

CNZ1215

Photo Interrupter

For contactless SW, object detection

Overview

CNZ1215 is a photocoupler in which a visible light emitting diode is used as the light emitting element, and a high sensitivity Darlington phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

Features

- Highly precise position detection : 0.3 mm
- Large output current : $I_C = 2 \text{ mA}$ (min.)
- High resolution

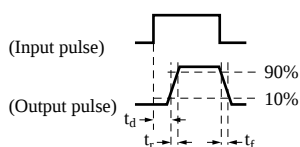
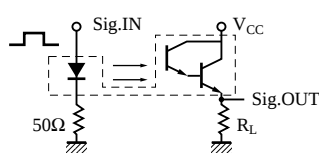
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	3	V
	Forward current (DC)	I_F	25	mA
	Power dissipation	P_D^{*1}	70	mW
Output (Photo transistor)	Collector current	I_C	30	mA
	Collector to emitter voltage	V_{CEO}	20	V
	Emitter to collector voltage	V_{ECO}	5	V
Temperature	Collector power dissipation	P_C^{*2}	100	mW
	Operating ambient temperature	T_{opr}	-25 to +80	$^\circ\text{C}$
	Storage temperature	T_{stg}	-30 to +100	$^\circ\text{C}$

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 20 \text{ mA}$		2.1	2.8	V
	Reverse current (DC)	I_R	$V_R = 3 \text{ V}$			5	μA
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 10 \text{ V}$		100	600	nA
	Collector to emitter capacitance	C_C	$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}$		5		pF
Transfer characteristics	Collector current	I_C	$V_{CE} = 10 \text{ V}, I_F = 5 \text{ mA}, R_L = 300 \Omega$	2			mA
	Response time	t_r, t_f^*	$V_{CC} = 10 \text{ V}, I_C = 5 \text{ mA}, R_L = 100 \Omega$		100		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 10 \text{ mA}, I_C = 1 \text{ mA}$		0.7	1.5	V

* Switching time measurement circuit



t_d : Delay time

t_r : Rise time (Time required for the collector current to increase from 10% to 90% of its final value)

t_f : Fall time (Time required for the collector current to decrease from 90% to 10% of its initial value)

