CNZ2152 (ON2152)

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

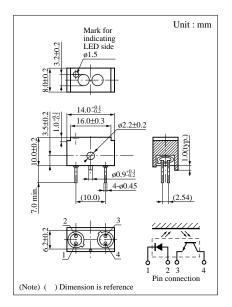
- Fast response
- High sensitivity
- High SN ratio

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)

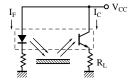
-	Symbol	Ratings	Unit	
I (I'l)	Reverse voltage (DC)	V_R	3	V
Input (Light emitting diode)	Forward current (DC)	I_F	100	mA
	Power dissipation	P_D^{*1}	150	mW
Output (Photo transistor)	Collector to emitter voltage	V_{CEO}	V _{CEO} 20	
	Emitter to collector voltage	V _{ECO}	3	V
	Collector current	I_{C}	30	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	$V_R = 3V$			10	μΑ
Output characteristics	Collector cutoff current	I _{CEO}	$V_{CE} = 10V$		0.05	2	μΑ
Transfer characteristics	Collector current	I _C *1	$V_{CC} = 5V, I_F = 20mA, R_L = 100\Omega$	0.8	3		mA
		I _C *2			500		μΑ
	Response time	t_r^{*3}, t_f^{*4}	$V_{CC} = 10V, I_C = 1mA, R_L = 100\Omega$		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)





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

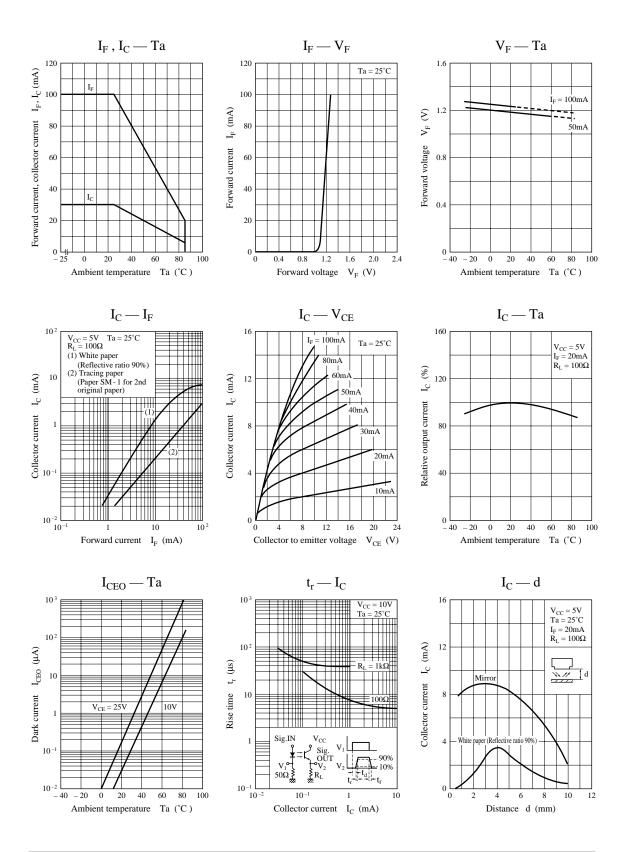
Note) The part number in the parenthesis shows conventional part number.

^{*1} Input power derating ratio is 2.0 mW/°C at $Ta \ge 25 ^{\circ}\text{C}$.

^{*2} Output power derating ratio is 2.0 mW/°C at $Ta \ge 25 ^{\circ}\text{C}$.

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

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



Caution for Safety



Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

Observe the relevant laws and regulations when disposing of the products. Do not mix them with ordinary industrial waste or household refuse when disposing of GaAs-containing products.

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