



	CPC1230N	Units
Blocking Voltage	350	V
Load Current	120	mA
Max On-resistance	30	$\Omega$

### Features

- Small 4 Pin SOP Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- Supplemental Isolation
- 1500V<sub>rms</sub> Input/Output Isolation
- 0.4mm Distance Through Insulation (Supplementary Isolation Requirement of EN60950)
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Tape & Reel Version Available

### Applications

- Telecommunications
  - Telecom Switching
  - Tip/Ring Circuits
  - Modem Switching (Laptop, Notebook, Pocket Size)
  - Hookswitch
  - Dial Pulsing
  - Ground Start
  - Ringer Injection
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

### Description

The CPC1230N is a miniature 1-Form-A solid state relay in a 4 pin SOP package that employs optically coupled MOSFET technology to provide 1500V of input to output isolation and is **BSI certified for supplemental insulation in accordance with EN60950**. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS<sup>®</sup> architecture. The optically coupled input is controlled by a highly efficient GaAIAs infrared LED. The CPC1230N uses Clare's state of the art double molded vertical construction packaging to produce the world's smallest 4 pin relay. The CPC1230N offers board space savings of at least 20% over the competitor's larger 4 pin SOP relay.

### Approvals

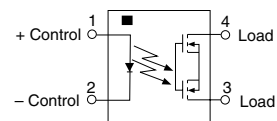
- UL Recognized Component File #: E76270
- Certified to: Supplementary Isolation Requirement of EN60950

### Ordering Information

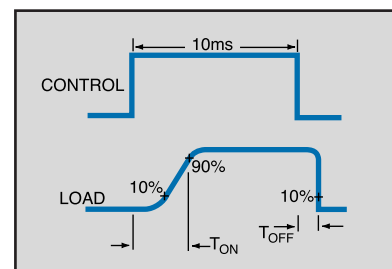
Part #	Description
CPC1230N	4 Pin SOP (100/tube)
CPC1230NTR	4 Pin SOP (2000/reel)

### Pin Configuration

CPC1230N Pinout



### Switching Characteristics of Normally Open (Form A) Devices



### Absolute Maximum Ratings (@ 25°C)

Parameter	Ratings	Units
Blocking Voltage (Peak)	350	V
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation	150	mW
Total Power Dissipation <sup>1</sup>	400	mW
Capacitance Input to Output	1	pF
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 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.

### Electrical Characteristics

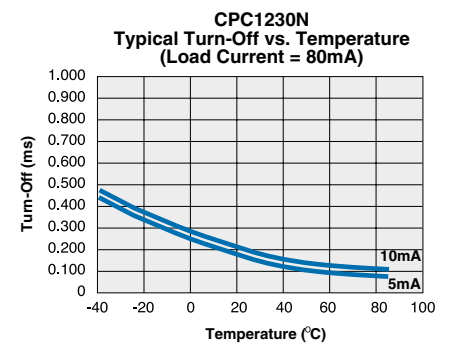
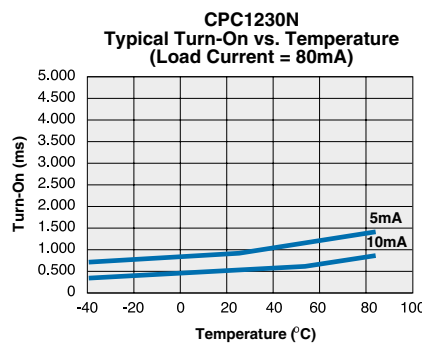
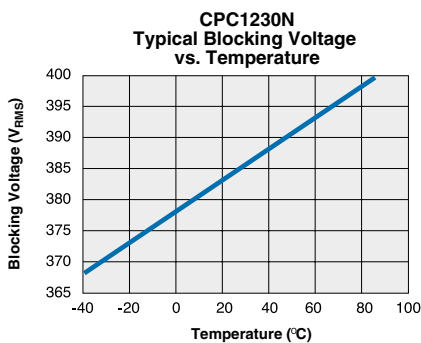
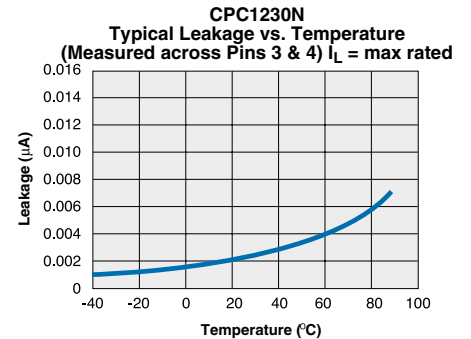
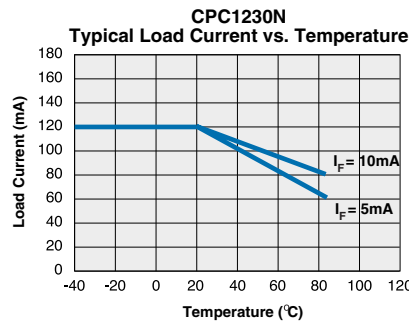
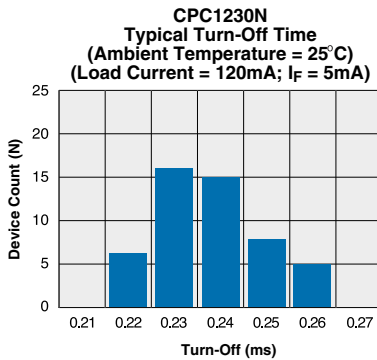
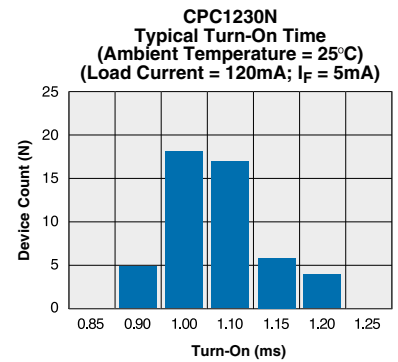
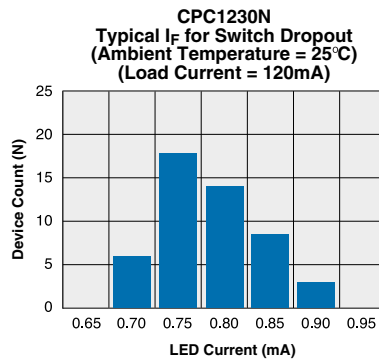
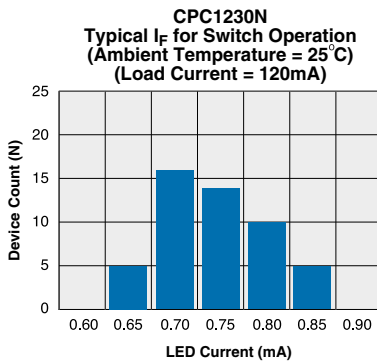
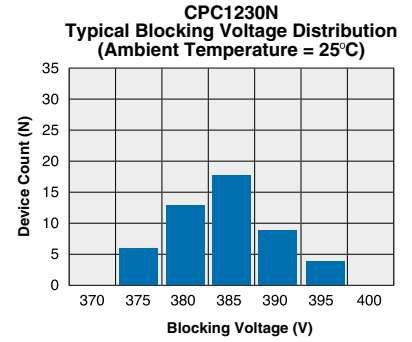
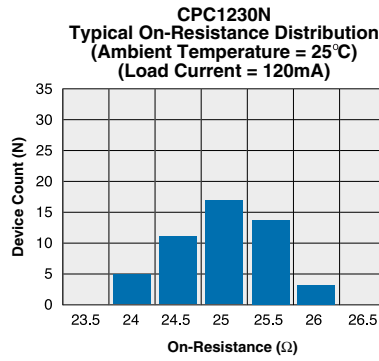
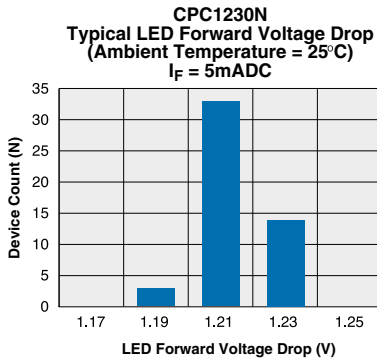
Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Load Current AC Peak <sup>1</sup> , Continuous	-	I <sub>L</sub>	-	-	120	mA
Peak Load Current	10ms	I <sub>LPK</sub>	-	-	350	mA
On-Resistance <sup>2</sup>	I <sub>L</sub> =120mA	R <sub>ON</sub>	-	25	30	Ω
Off-State Leakage Current	V <sub>L</sub> =350V	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	T <sub>ON</sub>	-	-	2	ms
Turn-Off	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	T <sub>OFF</sub>	-	-	1	ms
Output Capacitance	50V; f=1MHz	C <sub>OUT</sub>	-	25	-	pF
<b>Input Characteristics @ 25°C</b>						
Input Control Current <sup>3</sup>	I <sub>L</sub> =120mA	I <sub>F</sub>	2	-	50	mA
Input Dropout Current	-	I <sub>F</sub>	0.3	0.9	-	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Voltage	-	V <sub>R</sub>	-	-	5	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA

<sup>1</sup> Load current derates linearly from 120mA @ 25°C to 80mA @ 85°C.

<sup>2</sup> Measurement taken within 1 second of on time.

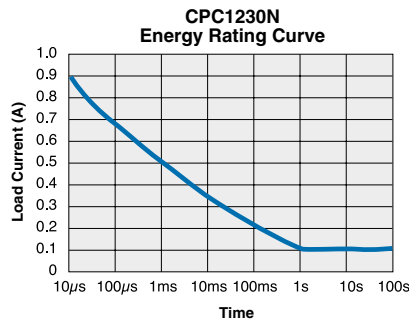
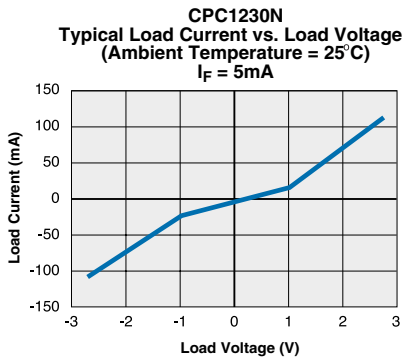
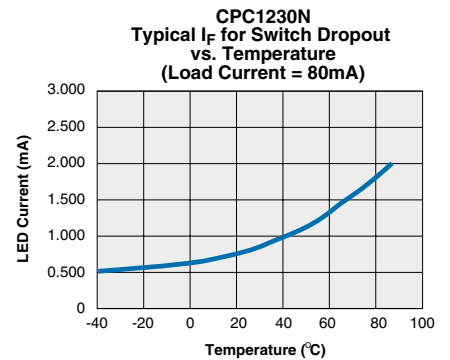
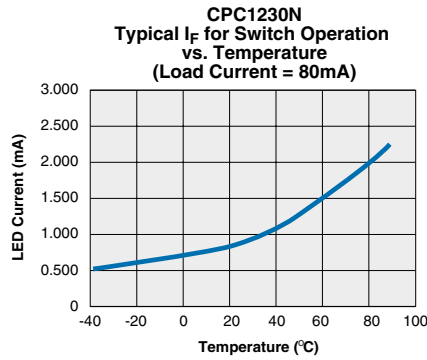
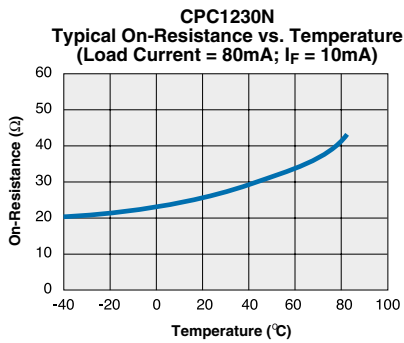
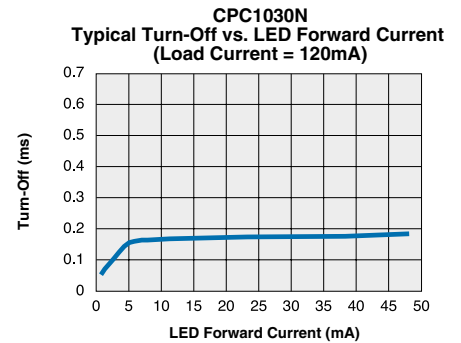
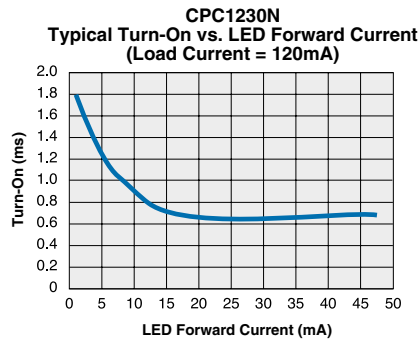
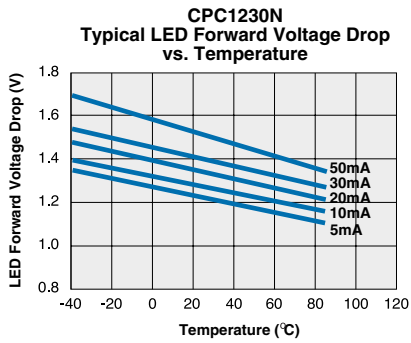
<sup>3</sup> For applications requiring high temperature operation (greater than 60°C) an LED drive current of 10mA is recommended.

**PERFORMANCE DATA\***



\*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.

PERFORMANCE DATA\*



\*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**

**Soldering**

Recommended soldering processes are limited to 260°C component body temperature for 10 seconds.

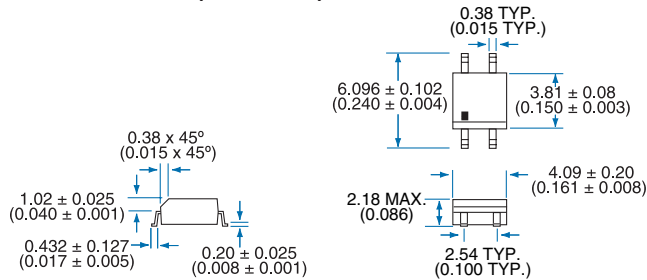


**Washing**

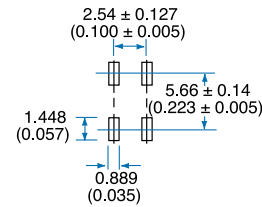
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

**MECHANICAL DIMENSIONS**

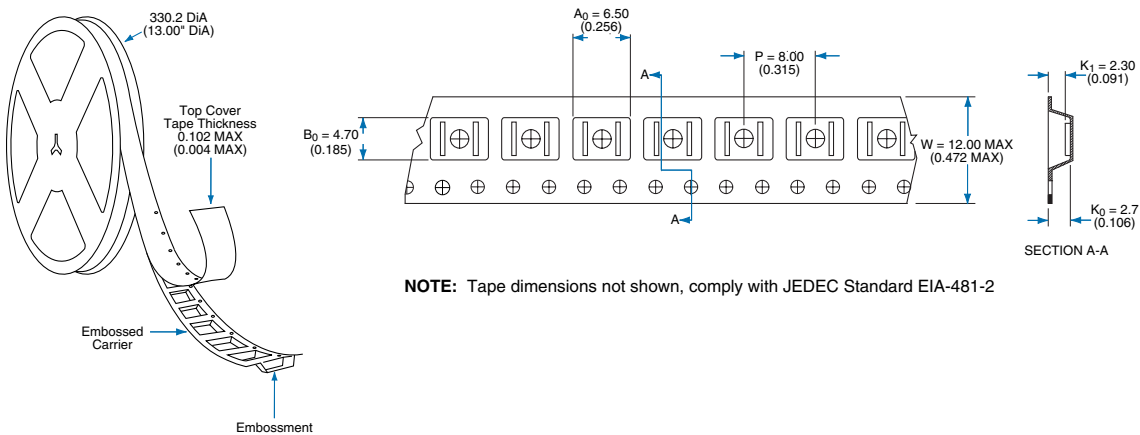
**4 Pin SOIC Narrow ("N" Suffix)**



**PC Board Pattern (Top View)**



**Tape and Reel Packaging for 4 pin SOIC package**



**NOTE:** Tape dimensions not shown, comply with JEDEC Standard EIA-481-2

**Dimensions:**  
mm  
(inches)

**For additional information please visit our website at: [www.clare.com](http://www.clare.com)**

Clare, Inc. 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 Clare's Standard Terms and Conditions of Sale, Clare, Inc. 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 Clare's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. Clare, Inc. reserves the right to discontinue or make changes to its products at any time without notice.

Specification: DS-CPC1230N-R04  
©Copyright 2005, Clare, Inc.  
OptoMOS® is a registered trademark of Clare, Inc.  
All rights reserved. Printed in USA.  
8/1/05