

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, $I_{CCL} = 0.8$ 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

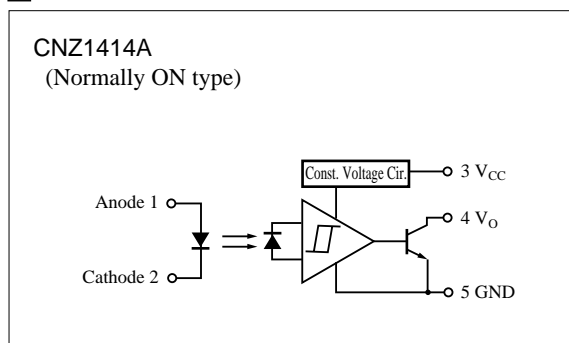
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

	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	$^\circ\text{C}$

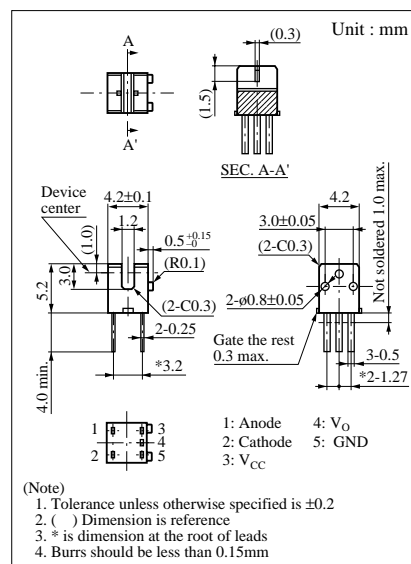
^{*1} Input power derating ratio is 1.0 mW/ $^\circ\text{C}$ at $T_a \geq 25^\circ\text{C}$.

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

Pin Connection



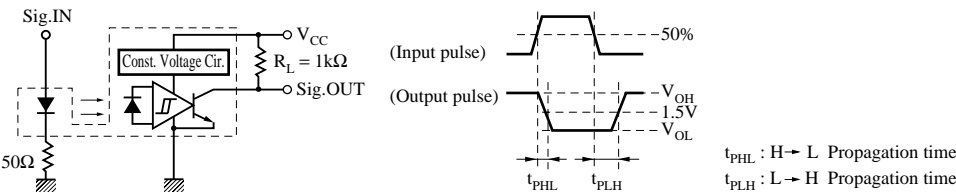
Note) The part number in the parenthesis shows conventional part number.



■ Electrical Characteristics (Ta = 25°C)

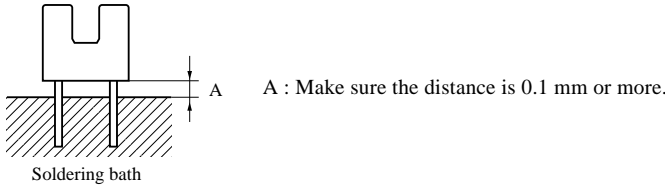
	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = 20\text{mA}$		1.2	1.4	V
	Reverse current (DC)	I_R	$V_R = 3\text{V}$			10	μA
Output characteristics	“H” Output current	I_{OH}	$V_{CC} = 5\text{V}$, $V_{OH} = 12\text{V}$, $I_F = 0\text{mA}$			100	μA
	“L” 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}^* t_{PLH}^*	$V_{CC} = 5\text{V}$, $I_F = 2\text{mA}$, $R_L = 1\text{k}\Omega$		3 8		μs μs

* Switching time measurement circuit



● Important Information for Soldering

1. Soldering Position



2. Solder Temperature and Soldering Time

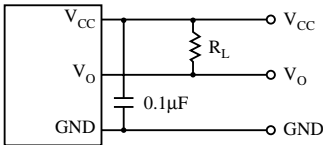
Temperature : 260°C or less
 Time : within 3 seconds
 Note) Avoid using reflow soldering methods.

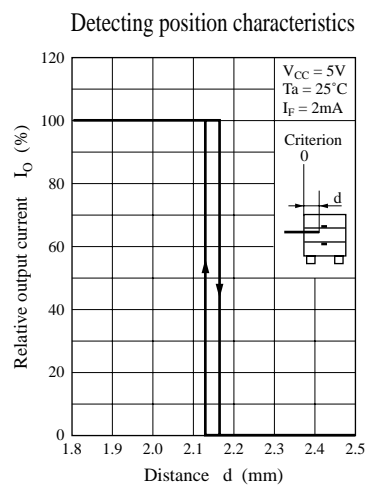
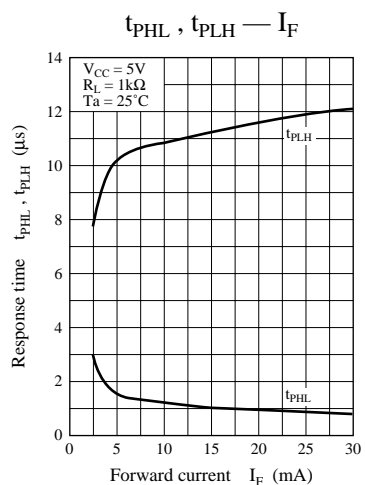
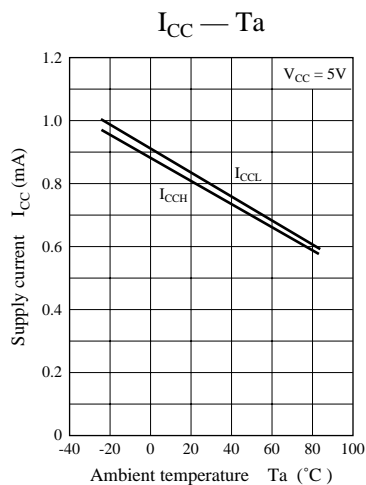
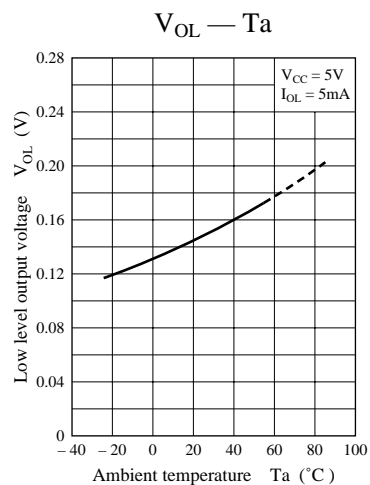
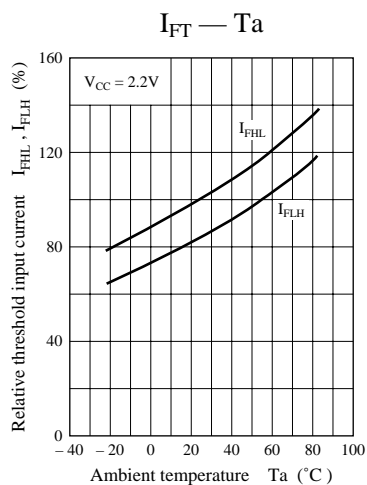
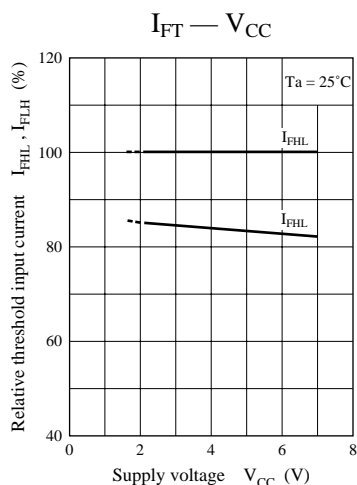
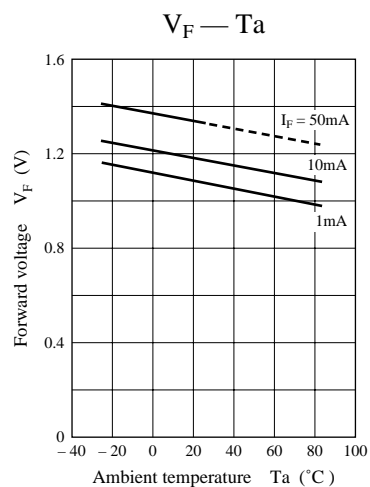
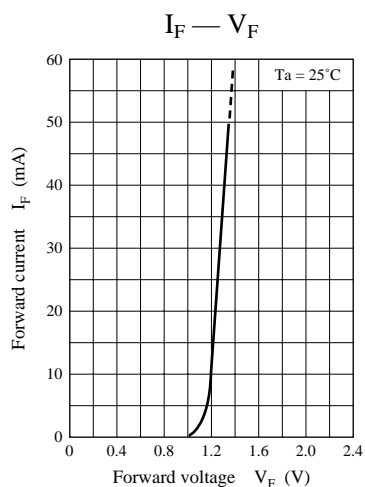
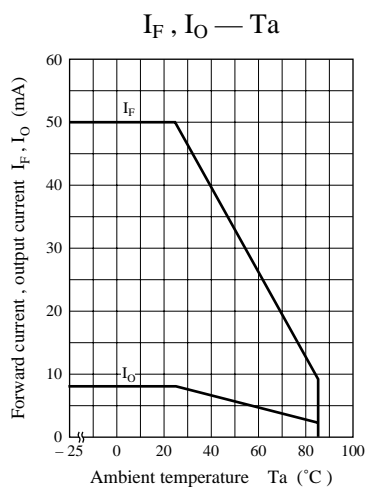
3. Other Issues

- 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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