

# CNB2003

## Reflective photosensor

### ■ Features

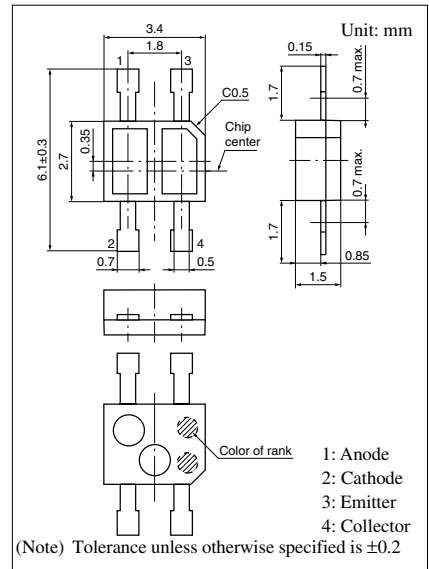
- Reflow-compatible reflective photosensor
- Ultraminiature, thin type: 2.7 mm × 3.4 mm (height: 1.5 mm)

### ■ Applications

- Object sensing, non-contact point SW

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

Parameter		Symbol	Rating	Unit
Input (Light emitting diode)	Reverse voltage (DC)	$V_R$	6	V
	Forward current (DC)	$I_F$	50	mA
	Power dissipation *1	$P_D$	75	mW
Output (Photo transistor)	Collector current	$I_C$	30	mA
	Collector to emitter voltage	$V_{CEO}$	35	V
	Emitter to collector voltage	$V_{ECO}$	6	V
	Collector power dissipation *2	$P_C$	75	mW
Temperature	Operating ambient temperature	$T_{opr}$	-25 to +85	$^\circ\text{C}$
	Storage temperature	$T_{stg}$	-40 to +100	$^\circ\text{C}$



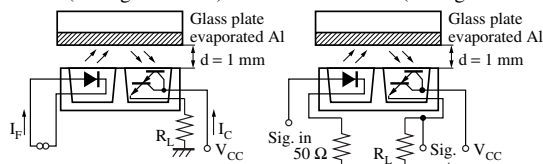
Note) \*1: Input power derating ratio is 1.0 mW/ $^\circ\text{C}$  at  $T_a \geq 25^\circ\text{C}$ .

\*2: Output power derating ratio is 1.0 mW/ $^\circ\text{C}$  at  $T_a \geq 25^\circ\text{C}$ .

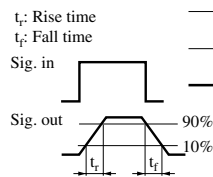
### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Input characteristics	Forward voltage (DC)	$V_F$	$I_F = 20 \text{ mA}$		1.2	1.4	V
	Reverse current (DC)	$I_R$	$V_R = 3 \text{ V}$			10	$\mu\text{A}$
Output characteristics	Collector cutoff current	$I_{CEO}$	$V_{CE} = 10 \text{ V}$			1.0	$\mu\text{A}$
Transfer characteristics	Collector current *1	$I_C$	$V_{CC} = 2 \text{ V}, I_F = 4 \text{ mA}, R_L = 100 \Omega, d = 1 \text{ mm}$	0.52		15.0	mA
	Leakage current	$I_D$	$V_{CC} = 2 \text{ V}, I_F = 4 \text{ mA}, R_L = 100 \Omega$			5.0	$\mu\text{A}$
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 4 \text{ mA}, I_C = 0.5 \text{ mA}$			1.2	V
	Response time *2		$t_r$	$V_{CC} = 2 \text{ V}, I_C = 10 \text{ mA}$		120	
$t_f$			$R_L = 100 \Omega$		115		

Note) \*1: Output current ( $I_C$ ) measurement method (see figure below)      \*2: Response time measurement circuit (see figure below)

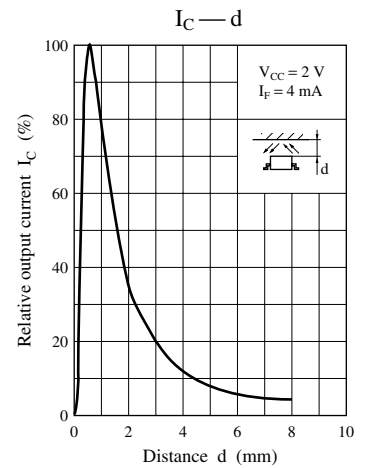
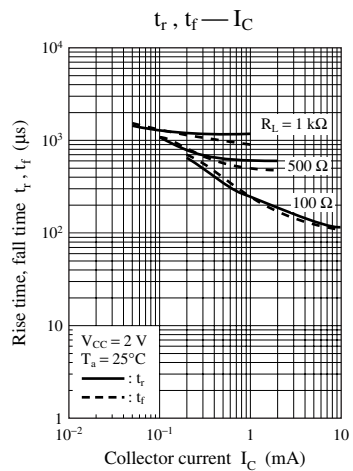
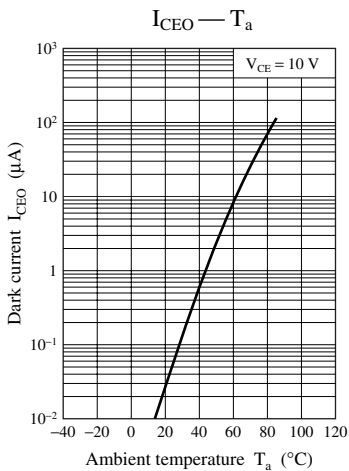
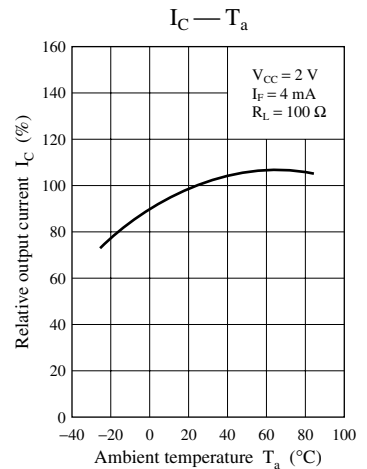
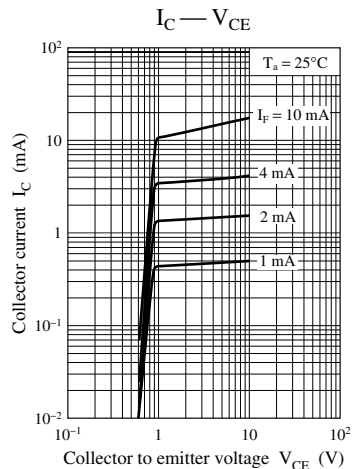
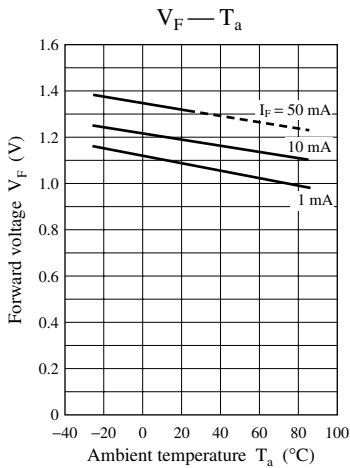
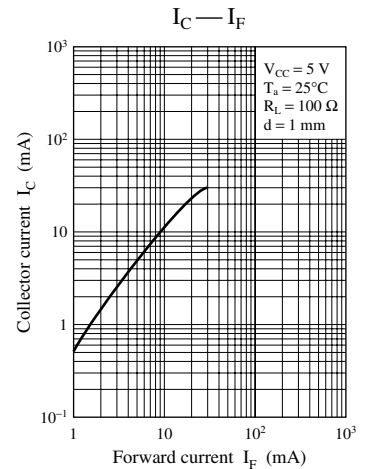
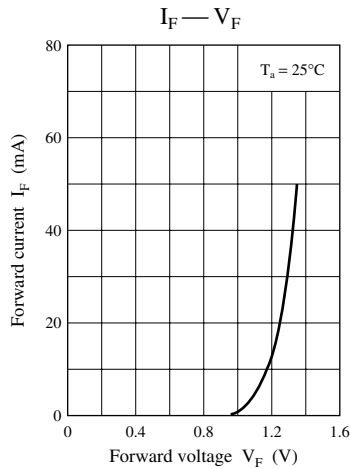
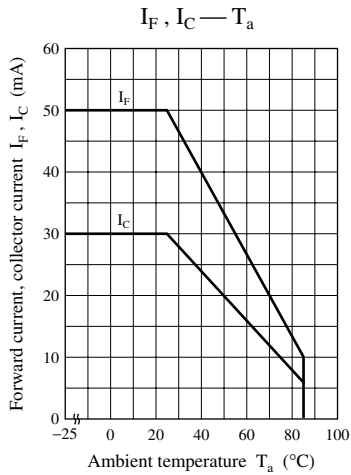


Input and output are handled electrically  
This product is not designed to withstand radiation



### Color indication of classifications

Class	$I_C$ (mA)	Color
Q	0.52 to 1.94	Orange
R	1.45 to 5.40	White
S	4.00 to 15.00	Light blue



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