

| Parameter                    | Rating | Units |
|------------------------------|--------|-------|
| Breakdown Voltage $BV_{CEO}$ | 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
- Tape & Reel Version Available
- Flammability Rating UL 94 V-0

### 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%.

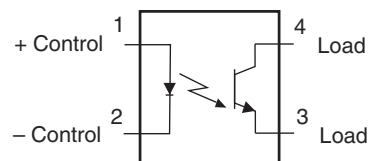
### Approvals

- UL Recognized Component: File E76270
- CSA Certified Component: Certificate 1172007
- TUV EN 62368-1: Certificate # B 082667 0008

### 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, Ambient     | -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.

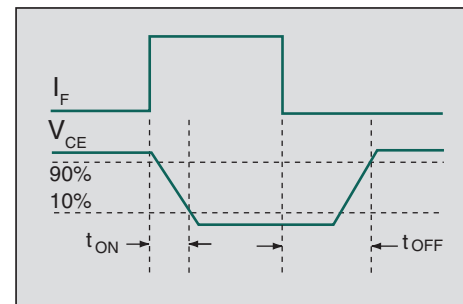
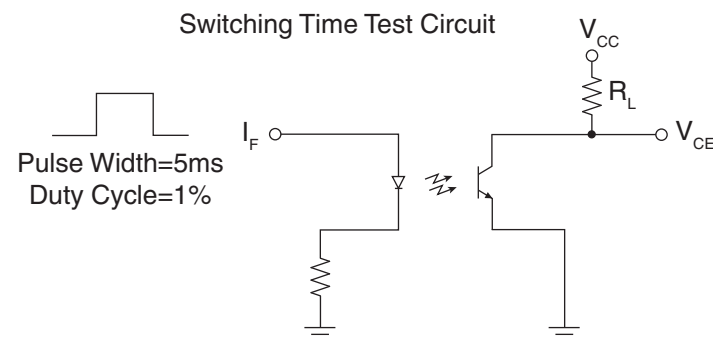
Typical values are characteristic of the device at +25°C, and are the result of engineering evaluations. They are provided for information purposes only, and are not part of the manufacturing testing requirements.

## Electrical Characteristics @ 25°C

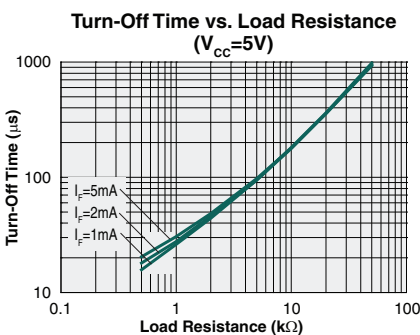
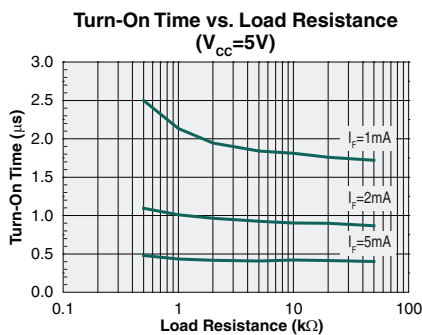
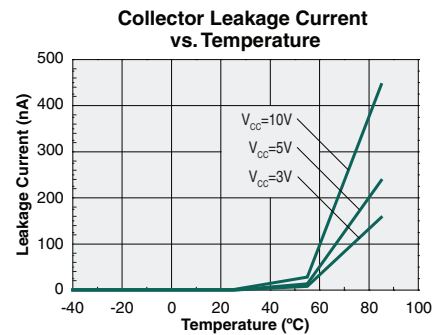
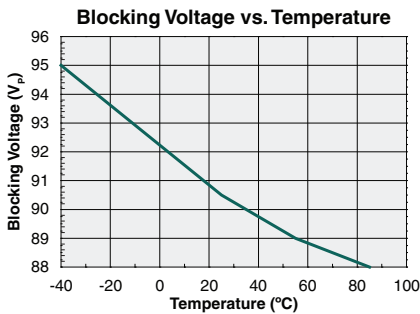
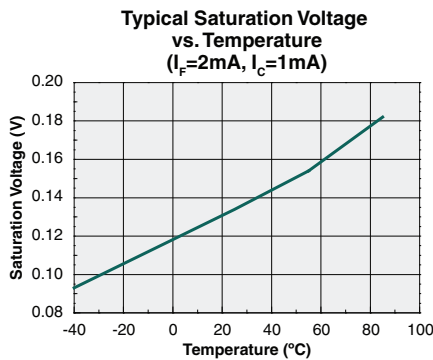
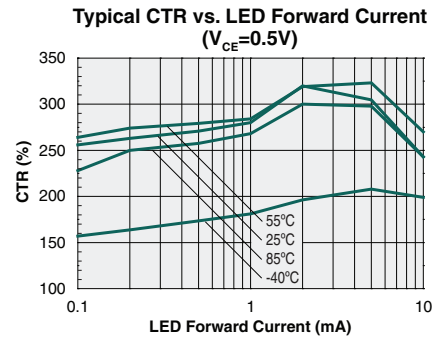
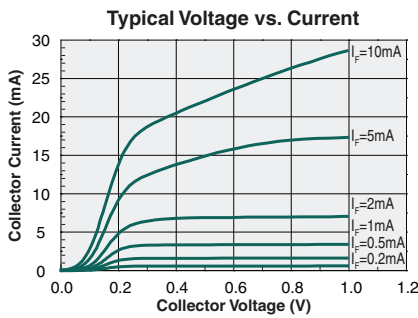
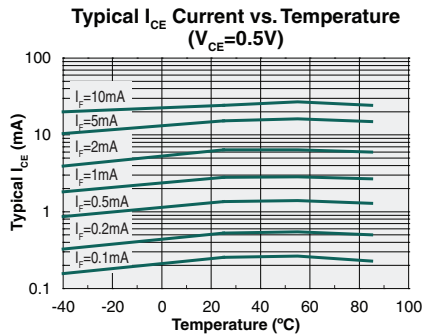
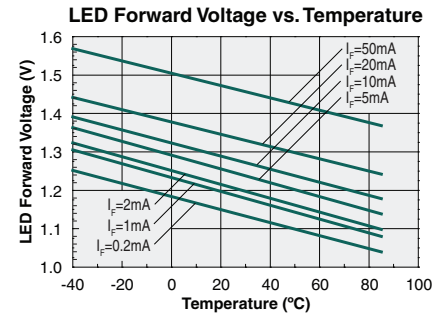
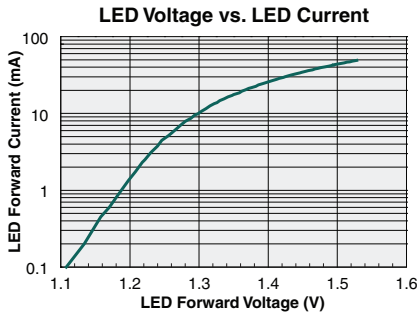
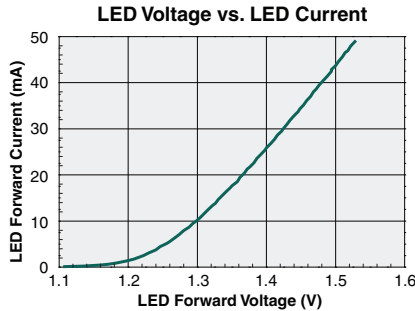
| Parameters                            | Conditions               | Symbol        | Min | Typ | Max | Units          |
|---------------------------------------|--------------------------|---------------|-----|-----|-----|----------------|
| <b>Output Characteristics</b>         |                          |               |     |     |     |                |
| Phototransistor Blocking Voltage      | $I_{CEO}=10\mu A$        | $BV_{CEO}$    | 30  | 90  | -   | V <sub>P</sub> |
| Phototransistor Output (Dark) Current | $I_F=0mA, V_{CEO}=5V$    | $I_{CEO}$     | -   | 9   | 500 | nA             |
| Saturation Voltage                    | $I_F=1mA, I_C=1mA$       | $V_{CE(sat)}$ | -   | -   | 0.3 | V              |
| Current Transfer Ratio                | $I_F=0.2mA, V_{CE}=0.5V$ | CTR           | 100 | 330 | 800 | %              |
| Output Capacitance                    | $V_{CEO}=25V, f=1MHz$    | $C_{OUT}$     | -   | 6   | -   | pF             |
| <b>Input Characteristics</b>          |                          |               |     |     |     |                |
| Input Control Current                 | $I_C=0.2mA, V_{CE}=0.5V$ | $I_F$         | -   | 0.1 | 0.2 | mA             |
| Input Voltage Drop                    | $I_F=5mA$                | $V_F$         | 0.9 | 1.2 | 1.5 | V              |
| Input Reverse Current                 | $V_R=5V$                 | $I_R$         | -   | -   | 10  | $\mu A$        |
| <b>Common Characteristics</b>         |                          |               |     |     |     |                |
| Input to Output Capacitance           | -                        | $C_{I/O}$     | -   | 3   | -   | pF             |

## Switching Characteristics @ 25°C

| Characteristic | Symbol    | Test Condition                     | Typ | Units   |
|----------------|-----------|------------------------------------|-----|---------|
| Turn-On Time   | $t_{on}$  | $I_F=2mA, V_{CC}=5V, R_L=1K\Omega$ | 1   | $\mu s$ |
| Turn-Off Time  | $t_{off}$ |                                    | 30  |         |



**PERFORMANCE DATA\***



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

\*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.

## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits classifies 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)** classification 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) Classification |
|----------|-------------------------------------------------|
| CPC1001N | MSL 3                                           |

### ESD Sensitivity



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

### Soldering Profile

Provided in the table below is the **IPC/JEDEC J-STD-020** Classification Temperature ( $T_C$ ) and the maximum dwell time the body temperature of these surface mount devices may be ( $T_C - 5$ )°C or greater. The Classification Temperature sets the Maximum Body Temperature allowed for these devices during reflow soldering processes.

| Device   | Classification Temperature ( $T_C$ ) | Dwell Time ( $t_p$ ) | Max Reflow Cycles |
|----------|--------------------------------------|----------------------|-------------------|
| CPC1001N | 260°C                                | 30 seconds           | 3                 |

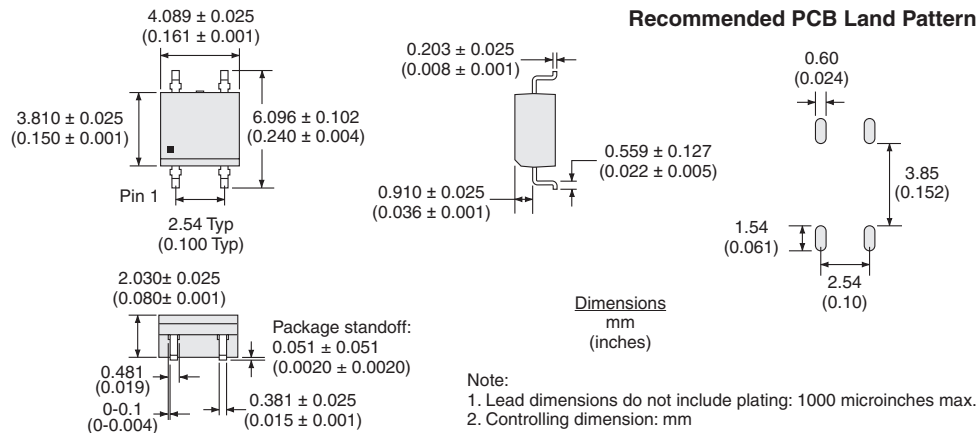
### Board Wash

IXYS Integrated Circuits recommends the use of no-clean flux formulations. Board washing to reduce or remove flux residue following the solder reflow process is acceptable provided proper precautions are taken to prevent damage to the device. These precautions include but are not limited to: using a low pressure wash and providing a follow up bake cycle sufficient to remove any moisture trapped within the device due to the washing process. Due to the variability of the wash parameters used to clean the board, determination of the bake temperature and duration necessary to remove the moisture trapped within the package is the responsibility of the user (assembler). Cleaning or drying methods that employ ultrasonic energy may damage the device and should not be used. Additionally, the device must not be exposed to halide flux or solvents.

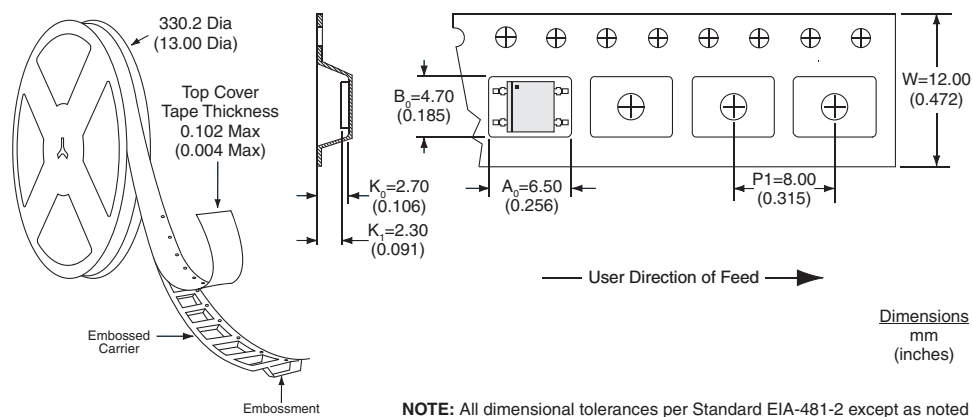


## MECHANICAL DIMENSIONS

### CPC1001N



### CPC1001NTR Tape & Reel



For additional information please visit our website at: <https://www.ixysic.com>