



Parameter	Rating	Units
Breakdown Voltage $V_{CEO}$	30	V
Current Transfer Ratio (Min)	100	%
Saturation Voltage	0.3	V
Input Control Current	0.2	mA

### Features

- 100mA Continuous Load Rating
- 1500V<sub>rms</sub> Input/Output Isolation
- Small 4-Pin SOP Package
- Machine Insertable, Wave Solderable
- Surface Mount and Tape & Reel Version Available

### Applications

- Loop Detect
- Ringing Detect
- Sensor Circuitry
- Instrumentation
- Multiplexers
- Data Acquisition
- I/O Subsystems
- Industrial Control

### Description

CPC1001N is a unidirectional input optocoupler with a single transistor output. Current transfer ratios range from 100% to 800%.

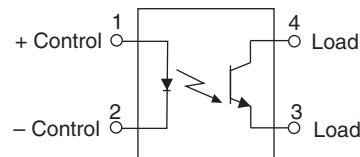
### Approvals

- UL Recognized Component: File # E76270
- CSA Certified Component: Certificate # 1175739
- EN/IEC 60950-1 Certified Component:  
TUV Certificate B 09 07 49410 004

### Ordering Information

Part #	Description
CPC1001N	4-Pin SOP (100/Tube)
CPC1001NTR	4-Pin SOP Surface Mount (2000/Reel)

### Pin Configuration



### Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Input Power Dissipation <sup>1</sup>	150	mW
Input Control Current Peak (10ms)	5	mA
	1	A
Reverse Input Voltage	5	V
Phototransistor <sup>2</sup>	150	mW
Isolation Voltage, Input to Output	1500	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate linearly 1.33 mW / °C

<sup>2</sup> Derate linearly 2.00 mW / °C

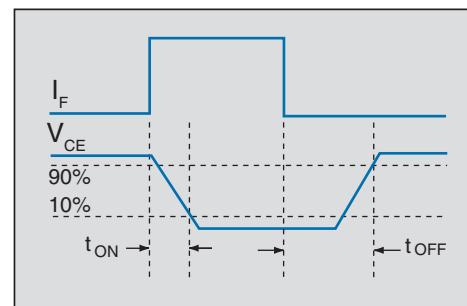
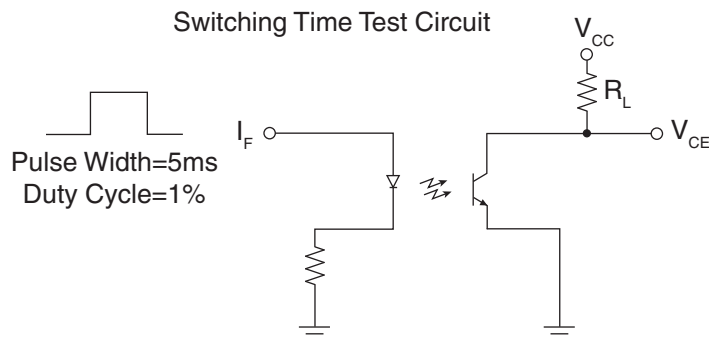
*Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.*

### Electrical Characteristics @ 25°C

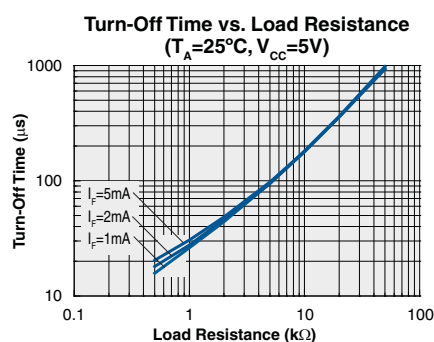
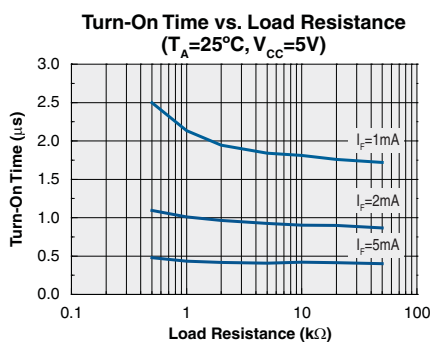
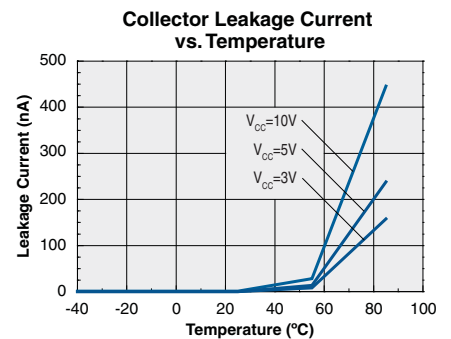
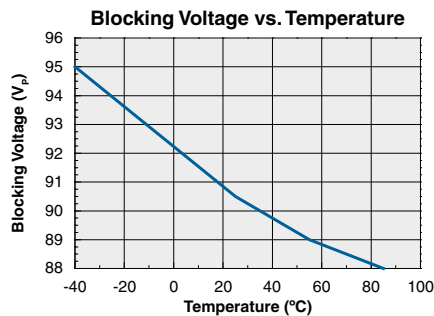
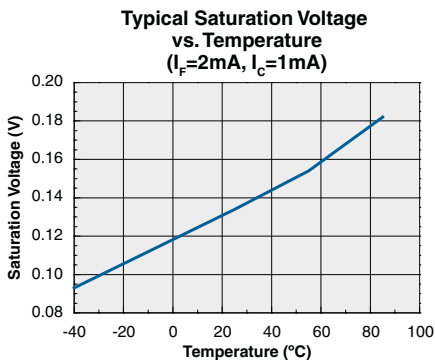
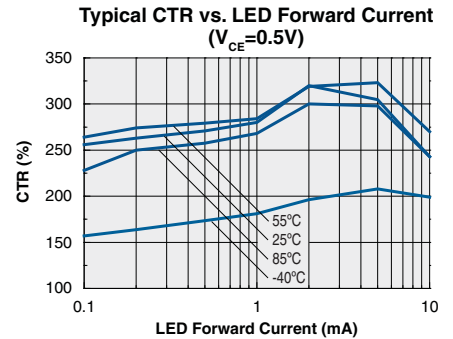
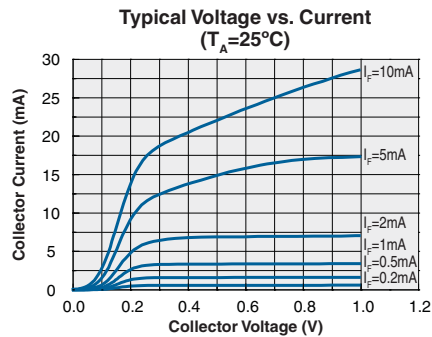
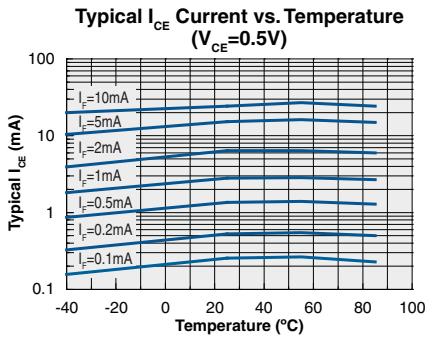
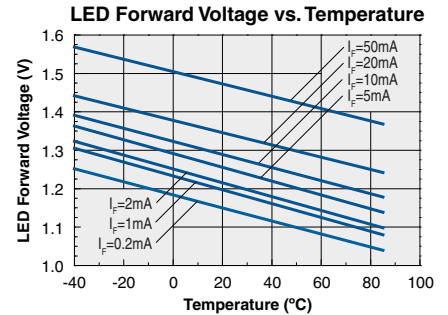
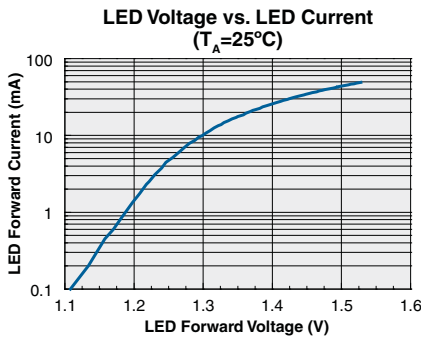
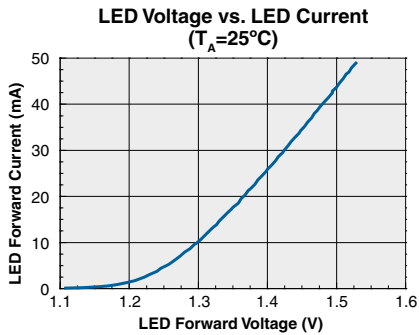
Parameters	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics</b>						
Phototransistor Blocking Voltage	I <sub>CEO</sub> =10μA	BV <sub>CEO</sub>	30	90	-	V <sub>P</sub>
Phototransistor Output (Dark) Current	I <sub>F</sub> =0mA, V <sub>CEO</sub> =5V	I <sub>CEO</sub>	-	9	500	nA
Saturation Voltage	I <sub>F</sub> =1mA, I <sub>C</sub> =1mA	V <sub>CE(sat)</sub>	-	-	0.3	V
Current Transfer Ratio	I <sub>F</sub> =0.2mA, V <sub>CE</sub> =0.5V	CTR	100	330	800	%
Output Capacitance	V <sub>CEO</sub> =25V, f=1MHz	C <sub>OUT</sub>	-	6	-	pF
<b>Input Characteristics</b>						
Input Control Current	I <sub>C</sub> =0.2mA, V <sub>CE</sub> =0.5V	I <sub>F</sub>	-	0.1	0.2	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Input Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA
<b>Common Characteristics</b>						
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

### Switching Characteristics @ 25°C

Characteristic	Symbol	Test Condition	Typ	Units
Turn-On Time	t <sub>on</sub>	I <sub>F</sub> =2mA, V <sub>CC</sub> =5V, R <sub>L</sub> =1KΩ	1	μs
Turn-Off Time	t <sub>off</sub>		30	



**PERFORMANCE DATA\***



Refer to the Test Circuit on the previous page for these two graphs.

\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Clare classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Rating
CPC1001N	MSL 3

### ESD Sensitivity



This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

### Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
CPC1001N	260°C for 30 seconds

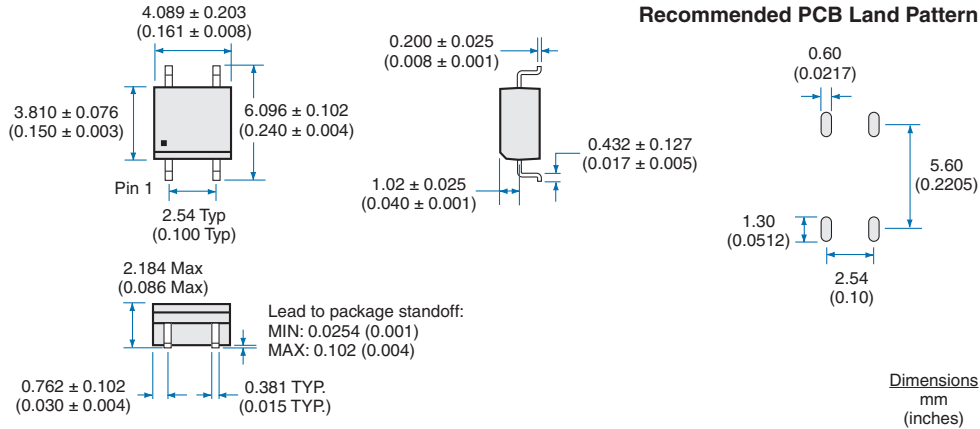
### Board Wash

Clare recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since Clare employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

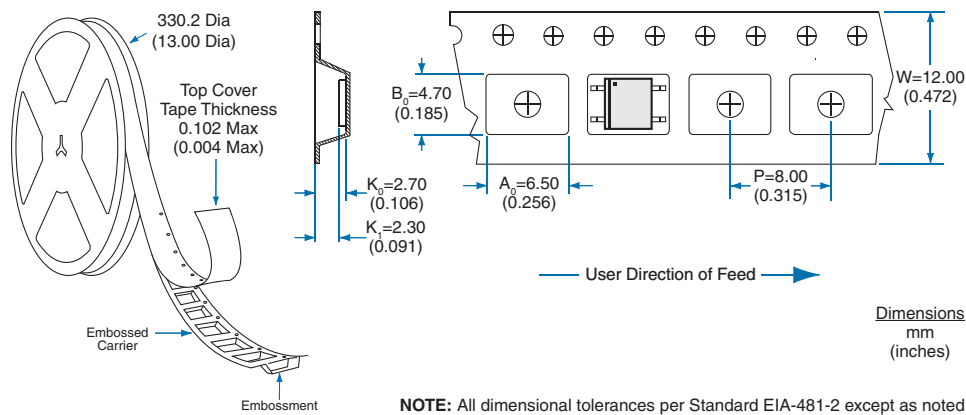


**MECHANICAL DIMENSIONS**

**CPC1001N**



**CPC1001N Tape & Reel**



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