



| Parameter | Rating | Units |
|---------------------|--------|--------------------------------------|
| Blocking Voltage | 350 | V _P |
| Load Current | 120 | mA _{rms} / mA _{DC} |
| On-Resistance (max) | 30 | Ω |

Features

- 1500V_{rms} Input/Output Isolation
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Small 4-Pin SOP Package
- Machine Insertable, Wave Solderable
- Tape & Reel Version Available

Applications

- Telecommunications
 - Telecom Switching
 - Tip/Ring Circuits
 - Modem Switching (Laptop, Notebook, Pocket Size)
 - Hook Switch
 - Dial Pulsing
 - Ground Start
 - Ringing 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 CPC1130N is a miniature single-pole, normally closed (1-Form-B) solid state relay that uses optically coupled MOSFET technology to provide 1500V_{rms} of input to output isolation. The efficient MOSFET switches and photovoltaic die use IXYS Integrated Circuits Division's patented OptoMOS® architecture while the optically coupled output is controlled by a highly efficient GaAlAs infrared LED.

The CPC1130N offers board space savings of at least 20% when compared to competitive 4-pin SOP solid state relays.

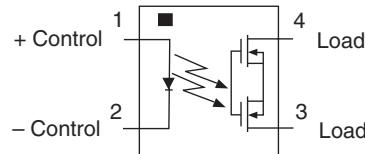
Approvals

- UL 1577 Approved Component: File E76270
- CSA Certified Component: Certificate 1172007
- EN 60950 Certified Component:
TUV Certificate B 10 05 49410 006

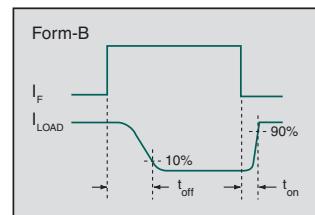
Ordering Information

| Part # | Description |
|------------|-----------------------|
| CPC1130N | 4-Pin SOP (100/tube) |
| CPC1130NTR | 4-Pin SOP (2000/reel) |

Pin Configuration



Switching Characteristics
of Normally Closed Devices



Absolute Maximum Ratings @ 25°C

| Parameter | Ratings | Units |
|--------------------------------------|-------------|------------------|
| Blocking Voltage | 350 | V _P |
| Reverse Input Voltage | 5 | V |
| Input Control Current Peak (10ms) | 50 | mA |
| | 1 | A |
| Input Power Dissipation | 150 | mW |
| Total Power Dissipation ¹ | 400 | mW |
| Isolation Voltage, Input to Output | 1500 | V _{rms} |
| Operational Temperature | -40 to +85 | °C |
| Storage Temperature | -40 to +125 | °C |

¹ 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.

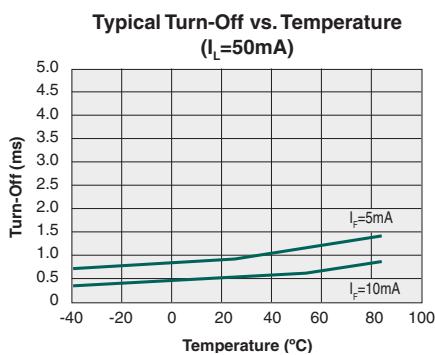
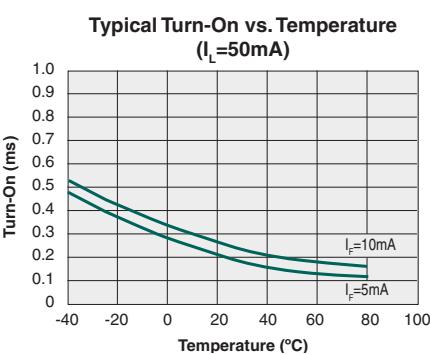
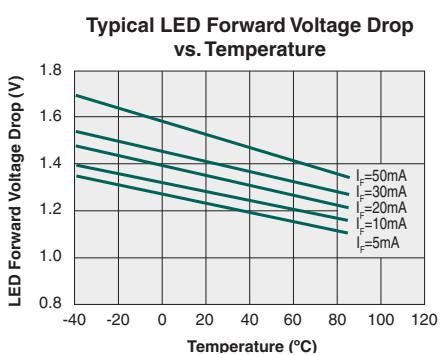
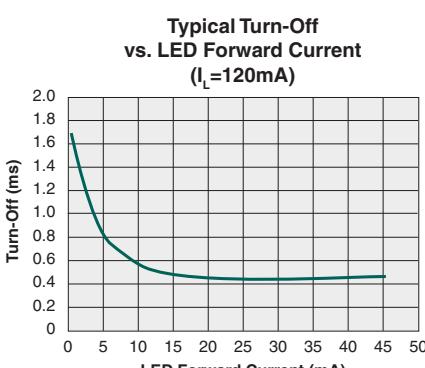
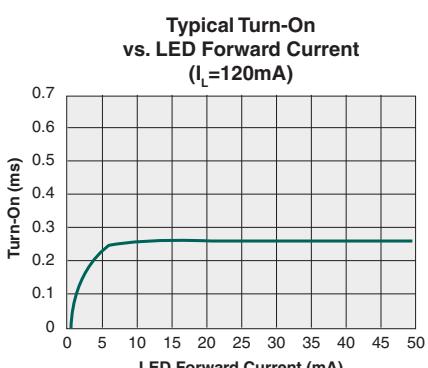
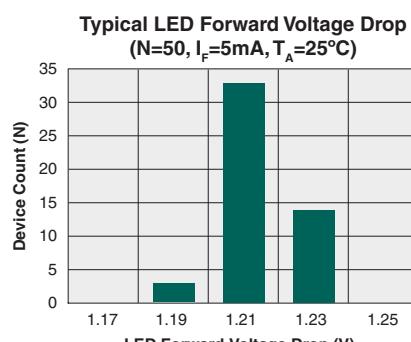
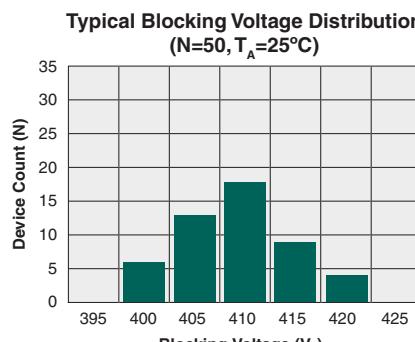
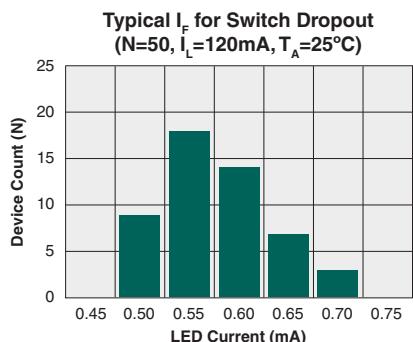
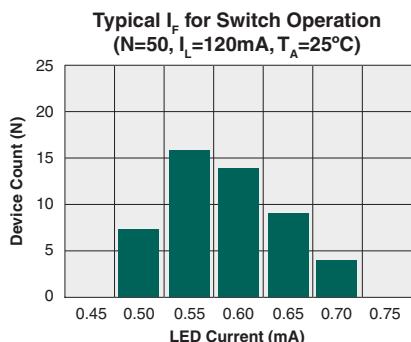
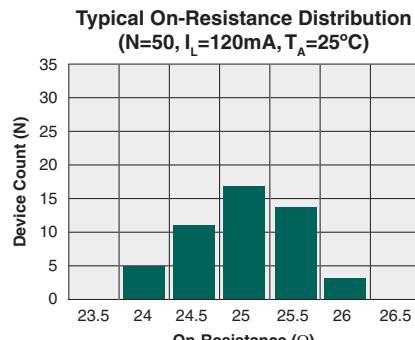
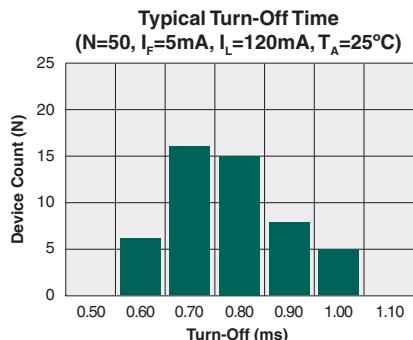
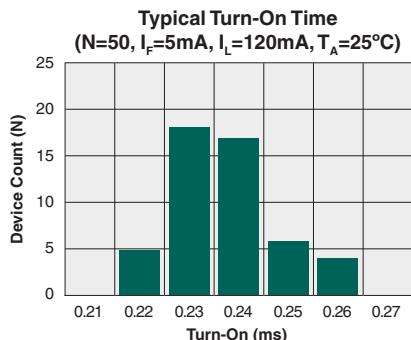
Electrical Characteristics @ 25°C

| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|--|--|-------------------|-----|------|------|--------------------------------------|
| Output Characteristics | | | | | | |
| Load Current Continuous ¹ | - | I _L | - | - | 120 | mA _{rms} / mA _{DC} |
| Peak | t = 10ms | I _{LPK} | - | - | ±350 | mA _P |
| On-Resistance ² | I _L = 120mA | R _{ON} | - | 25 | 30 | Ω |
| Off-State Leakage Current | I _F = 2mA, V _L = 350V _P | I _{LEAK} | - | - | 5 | μA |
| Switching Speeds | I _F = 5mA, V _L = 10V | t _{on} | - | - | 2 | ms |
| | | t _{off} | - | - | 2 | |
| | | C _{OUT} | - | 25 | - | pF |
| Input Characteristics | | | | | | |
| Input Control Current to Activate ³ | I _L = 120mA | I _F | - | 0.6 | 2 | mA |
| Input Control Current to Deactivate | - | I _F | 0.3 | 0.55 | - | mA |
| Input Voltage Drop | I _F = 5mA | V _F | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Current | V _R = 5V | I _R | - | - | 10 | μA |
| Common Characteristics | | | | | | |
| Input to Output Capacitance | - | C _{IO} | - | 1 | - | pF |

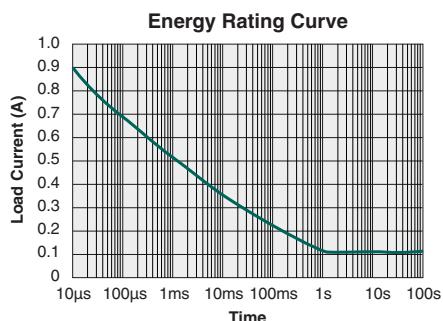
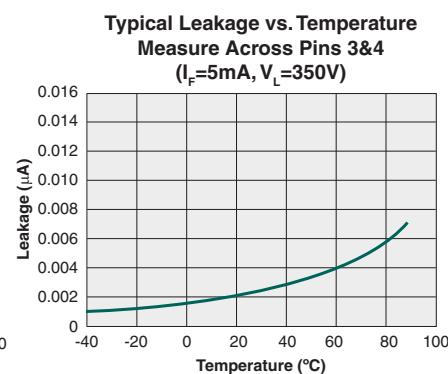
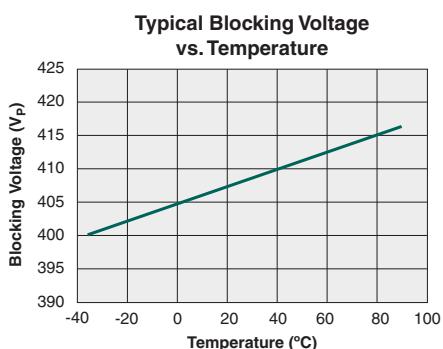
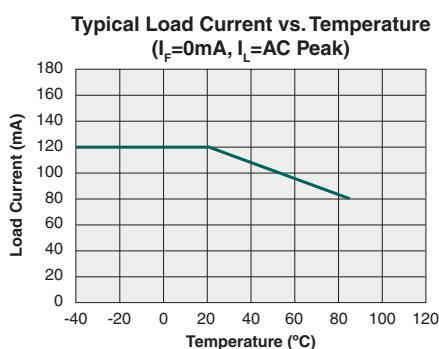
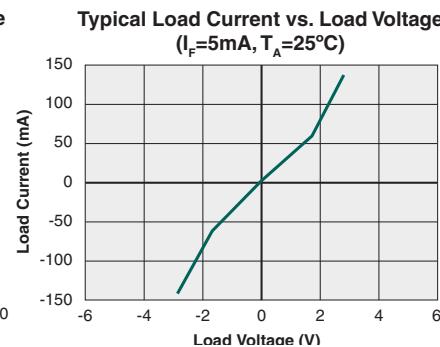
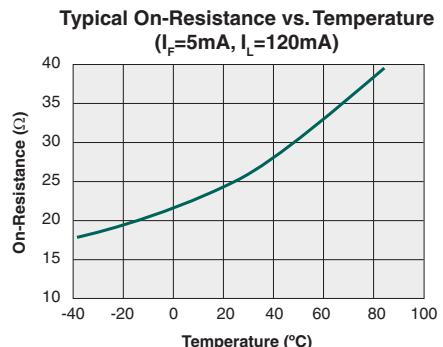
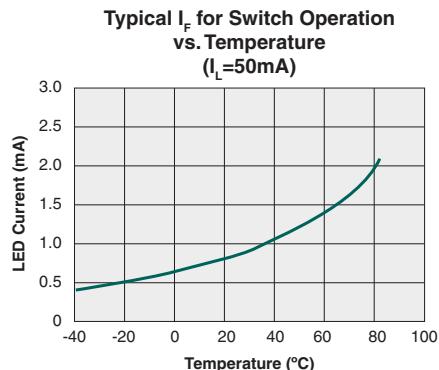
¹ Load current derates linearly from 120mA @ 25°C to 80mA @ 85°C.

² Measurement taken within 1 second of on-time.

³ For applications requiring high temperature operation (greater than 60°C) a LED drive current of 4mA 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.

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Manufacturing Information

Moisture Sensitivity

 All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division 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 |
|----------|---|
| CPC1130N | MSL 3 |

ESD Sensitivity



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

Reflow Profile

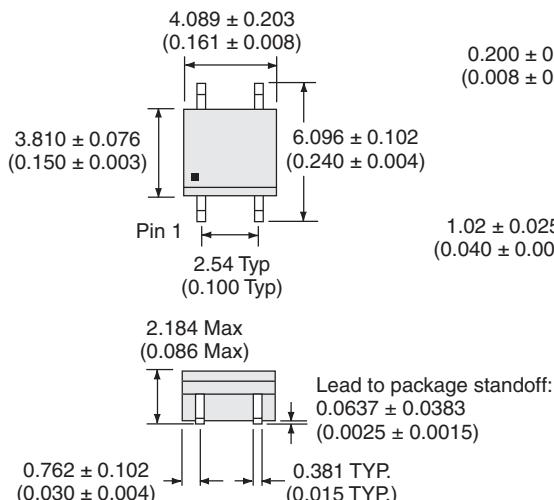
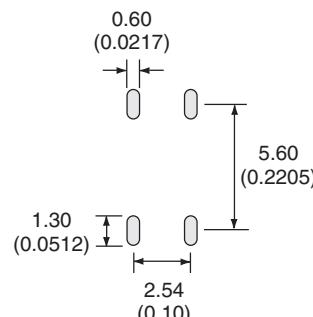
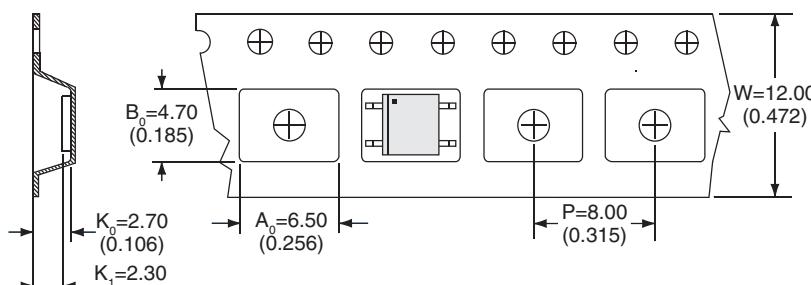
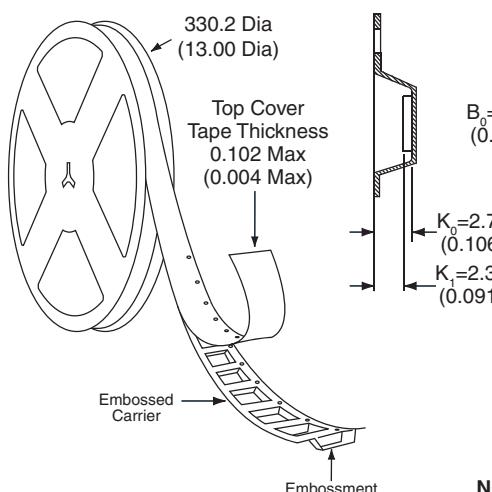
This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

| Device | Maximum Temperature x Time |
|----------|----------------------------|
| CPC1130N | 260°C for 30 seconds |

Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division 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
CPC1130N

Recommended PCB Land Pattern

CPC1130NTR Tape & Reel


— User Direction of Feed —→

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

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На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ Р В 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru
moschip.ru_4

moschip.ru_6
moschip.ru_9