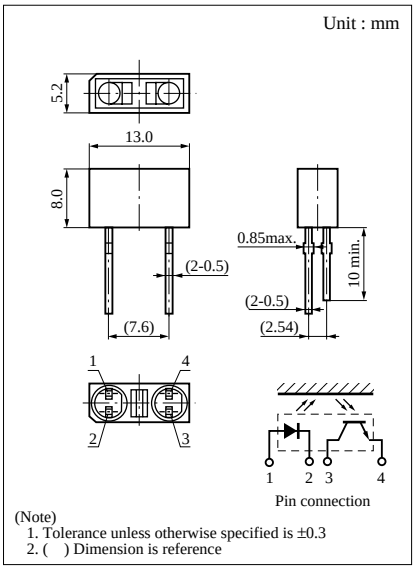
# CNZ2179 (ON2179)

## Reflective Photosensor




### ■ Overview

CNZ2179 is a reflective photosensor with a long focal distance, in which a high efficiency GaAs infrared light emitting diode is used as a light emitting element and a high sensitivity Si phototransistor is used as the light detecting element.

### ■ Features

- Long focal distance : 6 mm (typ.)
- Visible light cutoff resin is used

### ■ 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 | $V_{CEO}$ | 20 | 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 +80 | ˚C |
| | Storage temperature | $T_{stg}$ | –30 to +85 | ˚C |

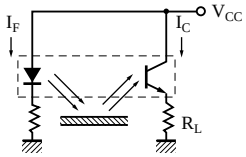
*1 Input power derating ratio is 1.25 mW/˚C at Ta ≥ 25˚C.

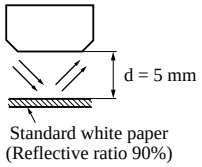
*2 Output power derating ratio is 1.67 mW/˚C at Ta ≥ 25˚C.

### ■ 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 | | | 0.2 | µA |
| Transfer characteristics | Collector current | $I_C$*1 | $V_{CC}$ = 5V, $I_F$ = 20mA, $R_L$ = 100Ω | 180 | | 1500 | µA |
| | Response time | $t_r$*2 , $t_f$*3 | $V_{CC}$ = 10V, $I_C$ = 0.1mA, $R_L$ = 100Ω | | 20 | | µs |
| | Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_F$ = 50mA, $I_C$ = 0.1mA | | | 0.5 | V |

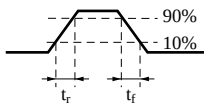
*1 Transfer characteristics measurement circuit
(Ambient light is shut off completely.)



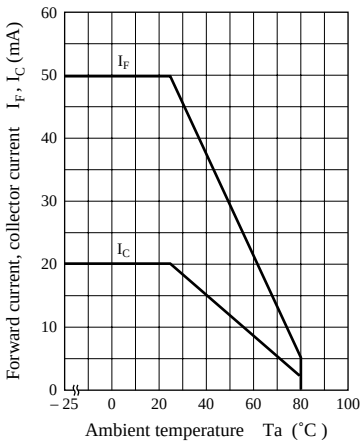

*2 Time required for the collector current to increase from 10% to 90% of its final value.

*3 Time required for the collector current to decrease from 90% to 10% of its initial value.

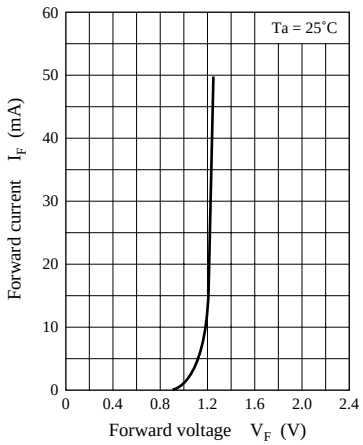



Note) The part number in the parenthesis shows conventional part number.

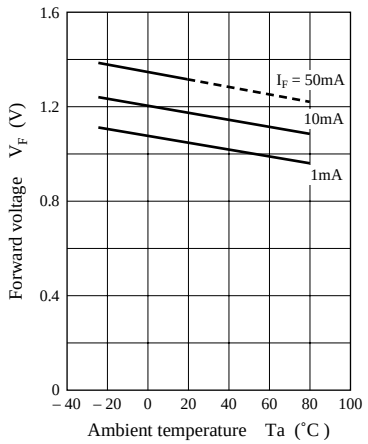
$I_F$ , $I_C$ — Ta



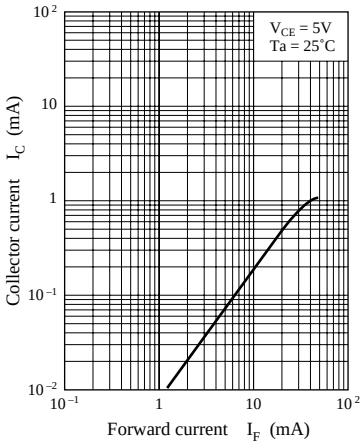

$I_F$ — $V_F$



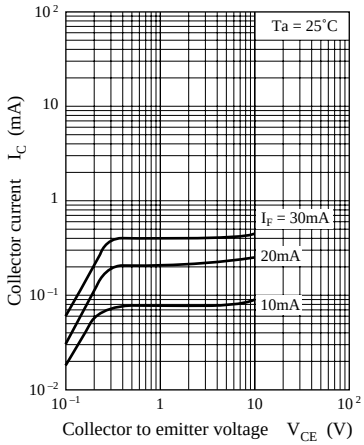

$V_F$ — Ta



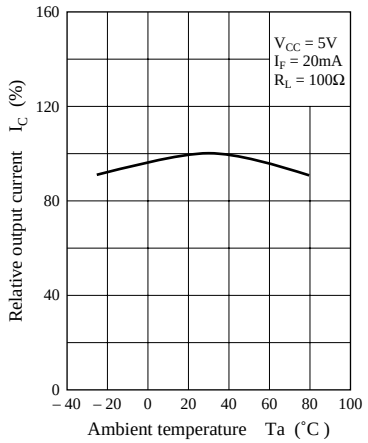

$I_C$ — $I_F$



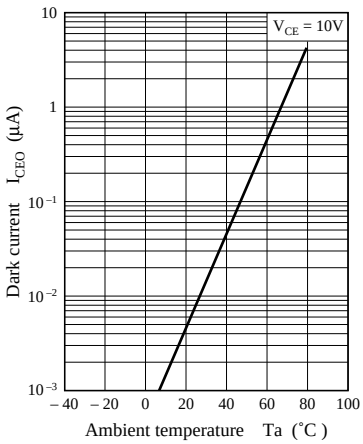

$I_C$ — $V_{CE}$



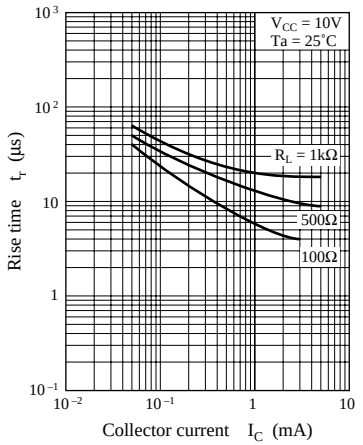

$I_C$ — Ta



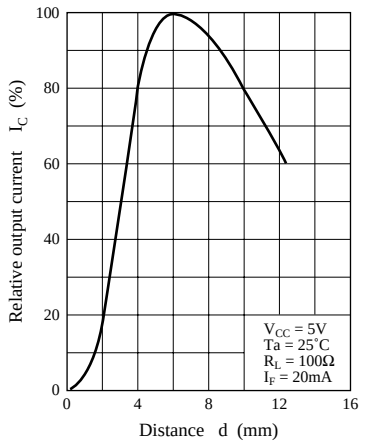

$I_{CEO}$ — Ta




$t_r$ — $I_C$




$I_C$ — d



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