio is 1.0 mW/˚C at Ta ≥ 25˚C.

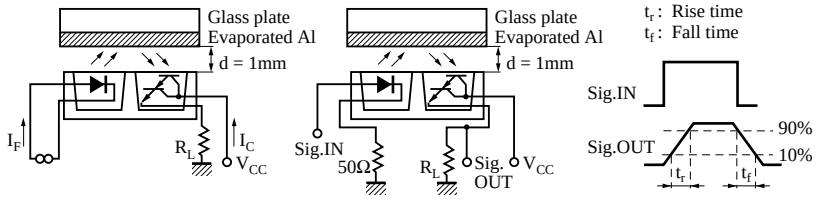
*2 Output power derating ratio is 1.0 mW/˚C at Ta ≥ 25˚C.

■ Electrical Characteristics (Ta = 25˚C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	I_F = 20mA		1.2	1.4	V
	Reverse current (DC)	I_R	V_R = 3V			10	μA
Output characteristics	Collector cutoff current	I_{CEO}	V_{CE} = 10V			1.0	μA
Transfer characteristics	Collector current	I_C *1	V_{CC} = 2V, I_F = 4mA, R_L = 100Ω, d = 1mm	0.52		15.0	mA
	Leakage current	I_D	V_{CC} = 2V, I_F = 4mA, R_L = 100Ω			5.0	μA
	Collector to emitter saturation voltage	$V_{CE(sat)}$	I_F = 4mA, I_C = 0.5mA			1.2	V
	Response time	t_r *2	V_{CC} = 2V, I_C = 10mA,		120		μs
		t_f *2	R_L = 100Ω		115		

*1 Output Current (IC) measurement method (see figure below.)

*2 Response time measurement circuit (see figure below.)



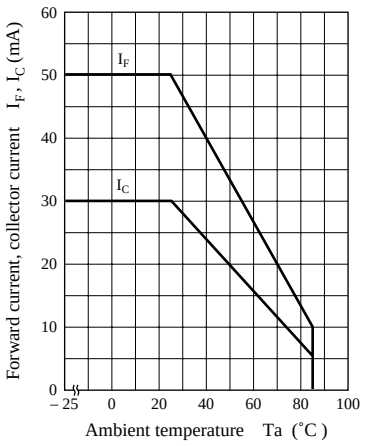
Color indication of classifications

Class	I_C (μA)	Color
Q	0.52 to 1.94	Orange
R	1.45 to 5.4	White
S	4.0 to 15.0	Light blue

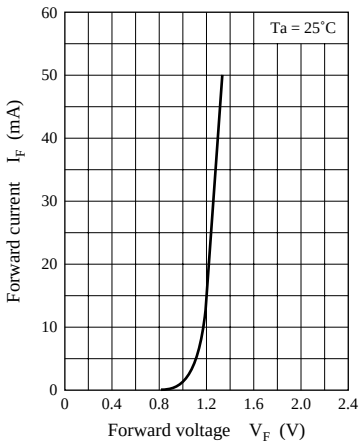
Input and output are handled electrically.

This product is not designed to withstand radiation.

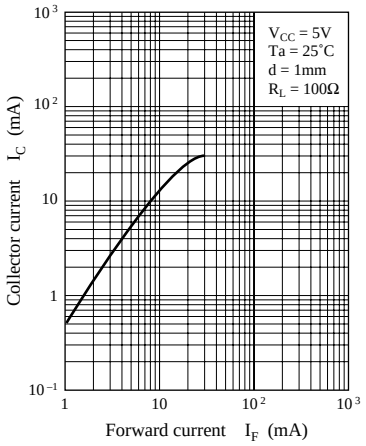
I_F , I_C — Ta



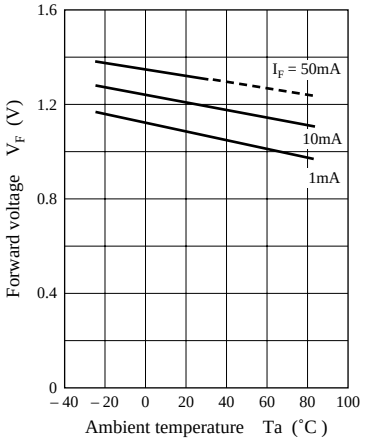
I_F — V_F



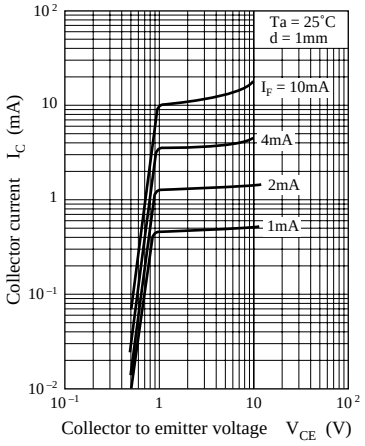
I_C — I_F



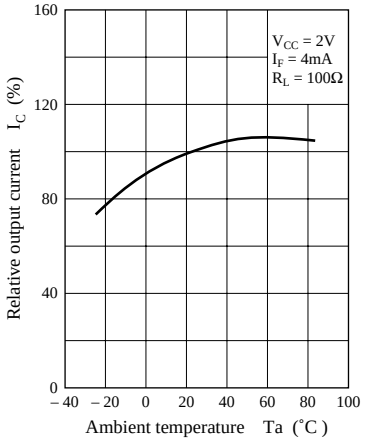
V_F — Ta



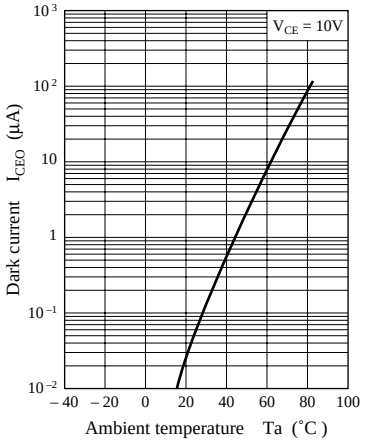
I_C — V_{CE}



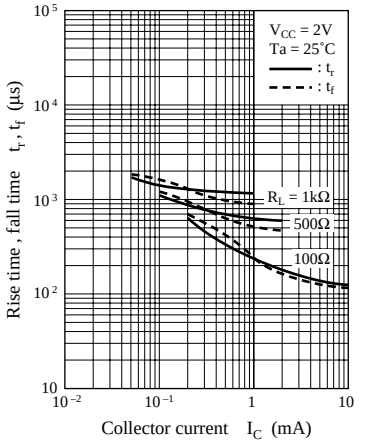
I_C — Ta



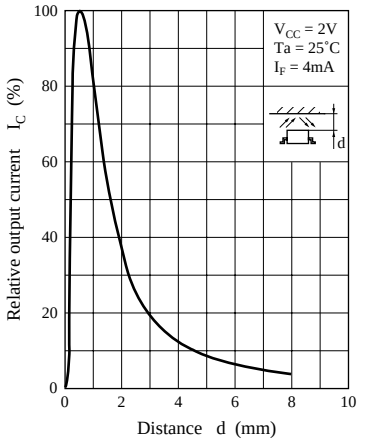
I_{CEO} — Ta



t_r , t_f — I_C



I_C — d



⚠ Caution for Safety

⚠ DANGER

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Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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