

CNZ1215

Photo Interrupter

For contactless SW, object detection

Overview

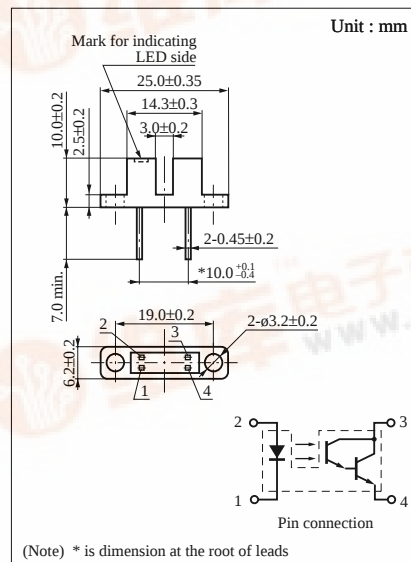
CNZ1215 is a photocoupler in which a visible light emitting diode is used as the light emitting element, and a high sensitivity Darlington phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

Features

- Highly precise position detection : 0.3 mm
- Large output current : IC = 2 mA (min.)
- High resolution

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	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	°C
	Storage temperature	T_{stg}	-30 to +100	°C



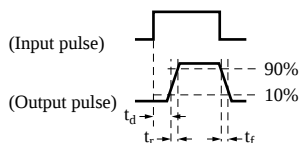
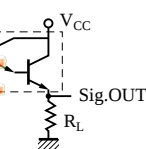
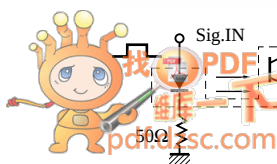
*1 Input power derating ratio is 0.93 mW/°C at Ta ≥ 25°C.

*2 Output power derating ratio is 1.33 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	$I_F = 20\text{mA}$		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)

