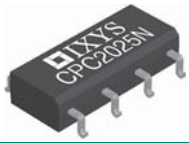
IXYS
INTEGRATED CIRCUITS DIVISION



CPC2025N
400V Dual Normally-Open Single-Pole 8-Pin SOIC OptoMOS® Relay

Parameter	Rating	Units
Blocking Voltage	400	V_P
Load Current	120	mA_{rms} / mA_{DC}
On-Resistance (max)	30	Ω
LED Forward Current (to Activate)	2	mA

Features
- 1500V_{rms} Input/Output Isolation
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Immune to Radiated EM Fields
- Wave Solderable
- Tape & Reel Version Available
- Small 8-Pin SOIC Package

Applications
- Telecommunications
  - Telecom Switching
  - Tip/Ring Circuits
  - Modem Switching (Laptop, Notebook, Pocket Size)
  - Hook Switch
  - Dial Pulsing
  - Ground Start
  - Ringing Injection
- Security
  - Passive Infrared Detectors (PIR)
  - Data Signaling
  - Sensor Circuitry
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
- Medical Equipment—Patient/Equipment Isolation
- Aerospace
- Industrial Controls

Description
The CPC2025N is a miniature device with two independent, normally-open (1-Form-A) solid state relays in an 8-pin SOIC package that employs optically coupled MOSFET technology to provide 1500V_{rms} of input to output isolation.

Optically coupled outputs that use the patented OptoMOS architecture are controlled by a highly efficient infrared LED.

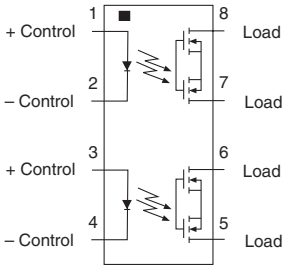
The CPC2025N uses IXYS Integrated Circuits Division's state of the art, double-molded vertical construction packaging to produce one of the world's smallest relays. It offers substantial board space savings over the competitor's larger 8-pin SOIC relay.

Approvals
- UL Recognized Component: File E76270
- CSA Approval Pending
- EN/IEC 60950-1 Certified Component: TUV Certificate B 13 12 82667 003

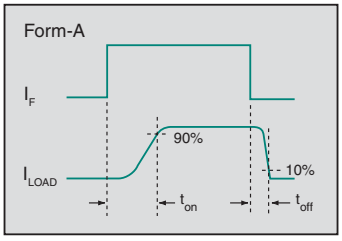
Ordering Information

Part #	Description
CPC2025N	8-Pin SOIC (50/tube)
CPC2025NTR	8-Pin SOIC (2000/reel)

Pin Configuration



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



Absolute Maximum Ratings @ 25ºC

Parameter	Ratings	Units
Blocking Voltage (Peak)	400	V_P
Reverse Input Voltage	5	V
LED Forward Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation	70	mW
Total Power Dissipation [1]	600	mW
Isolation Voltage, Input to Output (60 Seconds)	1500	V_{rms}
ESD Rating, Human Body Model	8	kV
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate linearly 5mW / °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.

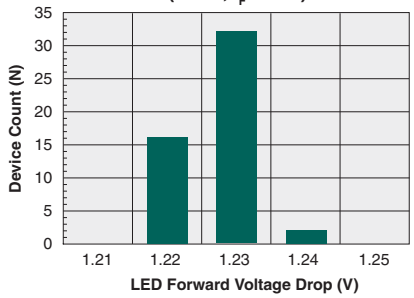
Electrical Characteristics @ 25ºC

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}	-	20	30	Ω
Off-State Leakage Current	V_L=400V_P	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	I_F=5mA, V_L=10V	t_{on}	-	0.76	2	ms
Turn-Off		t_{off}	-	0.36	1	
Output Capacitance	I_F=0mA, V_L=50V, f=1MHz	C_{OUT}	-	9	-	pF
Input Characteristics						
LED Forward Current						
To Activate [3]	I_L=120mA	I_F	-	0.6	2	mA
To Deactivate	-		0.3	0.55	-	
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						
Capacitance, Input to Output	V_{IO}=0V, f=1MHz	C_{IO}	-	1	-	pF

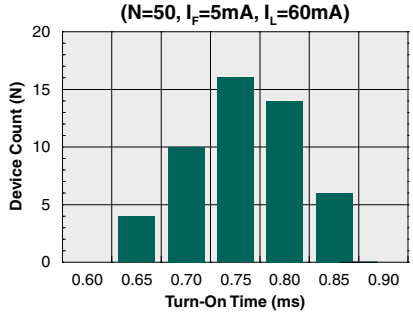
[1] Load current derates linearly from 120mA @ 25ºC to 60mA @ 85ºC, and must be derated if both poles are operating simultaneously.
[2] Measurement taken within 1 second of on-time.
[3] For applications requiring high temperature operation (greater than 60°C) a minimum LED forward current of 4mA is recomended.

PERFORMANCE DATA @ 25ºC (Unless Otherwise Noted) *

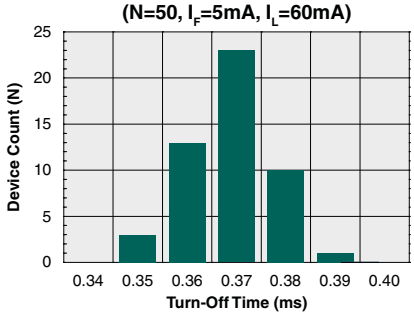
Typical LED Forward Voltage Drop
(N=50, I_F=5mA)



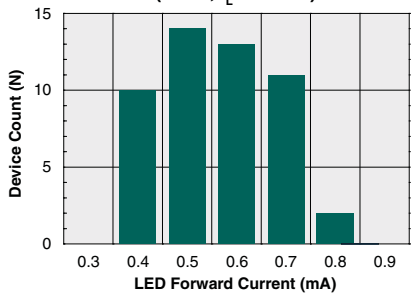
Typical Turn-On Time
(N=50, I_F=5mA, I_L=60mA)



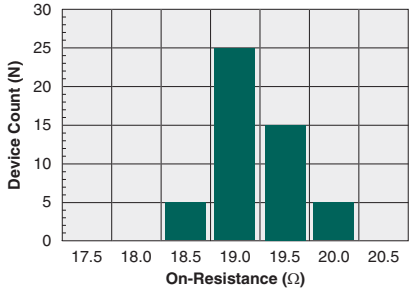
Typical Turn-Off Time
(N=50, I_F=5mA, I_L=60mA)



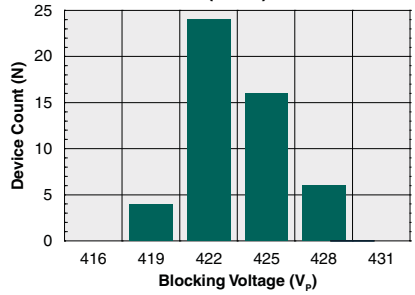
Typical LED Forward Current
to Activate
(N=50, I_L=120mA)



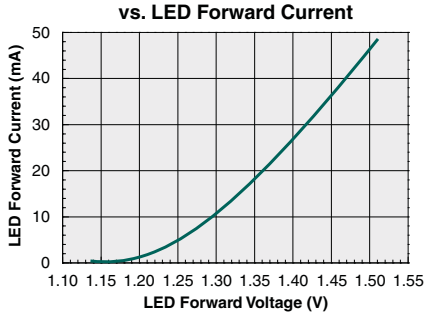
Typical On-Resistance Distribution
(N=50, I_F=2mA, I_L=120mA)



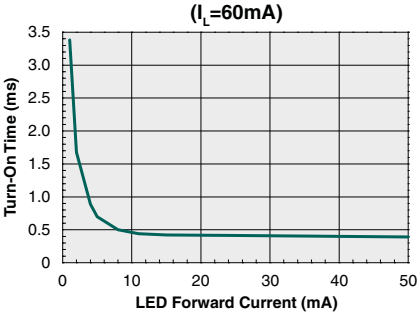
Typical Blocking Voltage Distribution
(N=50)



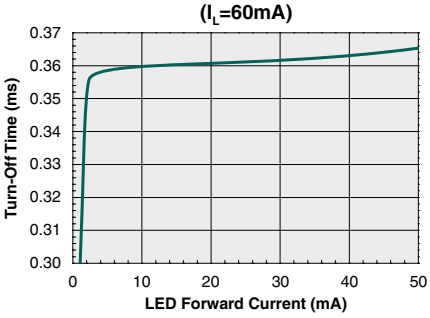
LED Forward Voltage
vs. LED Forward Current



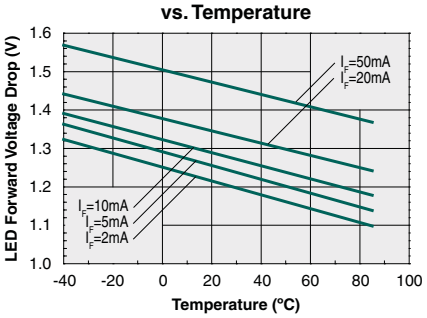
Typical Turn-On Time
vs. LED Forward Current
(I_L=60mA)



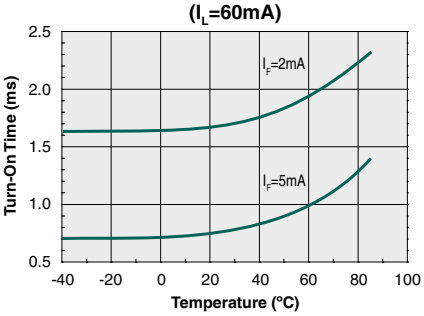
Typical Turn-Off Time
vs. LED Forward Current
(I_L=60mA)



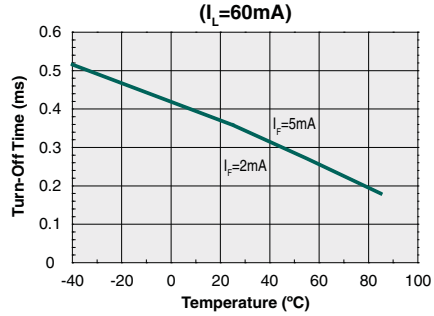
Typical LED Forward Voltage Drop
vs. Temperature



Typical Turn-On Time
vs. Temperature
(I_L=60mA)



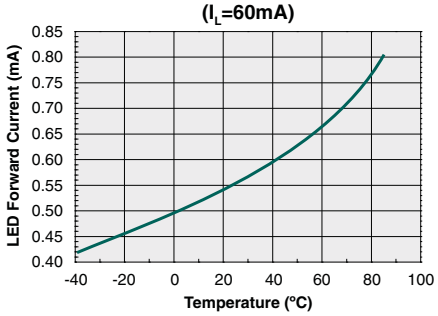
Typical Turn-Off Time
vs. Temperature
(I_L=60mA)



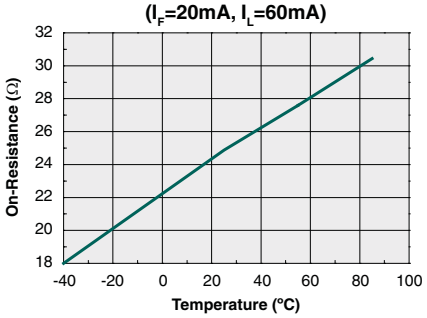
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA @ 25ºC (Unless Otherwise Noted) *

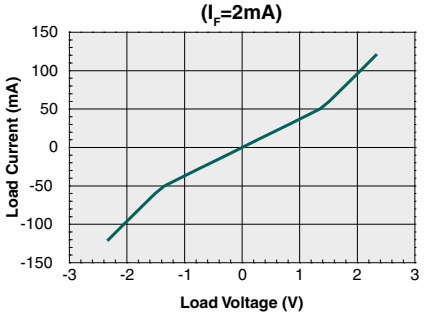
LED Forward Current to Activate vs. Temperature (I_L=60mA)



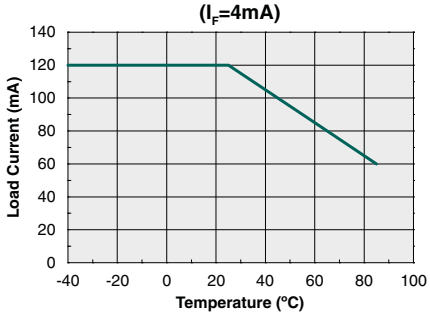
Typical On-Resistance vs. Temperature (I_F=20mA, I_L=60mA)



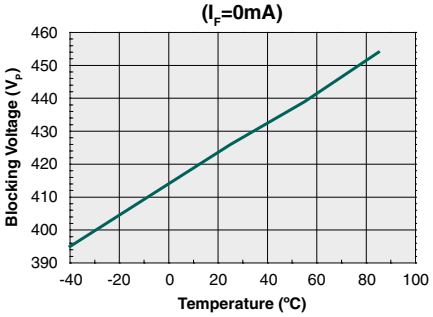
Typical Load Current vs. Load Voltage (I_F=2mA)



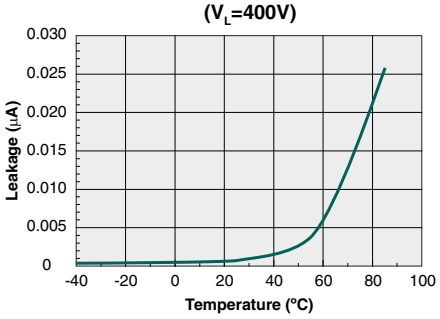
Maximum Load Current vs. Temperature (I_F=4mA)



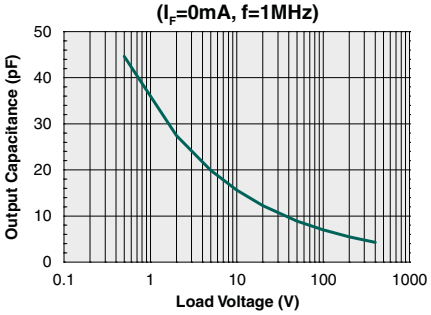
Typical Blocking Voltage vs. Temperature (I_F=0mA)



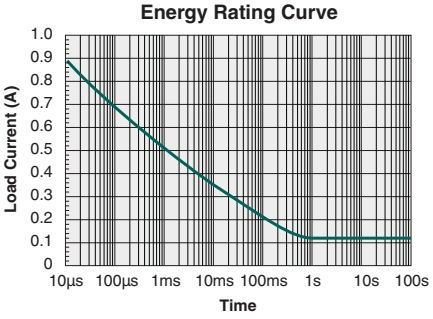
Typical Leakage vs. Temperature Measured Across Pins 5&6, 7&8 (V_L=400V)



Output Capacitance vs. Load Voltage (I_F=0mA, f=1MHz)



Energy Rating Curve



*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

Moisture Sensitivity

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. 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
CPC2025N	MSL 3

ESD Sensitivity

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

Soldering Profile

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

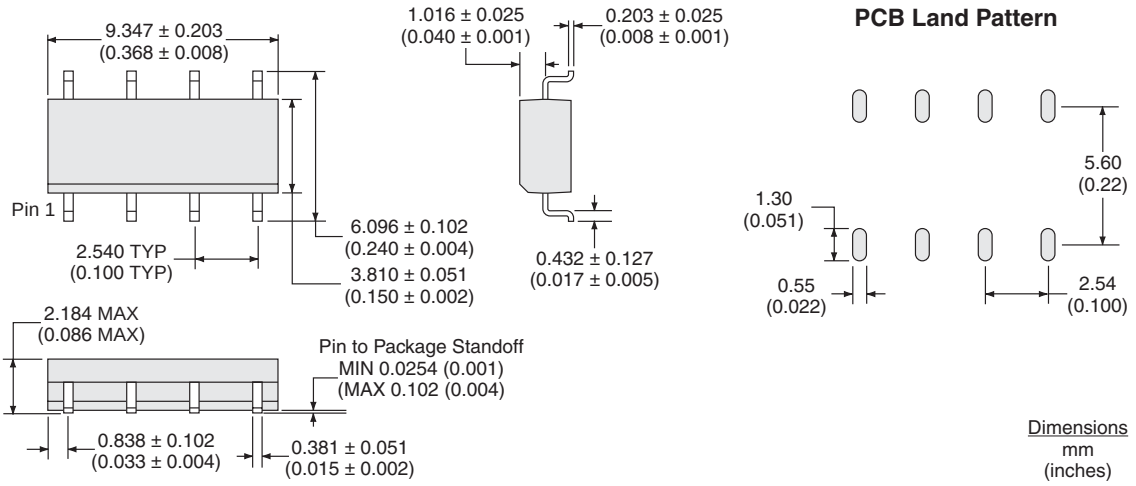
Device	Maximum Temperature x Time	Maximum Reflow Cycles
CPC2025N	260°C for 30 seconds	3

Board Wash

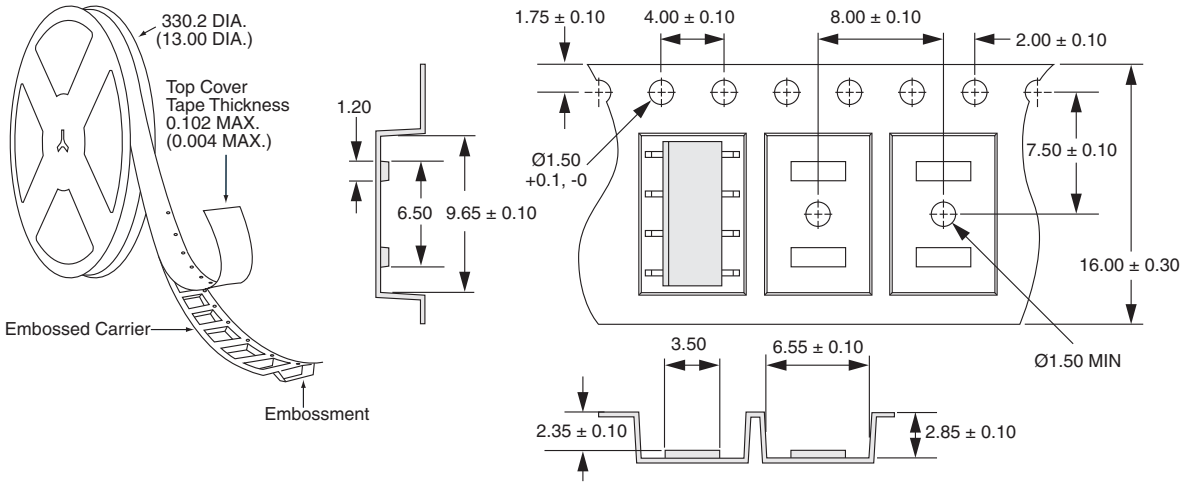
IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after soldering processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

MECHANICAL DIMENSIONS

CPC2025N



CPC2025NTR Tape & Reel



NOTES:
1. All dimensions in millimeters
2. 10 sprocket hole pitch cumulative tolerance ± 0.20.
3. Carrier camber is within 1mm in 250mm.
4. Tape material : Black Conductive Polystyrene Alloy.
5. All dimensions meet EIA-481-C requirements.
6. Thickness : 0.30 ± 0.05mm.

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

Specification: DS-CPC2025N-R03

11/19/2014

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