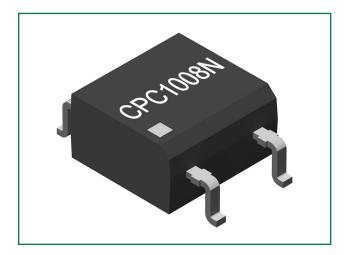
## **CPC1008N**

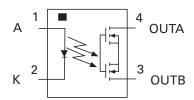
100V, 150 mA<sub>RMS</sub>/mA<sub>DC</sub> 1-Form-A SSR

## **Key Attributes**

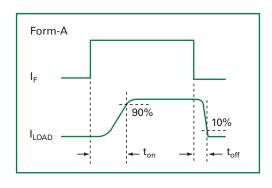
Characteristic	Rating	Unit
Blocking Voltage	100	V <sub>P</sub>
Load Current	150	mA <sub>RMS</sub> / mA <sub>DC</sub>
On-resistance (max)	8	Ω



## **Pin Configuration**



# **Switching Characteristics** of Normally Open Devices



## **Description**







The CPC1008N is a miniature, low-voltage, low on-resistance, single-pole, normally open (1-Form-A) solid state relay in a 4-Pin SOP package. It uses Littelfuse' patented OptoMOS architecture to optically control the isolated MOSFET switches while the optical coupling provides  $1500V_{\mbox{\footnotesize RMS}}$  of input/output isolation.

Using Littelfuse's state of the art double-molded vertical construction packaging, the CPC1008N is one of the world's smallest relays. It is ideal for replacing larger, less-reliable reed and electromechanical relays.

#### **Features**

- 1500V<sub>RMS</sub> Input/Output Isolation
- Small 4-Pin SOP Package
- Low Drive Power Requirements
- No EMI/RFI Generation
- Halogen-Free
- Tape & Reel Version

### **Applications**

Instrumentation

Multiplexers

Data Acquisition

Electronic Switching

I/O Subsystems

- Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security Systems
- Industrial Controls
- Reed Relay Replacement

#### **Approvals**

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

## **Ordering Information**

Part Number	Description	
CPC1008N	4-Pin SOP (100/tube)	
CPC1008NTR	4-Pin SOP (2000/Reel)	



## **Specifications**

#### **Absolute Maximum Ratings**

Parameter	Ratings	Units		
Blocking Voltage	100	V <sub>P</sub>		
Reverse Input Voltage	5	V		
Input Control Current	50	mA		
Peak (10 ms)	1	Α		
Input Power Dissipation	70	mW		
Total Power Dissipation <sup>1</sup>	400	mvv		
Isolation Voltage, Input to Output (60s)	1500	V <sub>RMS</sub>		
Operating Temperature, Ambient	perating Temperature, Ambient -40 to +85			
Storage Temperature	-40 to +125	- °C		

<sup>&</sup>lt;sup>1</sup> Derate output power linearly 3.33 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**

Parameter	Conditions	Symbol	Value			11
Parameter			Minimum	Typical	Maximum	Units
<b>Output Characteristics</b>						
Blocking voltage	$I_L = 1  \mu A$	$V_{DRM}$	100	-	-	V
Load current:						
Continuous <sup>1</sup>	-	Ι <sub>L</sub>	-	-	150	mA <sub>RMS</sub> /mA <sub>DC</sub>
Peak	t = 10 ms	I <sub>LPK</sub>	-	-	±350	mA <sub>P</sub>
On-resistance <sup>2</sup>	$I_F = 2 \text{ mA}, I_L = 150 \text{ mA}$	R <sub>ON</sub>	-	4.8	8	Ω
Off-state leakage current	V <sub>L</sub> = 100 V	I <sub>LEAK</sub>	-	-	1	μΑ
Switching speeds:						
Turn-on	L Ε το Λ \/ 10\/	t <sub>on</sub>	-	1	2	ms
Turn-off	$I_F = 5 \text{ mA}, V_L = 10 V$	t <sub>off</sub>	-	0.17	1	
Output capacitance	$I_F = 0 \text{ mA}, V_L = 50 \text{ V}, f = 1 \text{ MHz}$	C <sub>OUT</sub>	-	6	-	pF
Input Characteristics						
Input control current to activate <sup>3</sup>	I <sub>L</sub> = 150 mA	I <sub>F</sub>	-	0.45	2	
Input control current to deactivate	-	I <sub>F</sub>	0.2	-	-	mA mA
Input voltage drop	$I_F = 5  \text{mA}$	V <sub>F</sub>	0.9	1.36	1.5	V
Reverse input current	$V_R = 5V$	I <sub>R</sub>	-	-	10	μΑ
Input/Output Characteristics						
Capacitance, input to output	$V_{IO} = 0V$ , $f = 1 MHz$	C <sub>IO</sub>	-	1	-	pF

<sup>&</sup>lt;sup>1</sup> Load current derates linearly from 150 mA @ 25 °C to 120 mA @ 85 °C.



<sup>&</sup>lt;sup>2</sup> Measurement taken within 1 second of on-time.

<sup>&</sup>lt;sup>3</sup> For applications requiring operation greater than 60°C, a minimum LED drive current of 4 mA is recommended.

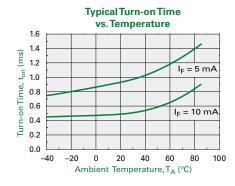
#### **Characteristic Curves**

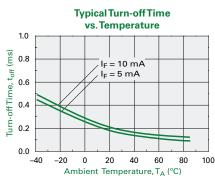


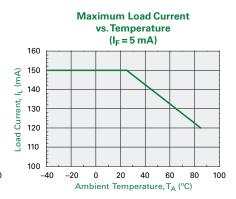
<sup>\*</sup>Unless otherwise noted, data presented in these graphs is typical of device operation at  $T_A = 25$  °C.

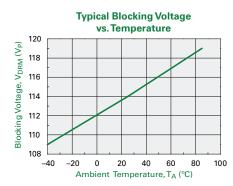


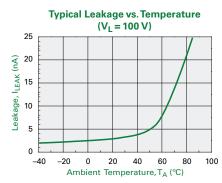
#### **Characteristic Curves**

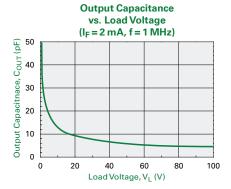


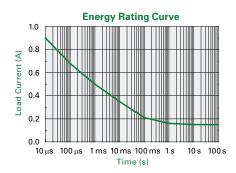














## **Manufacturing Information**

#### **Moisture Sensitivity**

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. Littelfuse classifies its plastic encapsulated devices for moisture sensitivity according to the latest revision 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 revision of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Classification	
CPC1008N	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 <sub>c</sub> )	Dwell Time (T <sub>p</sub> )	Max Reflow Cycles
CPC1008N	260°C	30 seconds	3

#### **Board Wash**

Littelfuse 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.



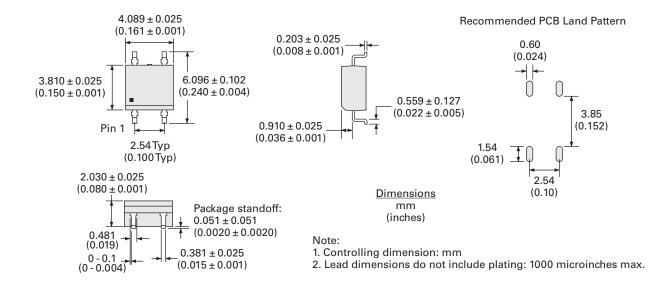




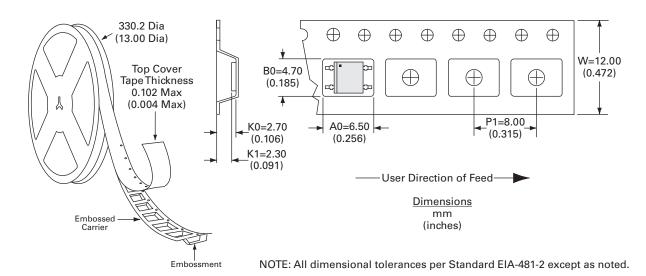


#### **Mechanical Dimensions**

CPC1008N 4-Pin SOP



#### CPC1008NTR Tape & Reel Packaging



**Disclaimer Notice** - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at https://www.littelfuse.com/disclaimer-electronics

