

# CNB1001, CNB1002

## Reflective Photosensors

### Outline

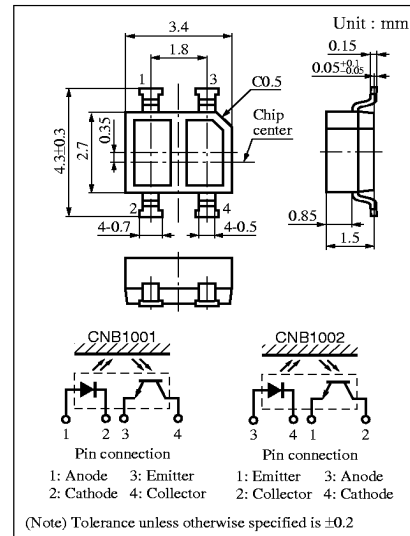
CNB1001 and CNB1002 are a small, thin SMD-compatible reflective photosensor consisting of a high efficiency GaAs infrared light emitting diode which is integrated with a high sensitivity Si phototransistor in a single resin package.

### 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	Rated	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
	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.

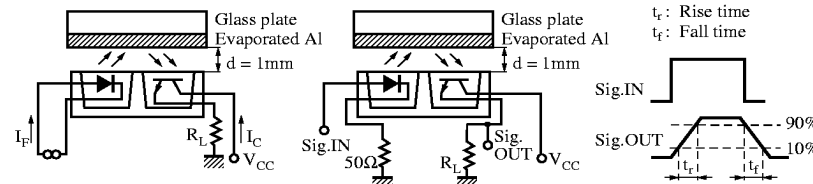
\*2 Output power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

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

Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	$V_F$	$I_F = 20\text{mA}$		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		$t_r^{*2}$	$V_{CC} = 5\text{V}, I_C = 0.1\text{mA}$		30	
$t_f^{*2}$			$R_L = 1000\Omega$		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

