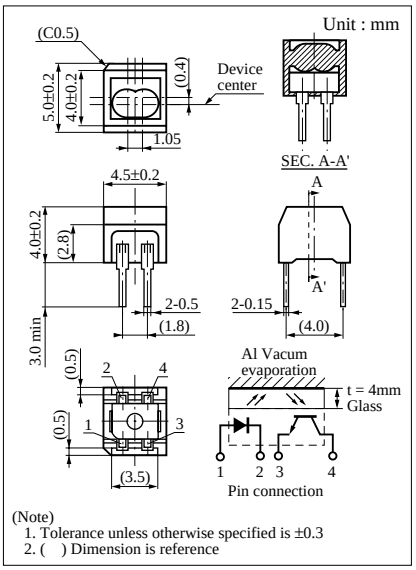
CNB1301

Reflective Photosensor



■ 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 × 4.5 mm (height : 4.0 mm)
- Focal distance : 2.5 mm
- Visible light cutoff resin is used

■ Applications

- Copier
- Printers
- Facsimiles
- Cassette deck

■ 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
	Collector power dissipation	P_C*2	50	mW
Temperature	Operating ambient temperature	T_{opr}	–25 to +75	˚C
	Storage temperature	T_{stg}	–30 to +80	˚C

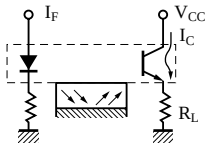
*1 Input power derating ratio is 1.36 mW/˚C at Ta ≥ 25˚C.

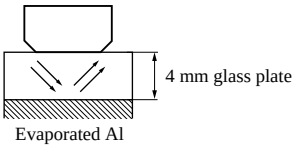
*2 Output power derating ratio is 0.91 mW/˚C at Ta ≥ 25˚C.

■ Electrical Characteristics (Ta = 25˚C)

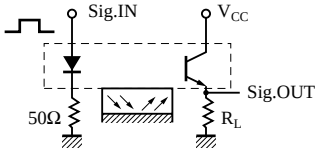
Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	I_F = 50mA		1.3	1.5	V
	Reverse current (DC)	I_R	V_R = 3V			10	µA
Output characteristics	Collector cutoff current	I_{CEO}	V_{CE} = 10V			200	nA
Transfer characteristics	Collector current	I_C*1	V_{CC} = 5V, I_F = 10mA, R_L = 100Ω d = 4mm	0.8		5.2	mA
	Leakage current	I_D*4	V_{CC} = 5V, I_F = 10mA, R_L = 100Ω			40	µA
	Response time	t_r, t_f*2	V_{CC} = 5V, I_C = 0.1mA, R_L = 100Ω		20		µs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	I_F = 20mA, I_C = 0.1mA			0.5	V

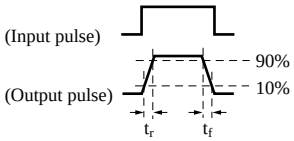
*1 Output current measurement circuit





*2 Switching time measurement circuit





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)

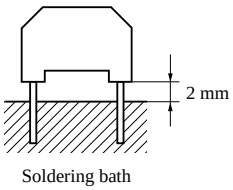
*3 Guaranteed conditions of heat withstanding at soldering

Solder temperature : 260˚C or less

Immersion time : within 5 seconds

Immersion position : At least 2 mm away from the body bottom

Note) Avoid using dip soldering methods.



*4 Leakage current : When there are no reflective objects

■ Usage notes

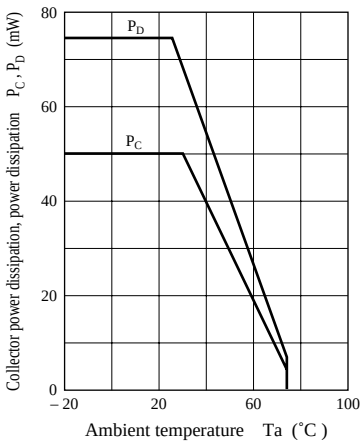
(1) The lens consists of polycarbonate which may be damaged by some chemicals. Therefore care should be taken to prevent chemicals from touching the lens surface.

(2) This reflective photosensor should not be cleaned with detergents since the lens is an optical component made with polycarbonate resin.

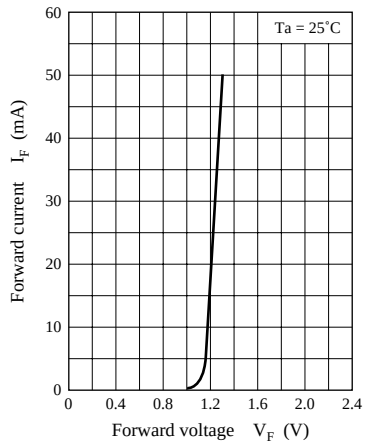
Dust and debris should be wiped off using an air blower or soft cloth, taking care not to scratch the lens.

(3) Do not apply mechanical stress (e.g., pulling, bending, twisting, spreading) to the lead bases.

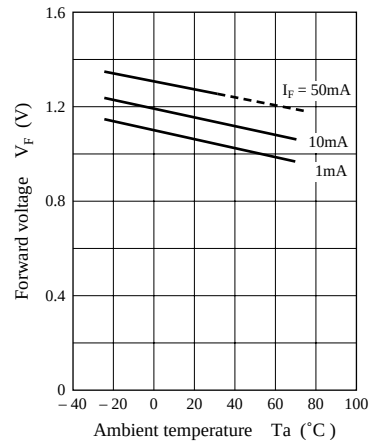
P_C , P_D — Ta



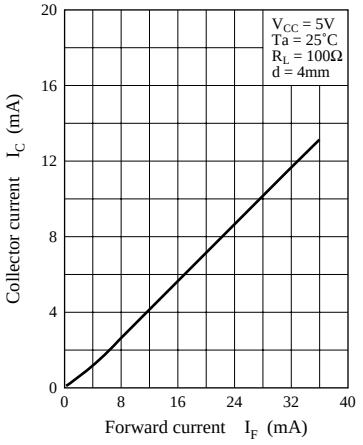
I_F — V_F



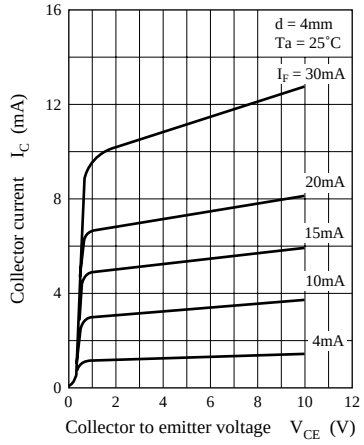
V_F — Ta



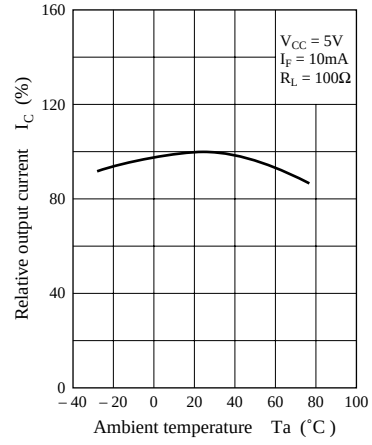
I_C — I_F



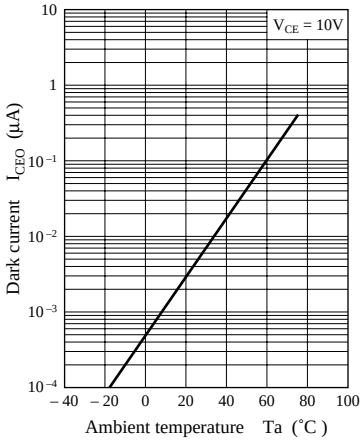
I_C — V_{CE}



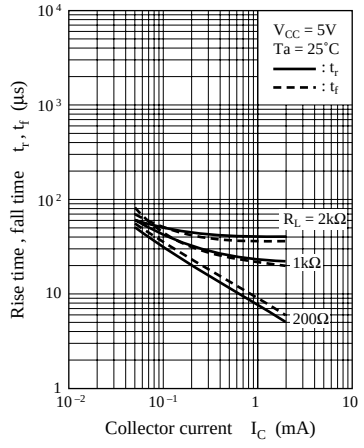
I_C — Ta



I_{CEO} — Ta



t_r , t_f — I_C



I_C — d