

# CNB1304H (ON2175)

## Reflective Photosensor

Tape end sensor for DAT

### Overview

CNB1304H is a sensor which consists of a high efficiency GaAs infrared light emitting diode and a high sensitivity Si phototransistor which are arranged together in the same direction. It detects the beginning and end of a tape based on changes in the amount of light reflected from a prism which is situated outside of the sensor.

### Features

- Fast response
- Small size and light weight

### Absolute Maximum Ratings (Ta = 25°C)

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

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

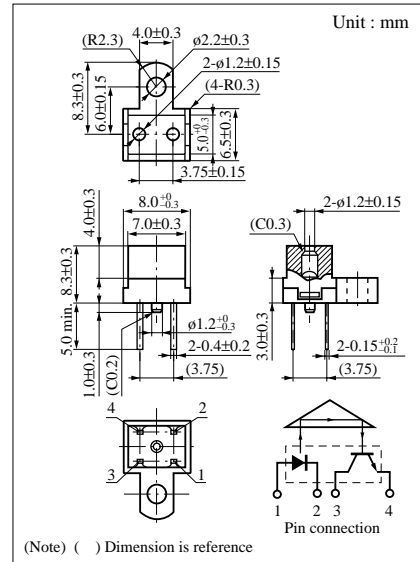
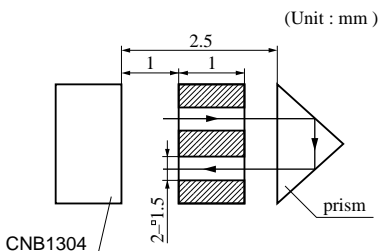
\*2 Output power derating ratio is 1.34 mW/°C at Ta ≥ 25°C.

### Electrical Characteristics (Ta = 25°C)

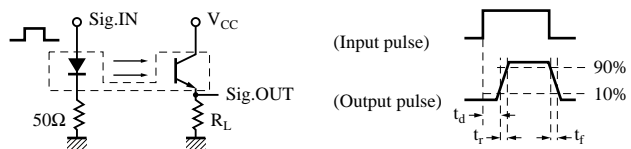
Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	$V_F$ $I_F = 50\text{mA}$			1.5	V
	Reverse current (DC)	$I_R$ $V_R = 3\text{V}$			10	μA
Output characteristics	Collector cutoff current	$I_{CEO}$ $V_{CE} = 10\text{V}$			0.2	μA
Transfer characteristics	Collector current	$I_C^{*1}$ $V_{CE} = 5\text{V}, I_F = 20\text{mA}, R_L = 100\Omega$	30			μA
	Response time	$t_r, t_f^{*2}$ $V_{CC} = 10\text{V}, I_C = 0.5\text{mA}, R_L = 100\Omega$		6		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$ $I_F = 50\text{mA}, I_C = 0.1\text{mA}$			0.5	V

\*1  $I_C$  Measurement method

\*2 Switching time measurement circuit



(Note) ( ) Dimension is reference



$t_d$ : Delay time

$t_r$ : Rise time (Time required for the collector current to increase from 10% to 90% of its final value)

$t_f$ : Fall time (Time required for the collector current to decrease from 90% to 10% of its initial value)

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.

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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