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CNZ1414A

Integrated Photosensor

Overview

CNZ1414A is ultraminiature, highly reliable transmissive photosensor that has a high efficiency GaAs infrared light emitting diode chip and a low voltage operation type high sensitivity Si-integrated-photodetector chip which are in a double molded resin package.

Features

- Ultraminiature : 4.2×4.2 mm (height : 5.2 mm)
- Low voltage operation, low current consumption
($V_{CC} = 2.2$ to 7 V, $I_{CCL} = 0.8$ mA typ.)
- Fast response : $t_{PHL} = 3$ μ s, $t_{PLH} = 8$ μ s (typ.)
- Highly precise position detection (slit width : 0.3 mm)
- Gap width : 1.2 mm
- With attachment positioning pin

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

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	6	V
	Forward current (DC)	I_F	50	mA
	Power dissipation	P_D^{*1}	75	mW
Output (Photo IC)	Output current	I_O	8	mA
	Output voltage	V_O	12	V
	Supply voltage	V_{CC}	7	V
	Power dissipation	P_C^{*2}	80	mW
Temperature	Operating ambient temperature	T_{opr}	-25 to $+85$	$^\circ\text{C}$
	Storage temperature	T_{stg}	-40 to $+100$	$^\circ\text{C}$

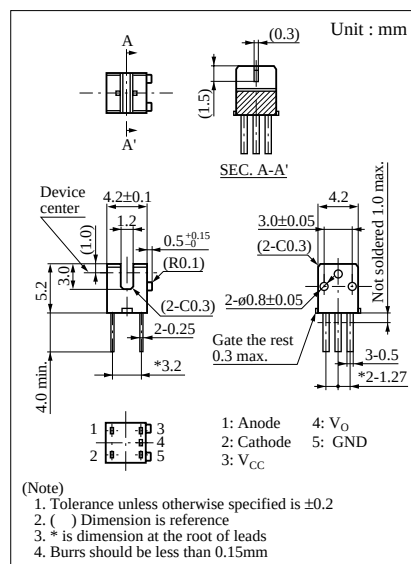
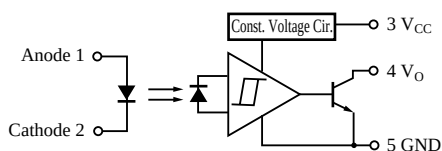
^{*1} Input power derating ratio is 1.0 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

^{*2} Output power derating ratio is 1.07 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

Pin Connection

CNZ1414A

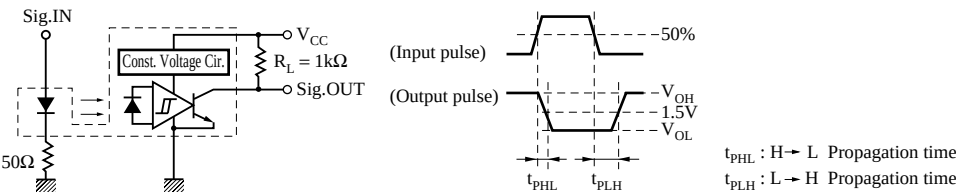
(Normally ON type)



■ Electrical Characteristics (Ta = 25°C)

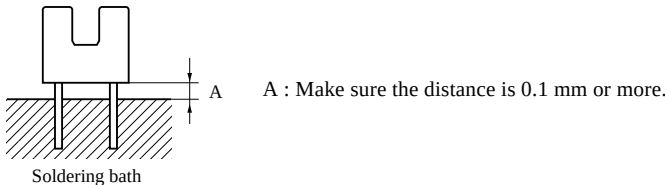
	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 20\text{mA}$		1.2	1.4	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			10	μA
Output characteristics	“H” Output current	I_{OH}	$V_{CC} = 5\text{V}$, $V_{OH} = 12\text{V}$, $I_F = 0\text{mA}$			100	μA
	“L” Output voltage	V_{OL}	$V_{CC} = 5\text{V}$, $I_{OL} = 5\text{mA}$, $I_F = 2\text{mA}$		0.15	0.4	V
	Operating power voltage	V_{CC}		2.2		7	V
	“L” Supply current	I_{CCL}	$V_{CC} = 5\text{V}$, $I_F = 2\text{mA}$		0.8	2	mA
	“H” Supply current	I_{CCH}	$V_{CC} = 5\text{V}$, $I_F = 0\text{mA}$		0.8	2	mA
Transfer characteristics	Threshold input current	$I_{FH \rightarrow L}$	$V_{CC} = 2.2\text{V}$			2	mA
	Hysteresis	I_{FLH}/I_{FHL}	$V_{CC} = 2.2\text{V}$		0.85		
	Response time	t_{PHL}^*	$V_{CC} = 5\text{V}$, $I_F = 2\text{mA}$, $R_L = 1\text{k}\Omega$		3		μs
		t_{PLH}^*			8		μs

* Switching time measurement circuit



● Important Information for Soldering

1. Soldering Position



2. Solder Temperature and Soldering Time

Temperature : 260°C or less

Time : within 3 seconds

Note) Avoid using reflow soldering methods.

3. Other Issues

- 1) Soldering should not create excessive thermal or mechanical stress on the case package or leads.
Excessive stress may cause changes in the shape or characteristics of the package or leads.
- 2) Be careful not to allow solder, flux, solvents, etc. to remain on the case package.
Doing so may cause problems related to transmission characteristics, etc.

● Important Information Related to Power Source Voltage

In order to stabilize the power line, use a decoupling capacitor of approximately 0.1 μF between V_{CC} and the GND line near the device .

