CNB2301 (ON2270)

Reflective Photosensor

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 × 3.4 mm • Visible light cutoff resin is used

• High current-transfer ratio

Applications

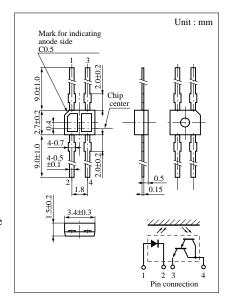
• Detection of paper, film and cloth • Detection of position and edge

• Detection of rotary positioning • Liquid level sensor

• Start, end mark detection of magnetic tape

Absolute Maximum Ratings (Ta = 25°C)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	3	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}	20	V
	Emitter to collector voltage	V _{ECO}	5	V
	Collector power dissipation	P _C *2	75	mW
Temperature	Operating ambient temperature	T _{opr}	-25 to +85	°C
	Storage temperature	T _{stg}	-30 to +100	°C



Electrical Characteristics (Ta = 25°C)

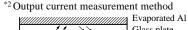
Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V _F	$I_F = 50 \text{mA}$		1.3	1.5	V
	Reverse current (DC)	I _R	$V_R = 3V$		0.01	10	μΑ
	Capacitance between terminals	Ct	$V_R = 0V$, $f = 1MHz$		30		pF
Output characteristics	Collector cutoff current	I _{CEO}	$V_{CE} = 10V$			1.0	μΑ
	Collector current	I _C *1, *2	$V_{CC} = 5V$, $I_F = 2mA$, $R_L = 100\Omega$, $d = 1mm$	0.46		12.0	mA
Transfer	Leakage current	I_{D}	$V_{CC} = 5V, I_F = 2mA, R_L = 100\Omega$			2.0	μΑ
characteristics	Response time	t_r^{*3}, t_f^{*4}	$V_{CC} = 10V, I_C = 1mA, R_L = 100\Omega$		150		μs
	Collector to emitter saturation voltage	V _{CE(sat)}	$I_F = 5 \text{mA}, I_C = 0.5 \text{mA}$			1.5	V

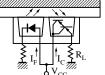
^{*1} I_C classifications

Class	Q	R	S
I _C (mA)	0.46 to 1.75	1.3 to 4.95	3.15 to 12.0

^{*3} Time required for the output current to increase from 10% to 90% of its final value

^{*4} Time required for the output current to decrease from 90% to 10% of its initial value



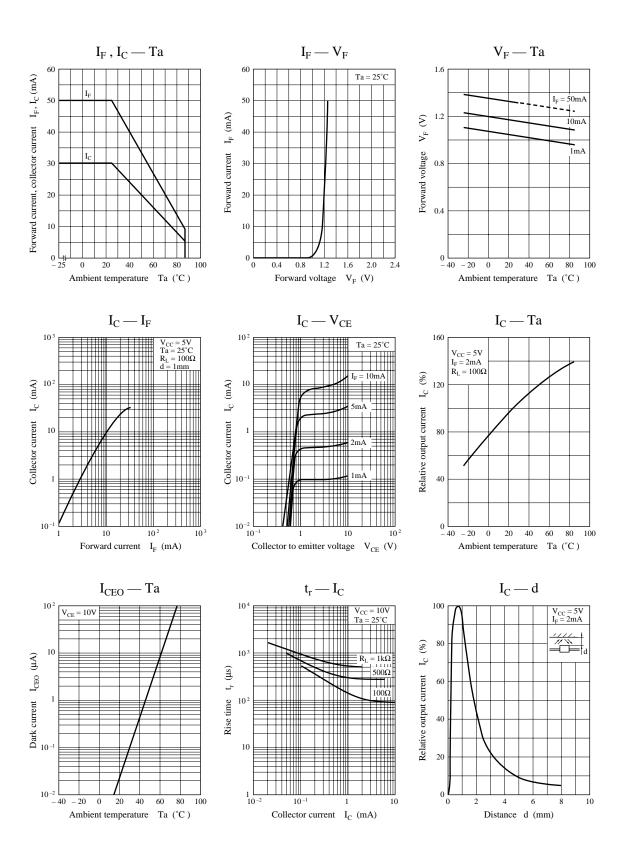


Glass plate

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

^{*1} Input power derating ratio is 1.0 mW/°C at Ta \geq 25°C.

^{*2} Output power derating ratio is 1.0 mW/°C at $Ta \ge 25 ^{\circ}\text{C}$.



Caution for Safety



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.

Observe the relevant laws and regulations when disposing of the products. Do not mix them with ordinary industrial waste or household refuse when disposing of GaAs-containing products.

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 - Even when the products are used within the guaranteed values, redundant design is recommended, so that such equipment may not violate relevant laws or regulations because of the function of our products.
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