

CNB1301 (ON2171)

Reflective Photosensor

For contactless SW and object detection

■ Overview

CNB1301 is a reflective photosensor consisting of a small, thin reflective photosensor (CNB1302) to which a plastic lens is attached to increase the focal distance from 0.8 mm to 2.5 mm.

■ Features

- Small size, light weight: 5 mm × 4.5 mm (height: 4.0 mm)
- Focal distance: 2.5 mm
- Visible light cutoff resin is used

■ Applications

- Copier
- Printers
- Fax
- Cassette deck

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

Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Power dissipation *1	P_D	75	mW
	Forward current	I_F	50	mA
	Reverse voltage	V_R	3	V
Output (Photo transistor)	Collector-emitter voltage (Base open)	V_{CEO}	30	V
	Emitter-collector voltage (Base open)	V_{ECO}	5	V
	Collector current	I_C	20	mA
	Collector power dissipation *2	P_C	50	mW
Operating ambient temperature		T_{opr}	-25 to +75	$^\circ\text{C}$
Storage temperature		T_{stg}	-30 to +80	$^\circ\text{C}$

Note) *1: Input power derating ratio is 1.36 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$

*2: Output power derating ratio is 0.91 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$

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

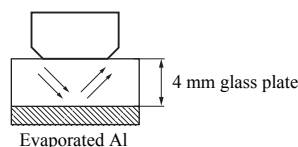
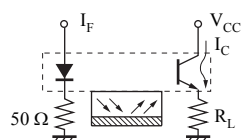
■ Electrical-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Reverse current	I_R	$V_R = 3\text{ V}$			10	μA
	Forward voltage	V_F	$I_F = 50\text{ mA}$		1.3	1.5	V
Output characteristics	Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{\text{CE}} = 10\text{ V}$			200	nA
Transfer characteristics	Collector current ratio ^{*1}	I_C	$V_{\text{CC}} = 5\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 100\ \Omega$, $d = 4\text{ mm}$	0.8		5.2	mA
	Drain current ^{*2}	I_D	$V_{\text{CC}} = 5\text{ V}$, $I_F = 10\text{ mA}$, $R_L = 100\ \Omega$			40	μA
	Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_F = 20\text{ mA}$, $I_C = 0.1\text{ mA}$			0.5	V
	Rise time ^{*3}	t_r	$V_{\text{CC}} = 5\text{ V}$, $I_C = 0.1\text{ mA}$, $R_L = 100\ \Omega$		20		μs
	Fall time ^{*3}	t_f			20		μs

Note) 1. Input and output are practiced by electricity.

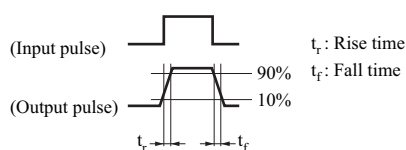
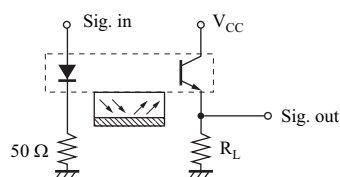
2. This device is designed by disregarding radiation.

3. *1: Output current measurement circuit



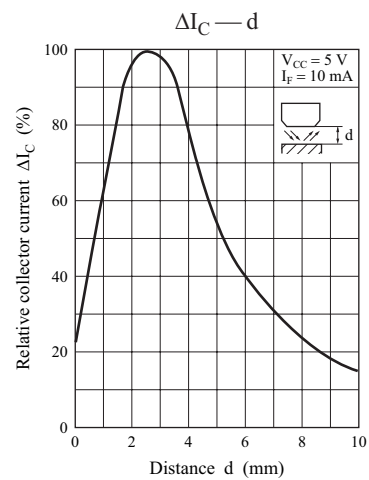
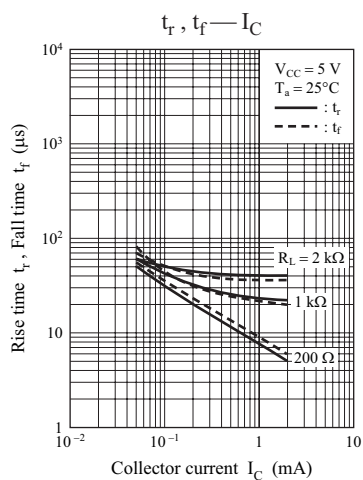
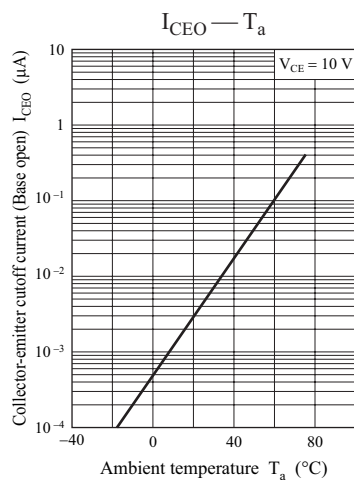
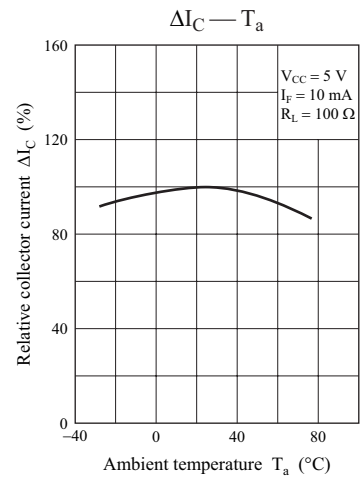
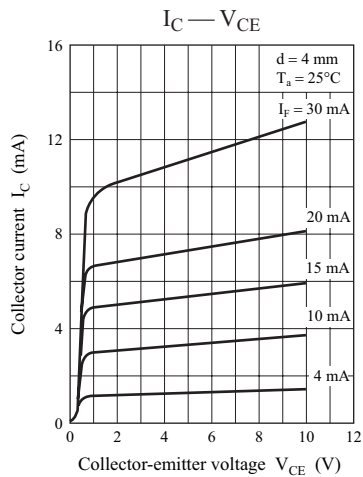
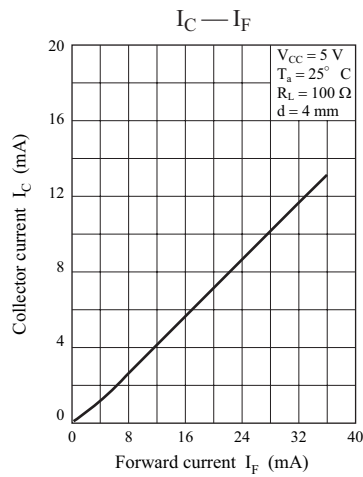
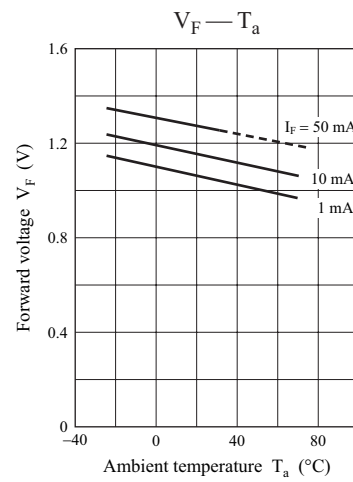
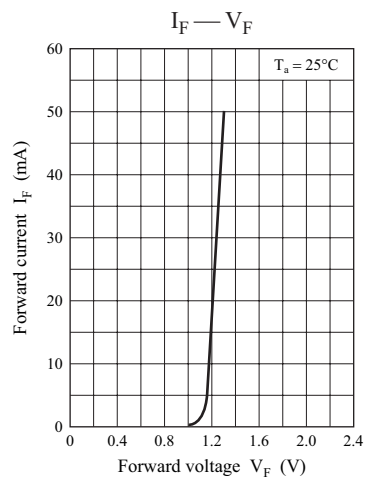
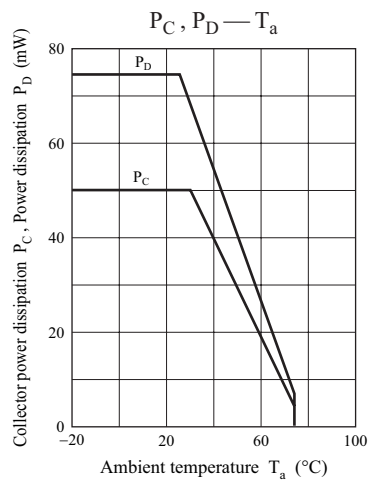
*2: No reflector and dark condition.

*3: Switching time measurement circuit



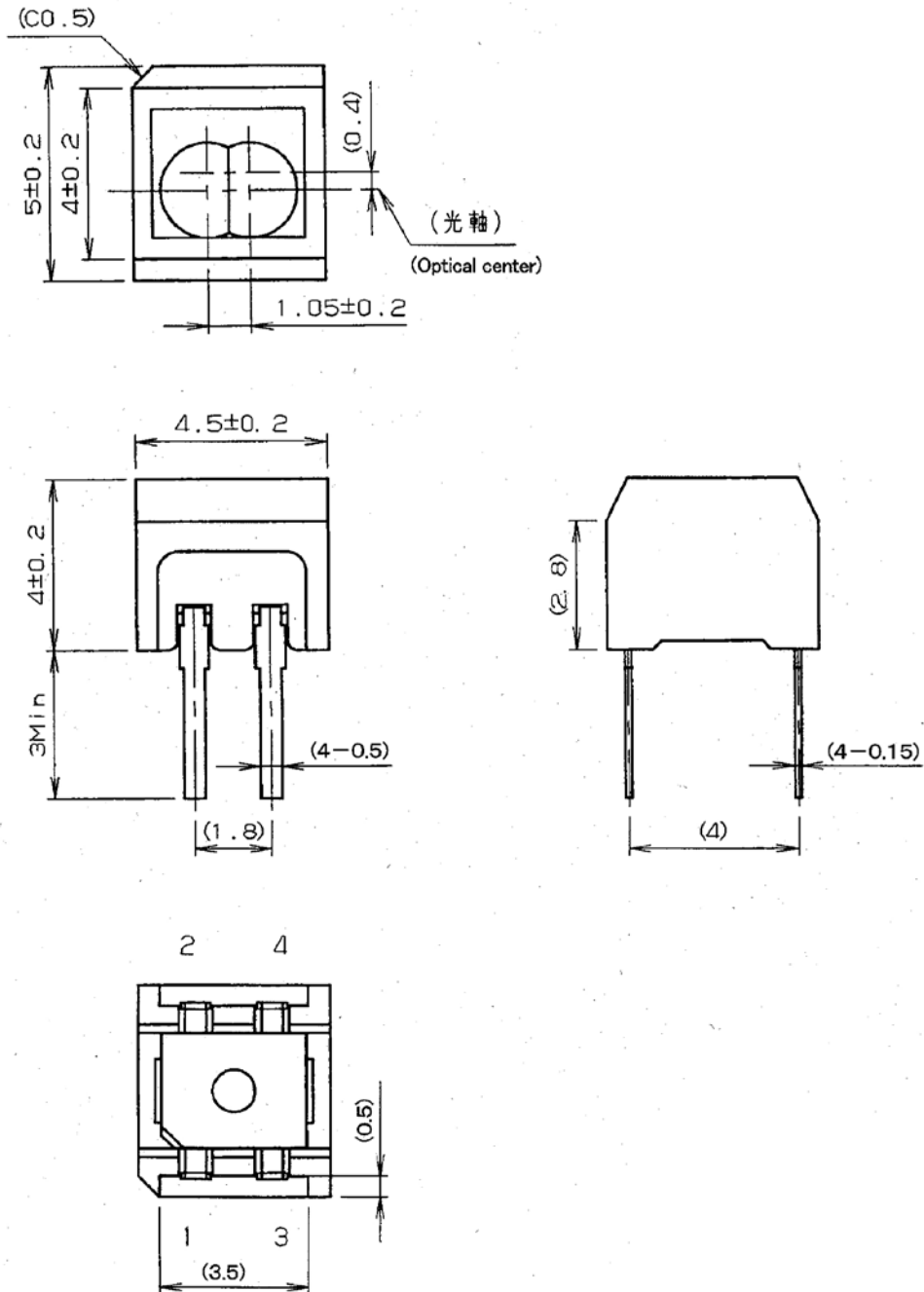
t_r : Time required for the collector current to increase from 10% to 90% of its final value

t_f : Time required for the collector current to decrease from 90% to 10% of its initial value



■ Package (Unit: mm)

LSSLRR4S0001



• Pin name

- 1: Anode
- 2: Cathode
- 3: Emitter
- 4: Collector

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