

CNZ1414A (ON1414A)

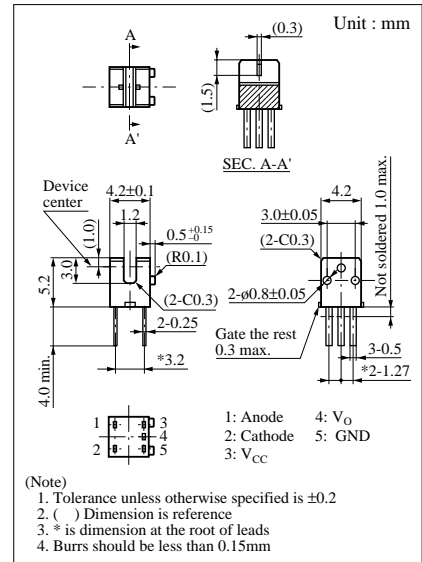
Integrated Photosensor

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_{CC} = 0.8 mA typ.)
- Fast response : t_{PHL} = 3 μs, t_{PLH} = 8 μs (typ.)
- Highly precise position detection (slit width : 0.3 mm)
- Gap width : 1.2 mm
- With attachment positioning pin



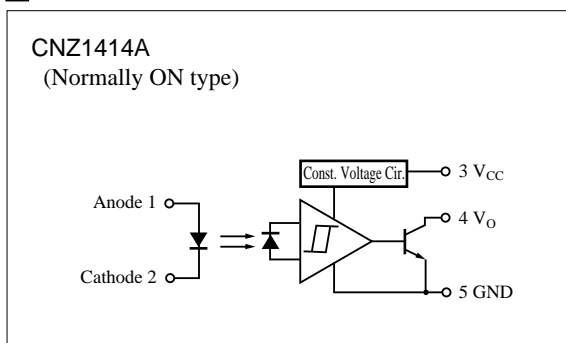
Absolute Maximum Ratings (Ta = 25°C)

	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	°C
	Storage temperature	T _{stg}	-40 to +100	°C

^{*1} Input power derating ratio is 1.0 mW/°C at Ta ≥ 25°C.

^{*2} Output power derating ratio is 1.07 mW/°C at Ta ≥ 25°C.

Pin Connection

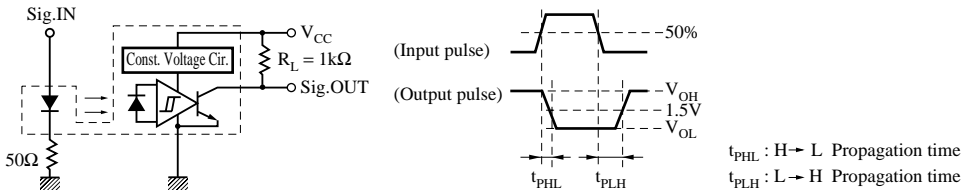


Note) The part number in the parenthesis shows conventional part number.

■ Electrical Characteristics (Ta = 25°C)

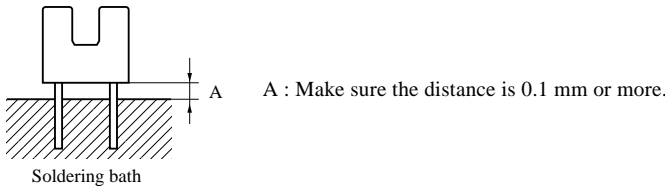
Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 20\text{mA}$		1.2	1.4	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			10	μA
Output characteristics	“H” Output current	I_{OH}	$V_{CC} = 5\text{V}, V_{OH} = 12\text{V}, I_F = 0\text{mA}$			100	μA
	“L” Output 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

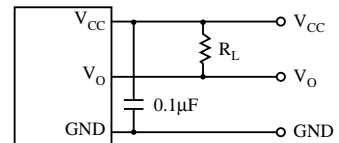
- Temperature : 260°C or less
- Time : within 3 seconds
- Note) Avoid using reflow soldering methods.

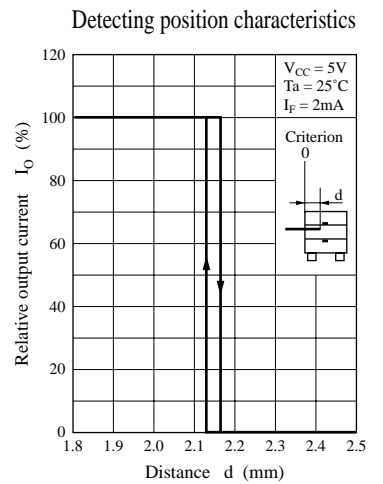
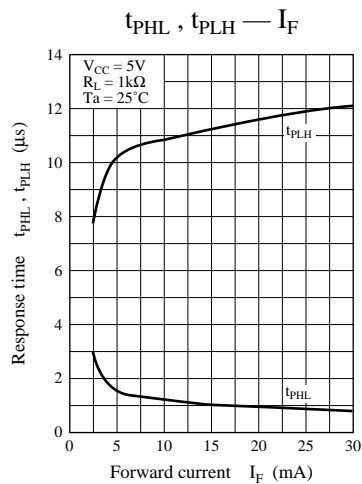
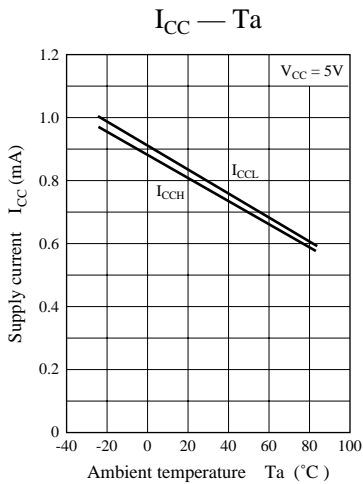
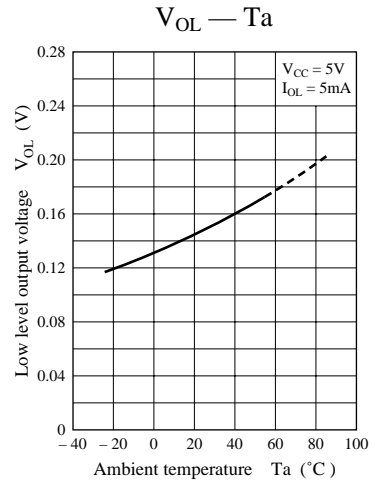
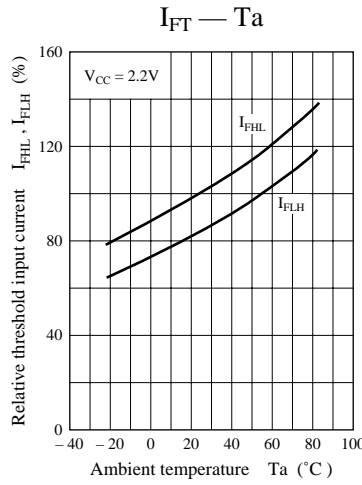
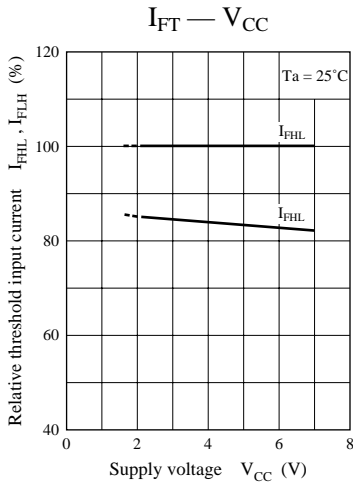
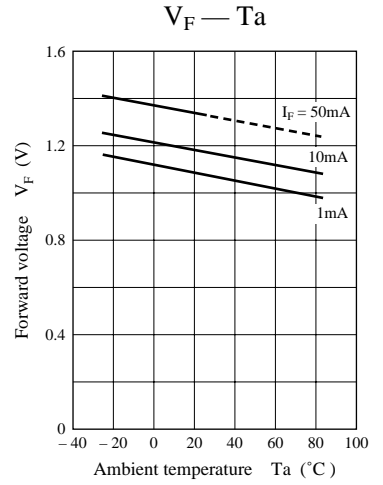
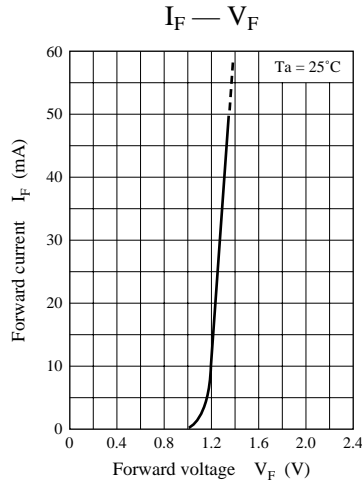
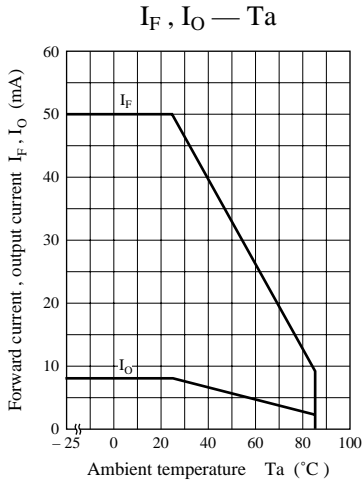
3. Other Issues

- 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 .





Caution for Safety

 **DANGER**

Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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