

CNZ2153

Reflective Photosensor

Overview

CNZ2153 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 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
- Small size and light weight

Applications

- Detection of paper, film and cloth
- Optical mark reading
- Detection of position and edge
- Detection of coin and bill
- 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	50	mA
	Power dissipation	P_D^{*1}	75	mW
Output (Photo transistor)	Collector to emitter voltage	V_{CEO}	30	V
	Emitter to collector voltage	V_{ECO}	5	V
	Collector current	I_C	20	mA
	Collector power dissipation	P_C^{*2}	50	mW
Temperature	Operating ambient temperature	T_{opr}	-25 to +85	°C
	Storage temperature	T_{stg}	-30 to +100	°C

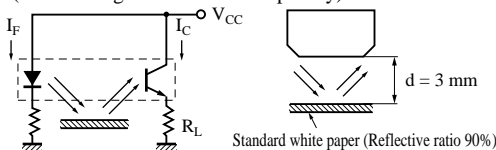
*1 Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

*2 Output power derating ratio is 0.67 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	$I_F = 50\text{mA}$		1.2	1.5	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			10	μA
	Capacitance between terminals	C_t	$V_R = 0\text{V}, f = 1\text{MHz}$		50		pF
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10\text{V}$			0.2	μA
Transfer characteristics	Collector current	I_C^{*1}	$V_{CC} = 5\text{V}, I_F = 20\text{mA}, R_L = 100\Omega$	100			μA
	Response time	t_r^{*2}, t_f^{*3}	$V_{CC} = 10\text{V}, I_C = 0.1\text{mA}, R_L = 100\Omega$		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 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.

