

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
Temperature	Collector power dissipation	P_C^{*2}	75	mW
	Operating ambient temperature	T_{opr}	-25 to +85	°C
	Storage temperature	T_{stg}	-30 to +100	°C

Electrical Characteristics (Ta = 25°C)

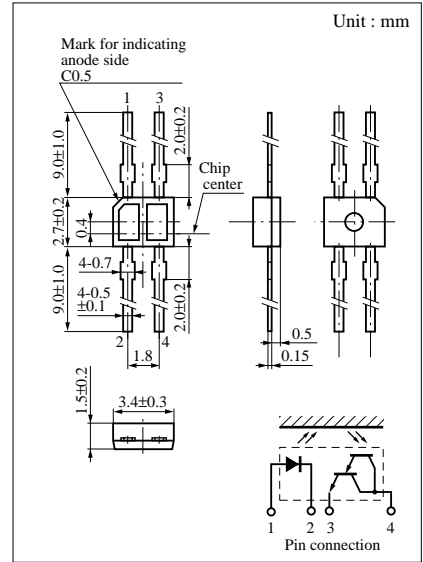
	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 50\text{mA}$		1.3	1.5	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$		0.01	10	μA
	Capacitance between terminals	C_t	$V_R = 0\text{V}, f = 1\text{MHz}$		30		pF
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10\text{V}$			1.0	μA
	Collector current	$I_C^{*1, *2}$	$V_{CC} = 5\text{V}, I_F = 2\text{mA}, R_L = 100\Omega, d = 1\text{mm}$	0.46		12.0	mA
Transfer characteristics	Leakage current	I_D	$V_{CC} = 5\text{V}, I_F = 2\text{mA}, R_L = 100\Omega$			2.0	μA
	Response time	t_r^{*3}, t_f^{*4}	$V_{CC} = 10\text{V}, I_C = 1\text{mA}, R_L = 100\Omega$		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

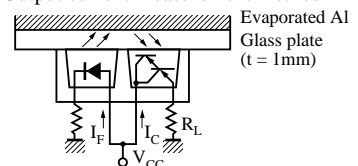
*4 Time required for the output current to decrease from 90% to 10% of its initial value



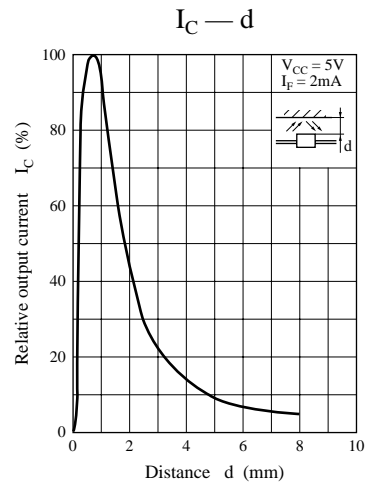
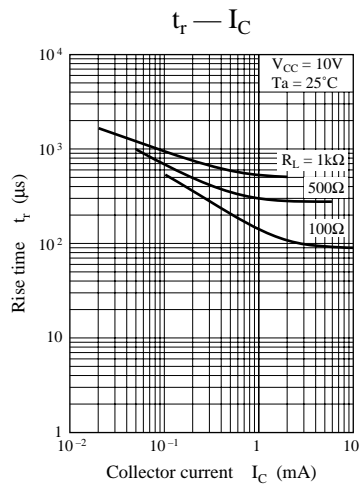
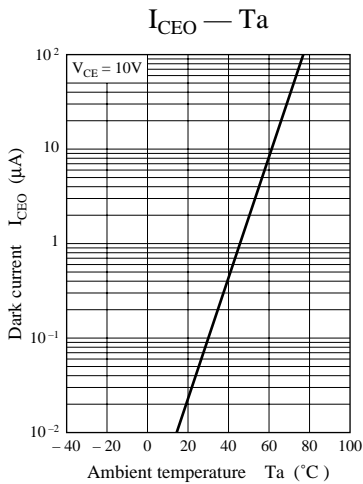
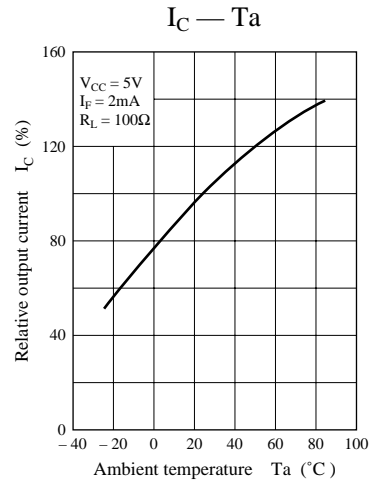
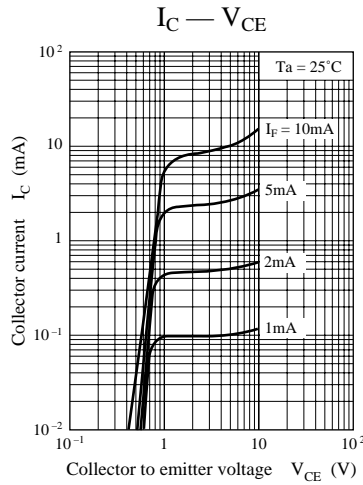
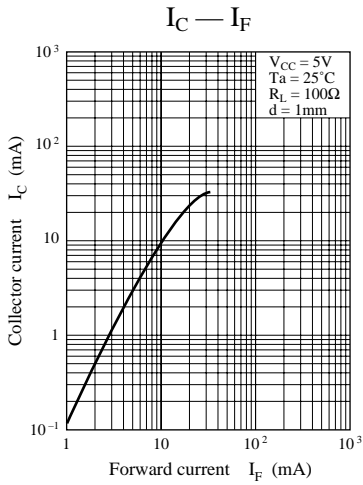
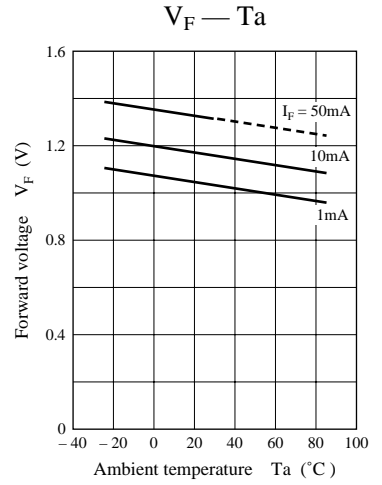
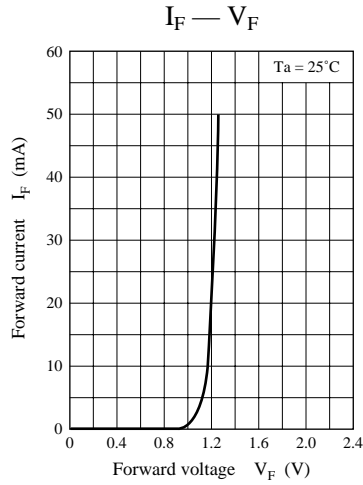
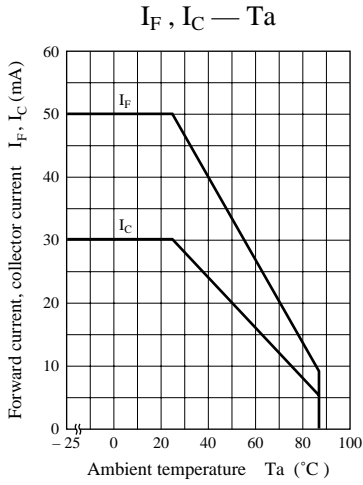
*1 Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

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

*2 Output current measurement method



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



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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