

CNB1302 (ON2170)

Reflective Photosensor

Overview

CNB1302 is a small, thin 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

- Ultraminiature, thin type : 2.7×3.4 mm (height : 1.5 mm)
- Visible light cutoff resin is used
- Fast response : $t_r, t_f = 20\mu\text{s}$ (typ.)
- Easy interface for control circuit

Applications

- Control of motor and other rotary units
- Detection of position and edge
- Detection of paper, film and cloth
- Start, end mark detection of magnetic tape

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

	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	20	mA
	Collector to emitter voltage	V_{CEO}	30	V
	Emitter to collector voltage	V_{ECO}	5	V
Temperature	Collector power dissipation	P_C^{*2}	50	mW
	Operating ambient temperature	T_{opr}	-25 to +85	$^\circ\text{C}$
	Storage temperature	T_{stg}	-30 to +100	$^\circ\text{C}$

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

	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}	$V_{CE} = 10\text{V}$			200	nA
Transfer characteristics	Collector current	$I_C^{*1, *2}$	$V_{CC} = 5\text{V}, I_F = 10\text{mA}, R_L = 100\Omega, d = 1\text{mm}$	90		880	μA
	Leakage current	I_D	$V_{CC} = 5\text{V}, I_F = 10\text{mA}, R_L = 100\Omega$			200	nA
	Response time	t_r^{*3}, t_f^{*4}	$V_{CC} = 5\text{V}, I_C = 0.1\text{mA}, R_L = 100\Omega$		20		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 0.1\text{mA}$			0.4	V

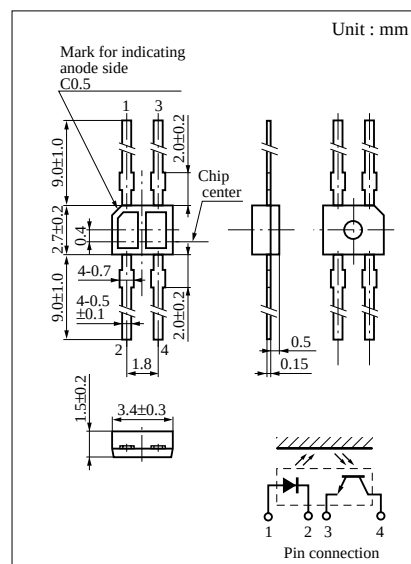
*1 I_C classifications

Class	Q	R	S
I_C (μA)	90 to 220	180 to 440	360 to 880

*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

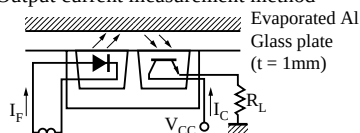
Note) The part number in the parenthesis shows conventional part number.

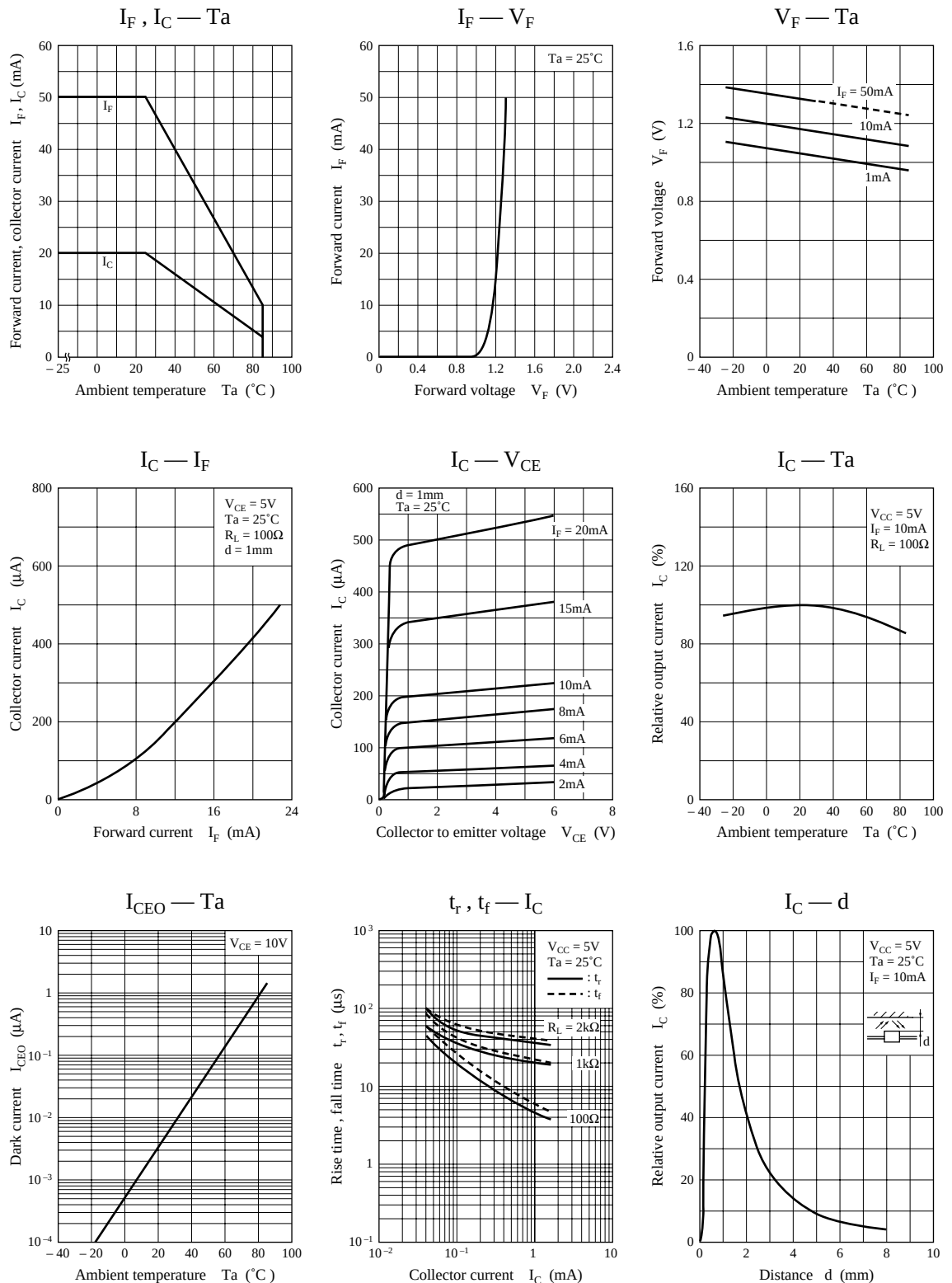


*1 Input power derating ratio is 1.0 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

*2 Output power derating ratio is 0.67 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

*2 Output current measurement method





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.

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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