

CNB1303

Reflective Photosensor

Overview

CNB1303 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 : $t_r, t_f = 20\mu s$ (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 (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	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 °C
	Storage temperature	T_{stg}	-30 to +100 °C

Electrical Characteristics (Ta = 25°C)

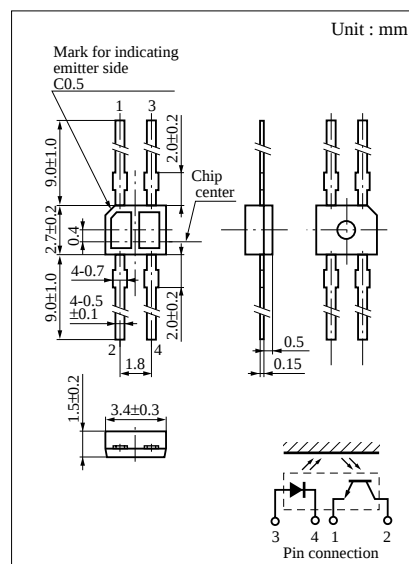
Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F $I_F = 50mA$		1.3	1.5	V
	Reverse current (DC)	I_R $V_R = 3V$		0.01	10	μA
	Capacitance between terminals	C_t $V_R = 0V, f = 1MHz$		30		pF
Output characteristics	Collector cutoff current	I_{CEO} $V_{CE} = 10V$			200	nA
Transfer characteristics	Collector current	$I_C^{*1, *2}$ $V_{CC} = 5V, I_F = 10mA, R_L = 100\Omega, d = 1mm$	90		880	μA
	Leakage current	I_D $V_{CC} = 5V, I_F = 10mA, R_L = 100\Omega$			200	nA
	Response time	t_r^{*3}, t_f^{*4} $V_{CC} = 5V, I_C = 0.1mA, R_L = 100\Omega$		20		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$ $I_F = 20mA, I_C = 0.1mA$			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



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

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

*2 Output current measurement method

