

# CNZ1215

## Photo Interrupter

For contactless SW, object detection

### Overview

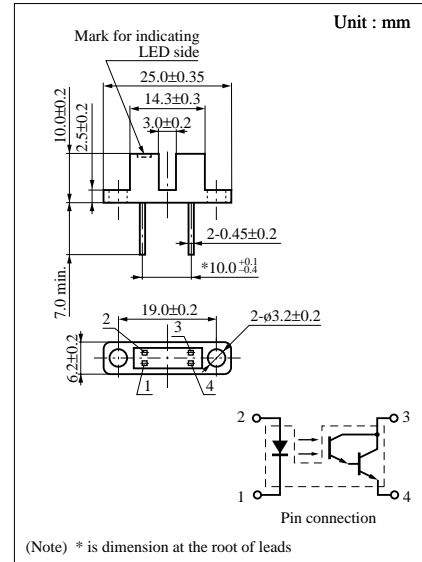
CNZ1215 is a photocoupler in which a visible light emitting diode is used as the light emitting element, and a high sensitivity Darlington phototransistor is used as the light detecting element. The two elements are arranged so as to face each other, and objects passing between them are detected.

### 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	$\mu\text{A}$
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		$\mu\text{s}$
	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

