CNZ2152 (ON2152)

Reflective photosensor

Non-contact point SW, object sensing

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

Applications

• Detection of paper, film and cloth • Optical mark reading

• High sensitivity

- Detection of coin and bill Detection of position and edge
- Start, end mark detection of magnetic tape

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

$\begin{array}{c c c c c c c c c c c c c c c c c c c $	I	Symbol	Rating	Unit	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Input (Light	Reverse voltage	V _R	3	V
Power dissipation *1 P_D 150 mW Output (Photo transistor) Collector-emitter voltage (Base open) V_{CEO} 20 V Emitter-collector voltage (Base open) V_{ECO} 3 V Collector current I _C 30 mA Collector power dissipation *2 P_C 150 mW Temperature Operating ambient temperature T_{opr} -25 to +85 °C	emitting diode)	Forward current	I _F	100	mA
Output (Photo transistor) Collector-emitter voltage (Base open) V_{CEO} 20 V Emitter-collector voltage (Base open) V_{ECO} 3 V Collector current I _C 30 mA Collector power dissipation *2 P_C 150 mW Temperature Operating ambient temperature T_{opr} -25 to +85 °C		Power dissipation *1	P _D	150	mW
transistor) (Base open) V Emitter-collector voltage V_{ECO} 3 V (Base open) Collector current I _C 30 mA Collector current I _C 30 mW Temperature Operating ambient temperature T _{opr} -25 to +85 °C Storage temperature T -30 to +100 °C	Output (Photo	Collector-emitter voltage	V _{CEO}	20	V
$\begin{array}{c c} \mbox{Emitter-collector voltage} & V_{ECO} & 3 & V \\ \hline (Base open) & & & \\ \hline Collector current & I_C & 30 & mA \\ \hline Collector power dissipation ^{*2} & P_C & 150 & mW \\ \hline Temperature & Operating ambient temperature & T_{opr} & -25 to +85 & ^{\circ}C \\ \hline Storage temperature & T_{opr} & -30 to +100 & ^{\circ}C \\ \hline \end{array}$	transistor)	(Base open)			
(Base open) I _C 30 mA Collector current I _C 30 mW Collector power dissipation *2 P _C 150 mW Temperature Operating ambient temperature T _{opr} -25 to +85 °C Storage temperature T -30 to +100 °C		Emitter-collector voltage	V _{ECO}	3	V
Collector currentI_C30mACollector power dissipation $*^2$ P_C150mWTemperatureOperating ambient temperature T_{opr} -25 to +85°CStorage temperatureT-30 to +100°C		(Base open)			
Collector power dissipation *2 P _C 150mWTemperatureOperating ambient temperature T_{opr} -25 to $+85$ $^{\circ}C$ Storage temperatureT -30 to $+100$ $^{\circ}C$		Collector current	I _C	30	mA
Temperature Operating ambient temperature $T_{opr} = -25 \text{ to } +85 \text{ °C}$ Storage temperature $T_{opr} = -30 \text{ to } +100 \text{ °C}$		Collector power dissipation *2	P _C	150	mW
Storage temperature $T = -30 \text{ to } \pm 100 \text{ °C}$	Temperature	Operating ambient temperature	T _{opr}	-25 to +85	°C
Storage temperature $1_{stg} = 50.00 \pm 100$ C		Storage temperature	T _{stg}	-30 to +100	°C



Note)	*1:	Input power derating ratio is
		2.0 mW/°C at $T_a \ge 25^{\circ}C$.
	*2:	Output power derating ratio is
		$2.0 \text{ mW/}^{\circ}\text{C}$ at $T_{*} \ge 25^{\circ}\text{C}$.

Electrical-Optical Characteristics $T_a = 25^{\circ}C \pm 3^{\circ}C$

Parameter		Symbol	Conditions	Min	Тур	Max	Unit
Input	Forward voltage	V _F	$I_{\rm F} = 100 \ {\rm mA}$		1.25	1.50	V
characteristics	Reverse current	I _R	$V_R = 5 V$			10	μΑ
Output	Collector-emitter cutoff current	I _{CEO}	$V_{CE} = 10 V$		0.05	2.00	μΑ
characteristics	(Base open)						
Transfer	Collector current *1	I _C *2	$V_{CC} = 5 \text{ V}, I_F = 20 \text{ mA}, R_L = 100 \Omega$	0.8	3.0		mA
characteristics		I _C *3			500		μΑ
	Collector-emitter saturation voltage	V _{CE(sat)}	$I_F = 100 \text{ mA}, I_C = 1 \text{ mA}$			0.6	V
	Rise time	t _r	$V_{CC} = 10 \text{ V}, I_C = 1 \text{ mA}, R_L = 100 \Omega$		8		μs
	Fall time	t _f			8		μs

Note) 1. Input and output are handled electrically.

2. This product is not designed to withstand radiation

3. *1: Output current measurement circuit (Ambient light is shut off completely)

Test Paper



d = 5 mm *2: White paper (reflective ratio 90%)

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

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

Panasonic



▲ Caution for Safety

⚠ DANGER

This product contains Gallium Arsenide (GaAs).

GaAs powder and vapor are hazardous to human health if inhaled or ingested. Do not burn, destroy, cut, cleave off, or chemically dissolve the product. Follow related laws and ordinances for disposal. The product should be excluded form general industrial waste or household garbage.

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