

CNZ2152

Reflective Photosensor

Overview

CNZ2152 is a photosensor detecting the change of reflective light in which a high efficiency GaAs infrared light emitting diode is used as the light emitting element, and a high sensitivity Si phototransistor is used as the light detecting element. The two elements are located parallel in the same direction and objects are detected when passing in front of the device.

Features

- Fast response
- High SN ratio
- High sensitivity

Applications

- Detection of paper, film and cloth
- Optical mark reading
- Detection of coin and bill
- Detection of position and edge
- Start, end mark detection of magnetic tape

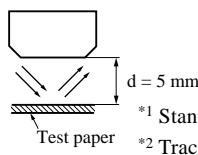
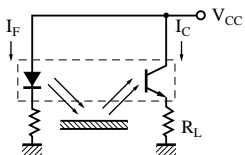
Absolute Maximum Ratings (Ta = 25°C)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	3	V
	Forward current (DC)	I_F	100	mA
	Power dissipation	P_D^{*1}	150	mW
Output (Photo transistor)	Collector to emitter voltage	V_{CEO}	20	V
	Emitter to collector voltage	V_{ECO}	3	V
	Collector current	I_C	30	mA
	Collector power dissipation	P_C^{*2}	150	mW
Temperature	Operating ambient temperature	T_{opr}	-25 to +85	°C
	Storage temperature	T_{stg}	-30 to +100	°C

Electrical Characteristics (Ta = 25°C)

	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 100\text{mA}$		1.25	1.5	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			10	μA
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10\text{V}$		0.05	2	μA
Transfer characteristics	Collector current	I_C^{*1}	$V_{CC} = 5\text{V}, I_F = 20\text{mA}, R_L = 100\Omega$	0.8	3		mA
		I_C^{*2}			500		μA
	Response time	t_r^{*3}, t_f^{*4}	$V_{CC} = 10\text{V}, I_C = 1\text{mA}, R_L = 100\Omega$		8		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 100\text{mA}, I_C = 1\text{mA}$			0.6	V

*1 *2 Transfer characteristics measurement circuit (Ambient light is shut off completely)

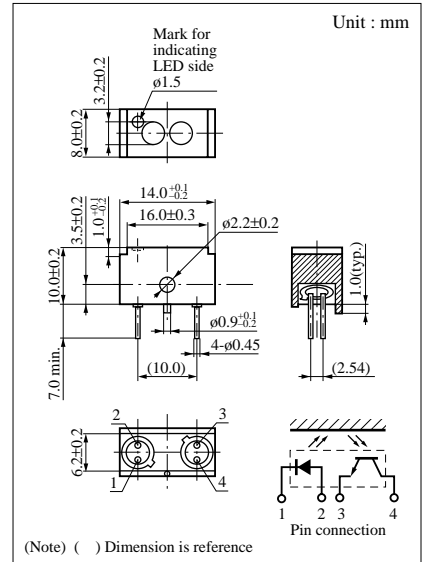


*1 Standard white paper (reflective ratio 90%)

*2 Tracing paper (paper SM-1 for 2nd original paper)

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

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



(Note) () Dimension is reference

*1 Input power derating ratio is 2.0 mW/°C at Ta ≥ 25°C.

*2 Output power derating ratio is 2.0 mW/°C at Ta ≥ 25°C.

