

# CNB1001, CNB1002

## Reflective Photosensors

### Overview

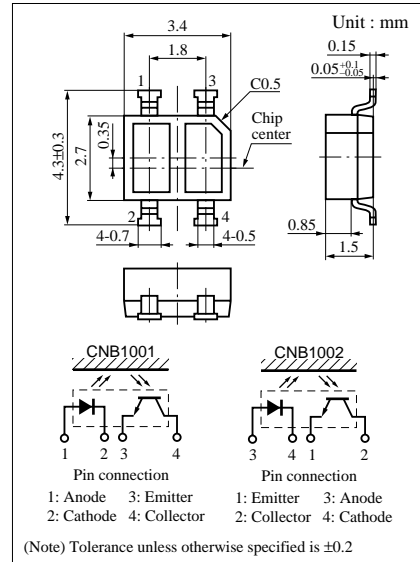
CNB1001 and CNB1002 are a small, thin SMD-compatible reflective photosensor consisting of a high efficiency GaAs infrared light emitting diode which is integrated with a high sensitivity Si phototransistor in a single resin package.

### Features

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

### 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	$I_C$	20	mA
	Collector to emitter voltage	$V_{CEO}$	35	V
	Emitter to collector voltage	$V_{ECO}$	6	V
Temperature	Collector power dissipation	$P_C^{*2}$	75	mW
	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.

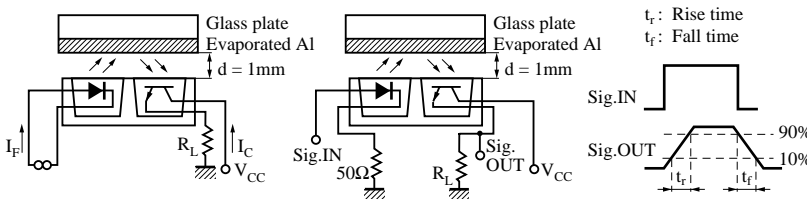
\*2 Output power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

### Electrical Characteristics (Ta = 25°C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	$V_F$	$I_F = 20\text{mA}$		1.2	1.4	V
	Reverse current (DC)	$I_R$	$V_R = 3\text{V}$			10	$\mu\text{A}$
Output characteristics	Collector cutoff current	$I_{CEO}$	$V_{CE} = 20\text{V}$			100	nA
Transfer characteristics	Collector current	$I_C^{*1}$	$V_{CC} = 2\text{V}, I_F = 4\text{mA}, R_L = 100\Omega, d = 1\text{mm}$	23		160	$\mu\text{A}$
	Leakage current	$I_D$	$V_{CC} = 2\text{V}, I_F = 4\text{mA}, R_L = 100\Omega$			100	nA
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 0.1\text{mA}$			0.4	V
	Response time	$t_r^{*2}$	$V_{CC} = 5\text{V}, I_C = 0.1\text{mA}, R_L = 1000\Omega$		30		$\mu\text{s}$
	$t_f^{*2}$			40			

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

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

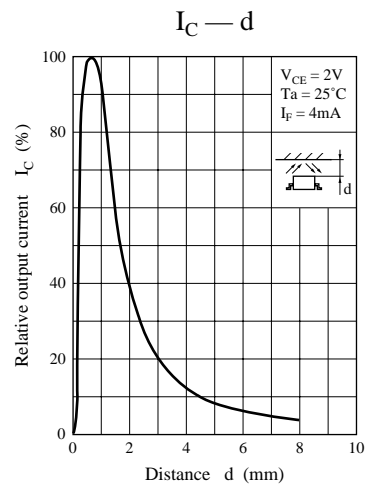
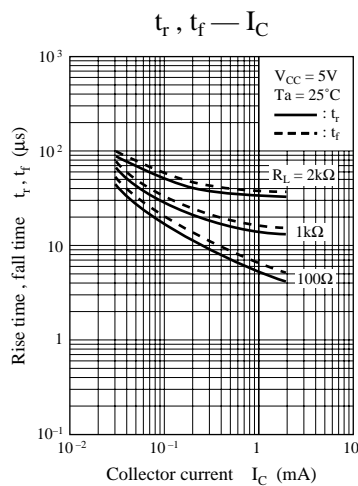
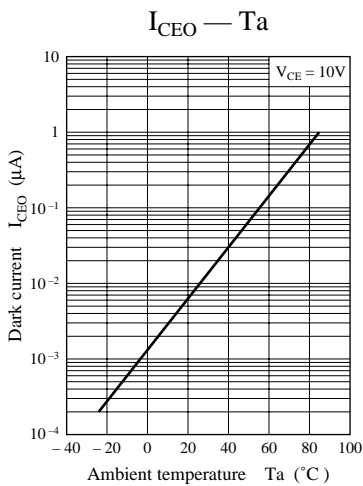
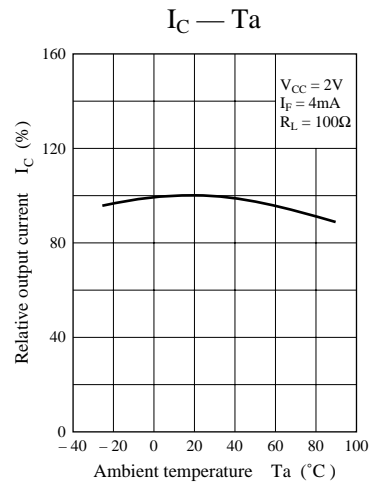
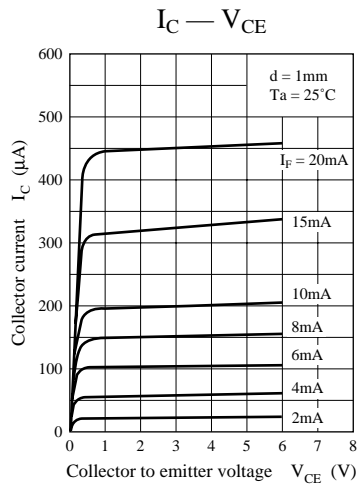
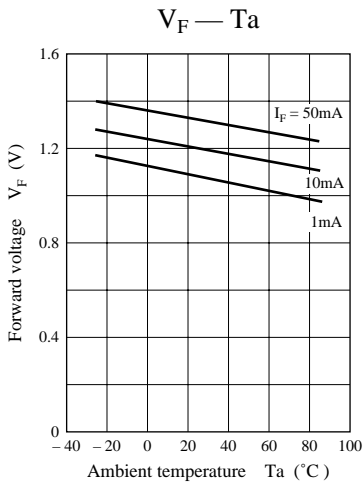
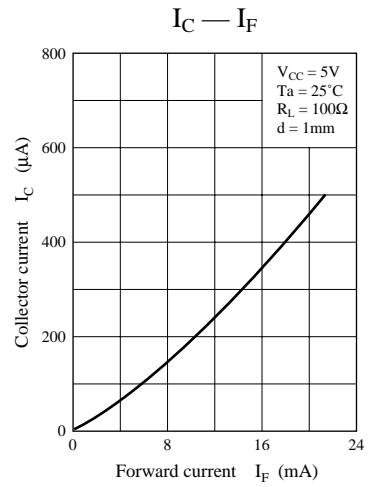
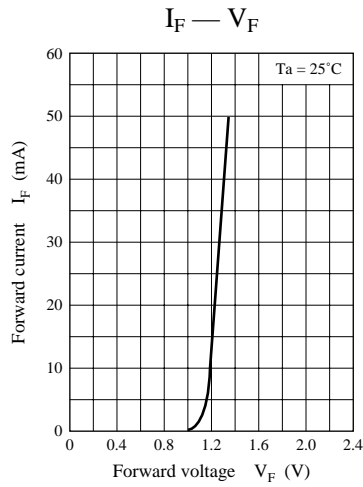
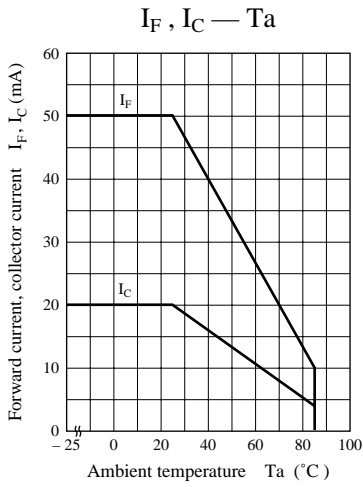


Input and output are handled electrically.

This product is not designed to withstand radiation.

### Color indication of classifications

Class	$I_C$ ( $\mu\text{A}$ )	Color
Q	23 to 50	Orange
R	41 to 90	White
S	74 to 160	Light blue



# Caution for Safety

 **DANGER**

Gallium arsenide material (GaAs) is used in this product.

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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