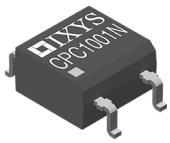
IXYS
INTEGRATED CIRCUITS DIVISION



CPC1001N
Optocoupler: Unidirectional Input, Single-Transistor Output

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

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

Features
- 100mA Continuous Load Rating
- $1500V_{rms}$ Input/Output Isolation
- Small 4-Pin SOP Package
- Tape & Reel Version Available
- Flammability Rating UL 94 V-0

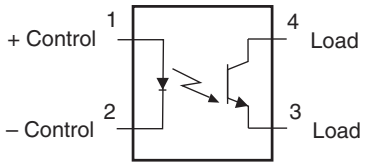
Approvals
- UL Recognized Component: File # E76270
- CSA Certified Component: Certificate # 1175739
- EN/IEC 60950-1 Certified Component: Certificate available on our website

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

Ordering Information

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

Pin Configuration



sales@prom-elec.com / ООО ПРОМЭЛЕКТРОНИКА

Absolute Maximum Ratings @ 25ºC

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

[1] Derate linearly 1.33 mW / ºC

[2] Derate linearly 2.00 mW / ºC

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.

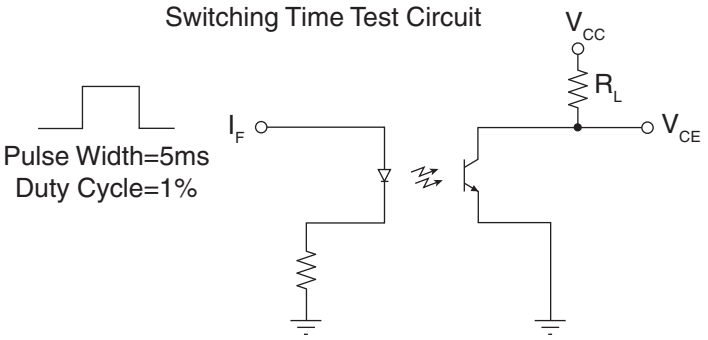
Electrical Characteristics @ 25ºC

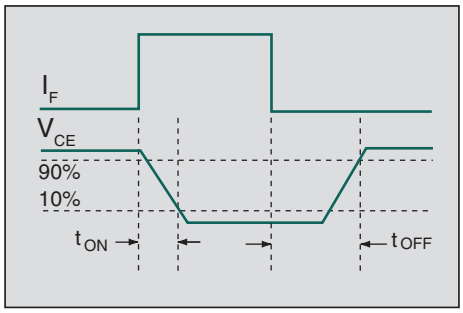
Parameters	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Phototransistor Blocking Voltage	I_{CEO}=10µA	BV_{CEO}	30	90	-	V_P
Phototransistor Output (Dark) Current	I_F=0mA, V_{CEO}=5V	I_{CEO}	-	9	500	nA
Saturation Voltage	I_F=1mA, I_C=1mA	$V_{CE(sat)}$	-	-	0.3	V
Current Transfer Ratio	I_F=0.2mA, V_{CE}=0.5V	CTR	100	330	800	%
Output Capacitance	V_{CEO}=25V, f=1MHz	C_{OUT}	-	6	-	pF
Input Characteristics						
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	µA
Common Characteristics						
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF

Switching Characteristics @ 25ºC

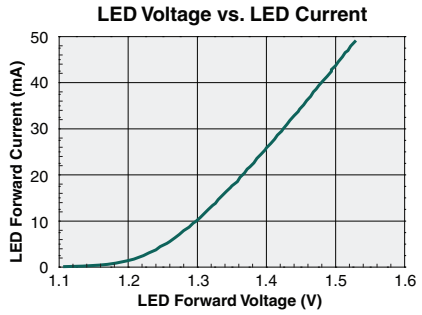
Characteristic	Symbol	Test Condition	Typ	Units
Turn-On Time	t_{on}	I_F=2mA, V_{CC}=5V, R_L=1KΩ	1	µs
Turn-Off Time	t_{off}		30	

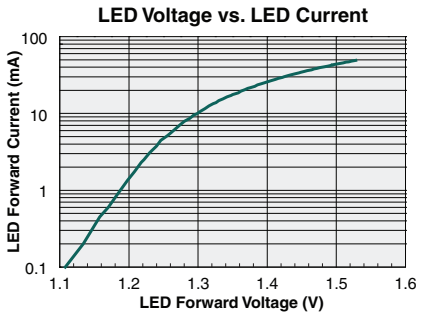
Switching Time Test Circuit

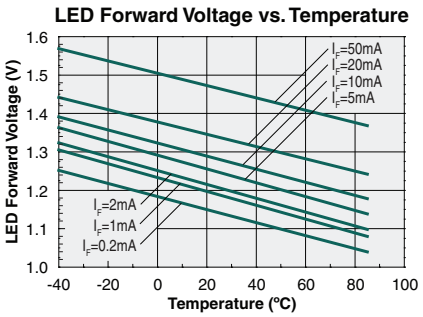


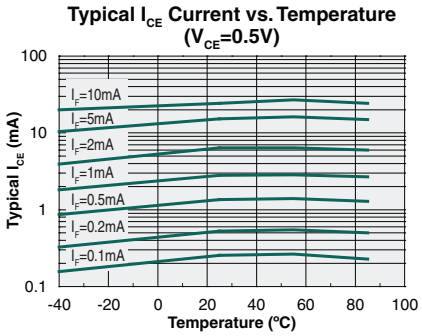


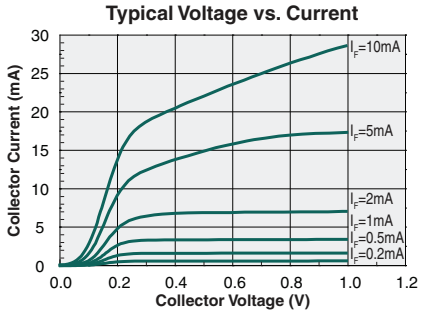
PERFORMANCE DATA*

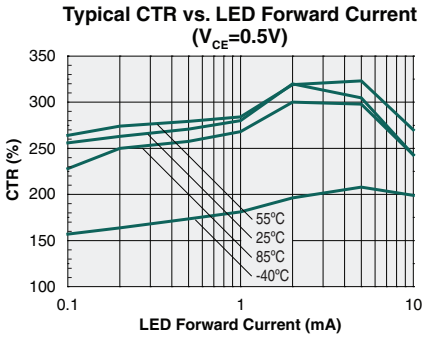


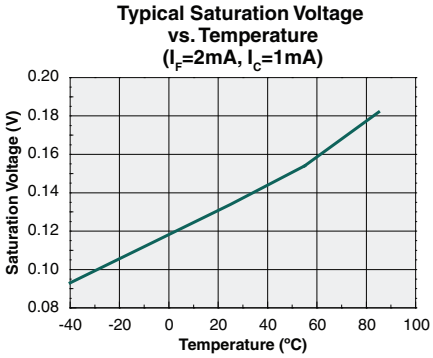


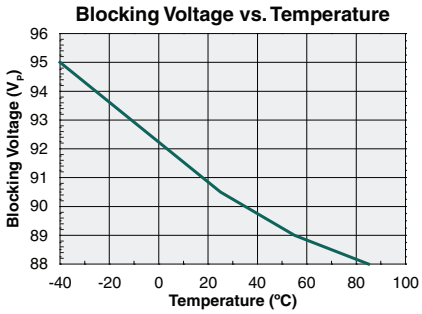


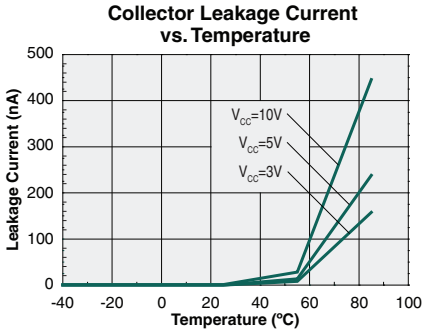


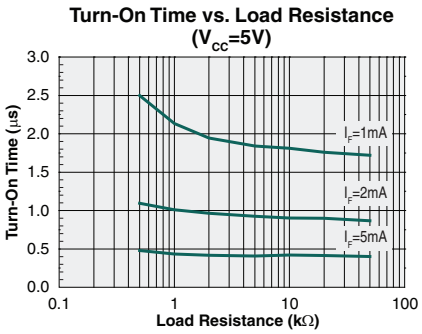


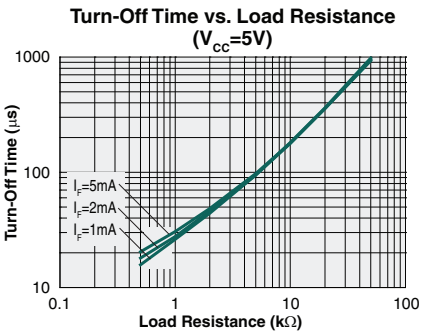












Refer to the Test Circuit on the previous page for these two graphs.

*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.
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 ingression. 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 Classification Temperature (T_C) of this product and the maximum dwell time the body temperature of this device may be (T_C - 5)ºC or greater. The classification temperature sets the Maximum Body Temperature allowed for this device during lead-free reflow processes. For through-hole devices, and any other processes, the guidelines of **J-STD-020** must be observed.

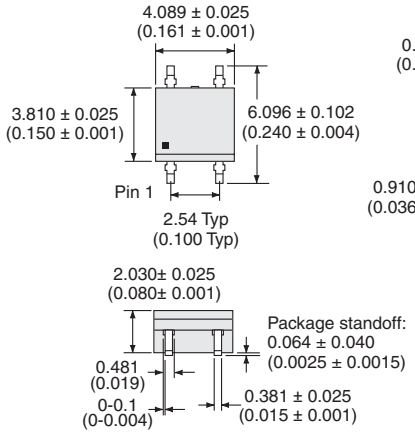
Device	Classification Temperature (T_c)	Dwell Time (t_p)	Max Reflow Cycles
CPC1001N	260ºC	30 seconds	3

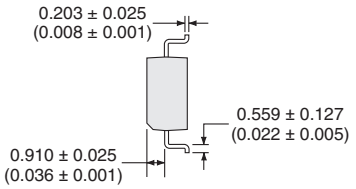
Board Wash

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 flux or solvents that are Chlorine- or Fluorine-based.

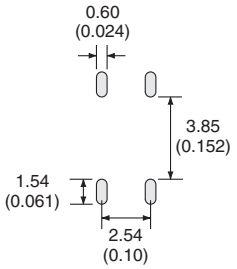
MECHANICAL DIMENSIONS

CPC1001N





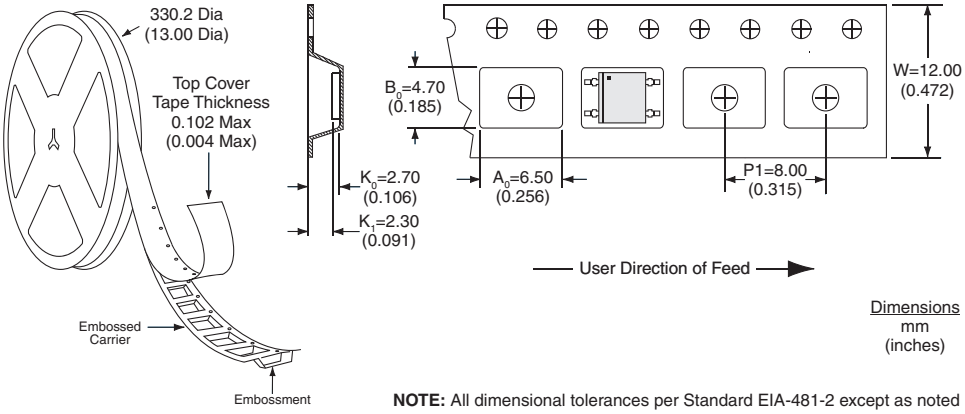
Recommended PCB Land Pattern



Dimensions
mm
(inches)

Note:
1. Lead dimensions do not include plating: 1000 microinches max.

CPC1001NTR Tape & Reel



Dimensions
mm
(inches)

NOTE: All dimensional tolerances per Standard EIA-481-2 except as noted

For additional information please visit our website at: www.ixysic.com

IXYS Integrated Circuits makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in IXYS Integrated Circuits' Standard Terms and Conditions of Sale, IXYS Integrated Circuits assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of IXYS Integrated Circuits' product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. IXYS Integrated Circuits reserves the right to discontinue or make changes to its products at any time without notice.

Specification: DS-CPC1001N-R06
©Copyright 2018, IXYS Integrated Circuits
OptoMOS® is a registered trademark of IXYS Integrated Circuits
All rights reserved. Printed in USA.
6/4/2018