



Parameter	Rating	Units
Blocking Voltage	100	V _P
Load Current	100	mA
Max On-resistance	16	Ω

Features

- 100% Solid State
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Arc-Free With No Snubbing Circuits
- 1500V_{rms} Input/Output Isolation
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Tape & Reel Version Available

Applications

- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security Systems
- Aerospace
- Industrial Controls
- Reed Relay Replacement

Description

CPC1016N is a miniature, low-voltage, low on-resistance 1-Form-A solid state relay in a 4-Pin SOP package. The relay uses optically coupled MOSFET technology to provide 1500V_{rms} of input/output isolation. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS architecture. The optically-coupled output is controlled by a highly efficient GaAlAs infrared LED. The CPC1016N uses Clare's state of the art double-molded vertical construction packaging to produce a very compact solid state relay. The CPC1016N is ideal for replacing larger, less-reliable reed and electromechanical relays.

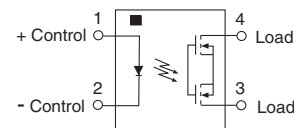
Approvals

- UL Recognized Component File #: E76270
- EN/IEC 60950-1 compliant
- CSA Certified Component: Certificate # 1172007

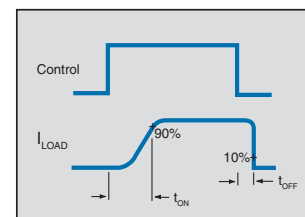
Ordering Information

Part #	Description
CPC1016N	4-Pin SOP (100/tube)
CPC1016NTR	4-Pin SOP (2000/reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	100	V_P
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation	70	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

Electrical absolute maximum ratings are at 25°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.

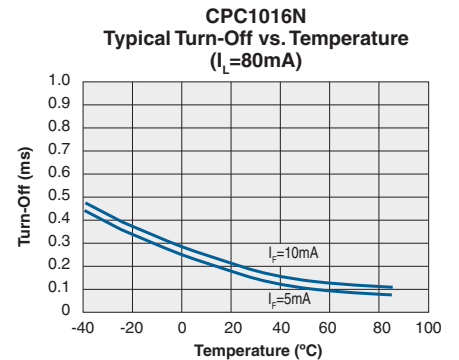
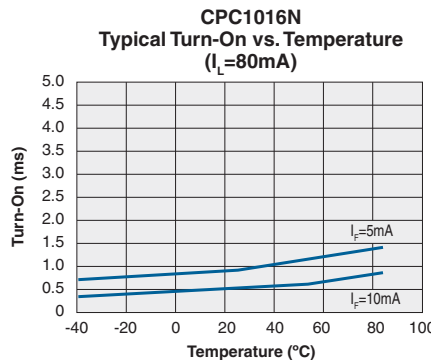
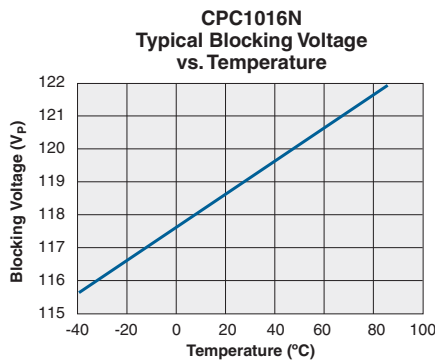
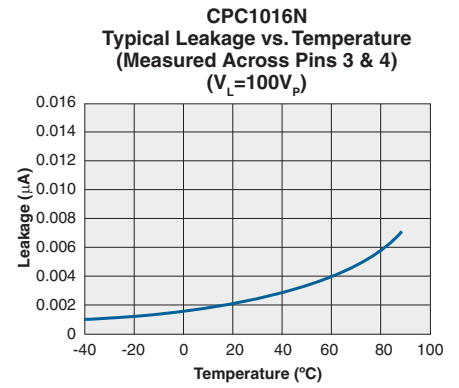
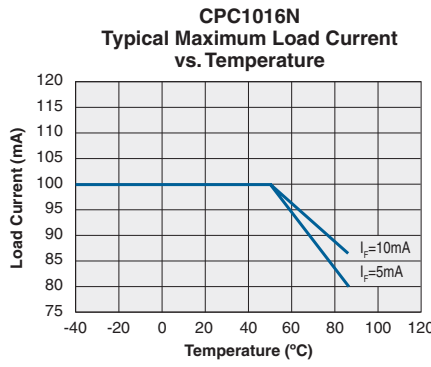
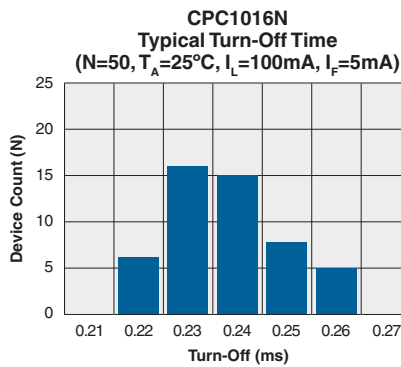
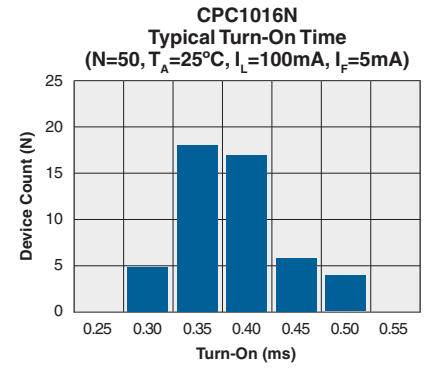
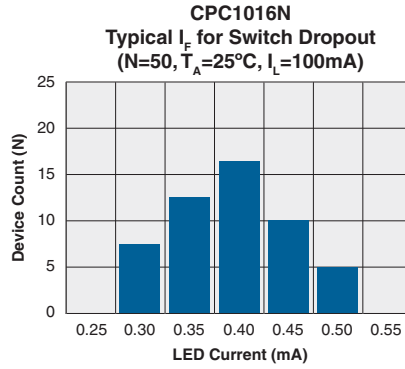
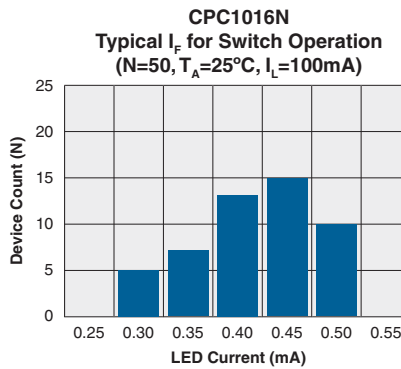
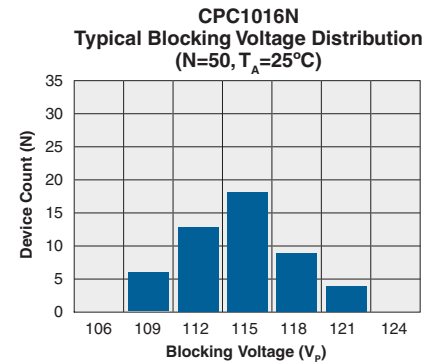
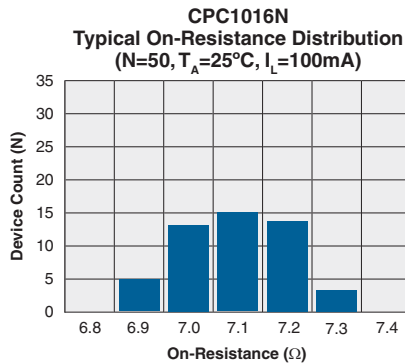
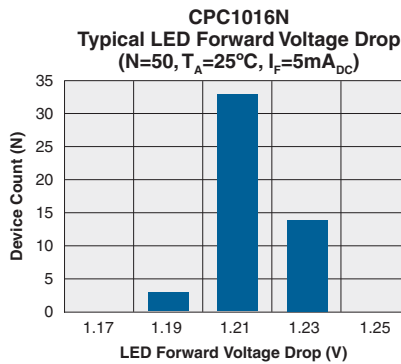
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current	-	I_L	-	-	100	mA
Peak	t=10ms	I_{LPK}	-	-	350	
On-Resistance ²	$I_L=100mA$	R_{ON}	-	-	16	Ω
Off-State Leakage Current	$V_L=100V_P$	I_{LEAK}	-	-	1	μA
Switching Speeds						
Turn-On	$I_F=5mA, V_L=10V$	t_{ON}	-	-	2	ms
Turn-Off		t_{OFF}	-	-	0.5	ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	25	-	pF
Input Characteristics @ 25°C						
Input Control Current	$I_L=100mA$	I_F	-	0.5	2	mA
Input Dropout Current	-	I_F	0.3	0.4	-	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 @ 25°C						
Capacitance Input to Output	-	C_{IO}	-	1	-	pF

¹ Load current derates linearly from 100mA @ 25°C to 80mA @ 85°C.

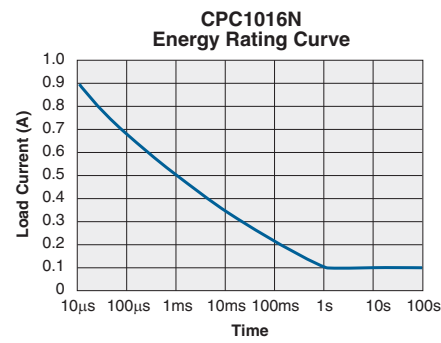
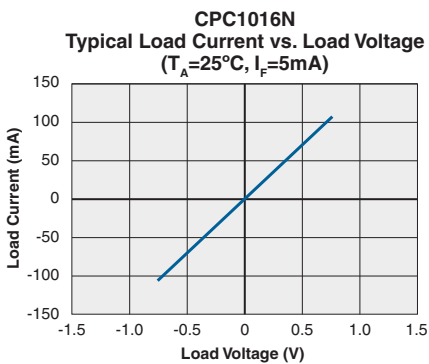
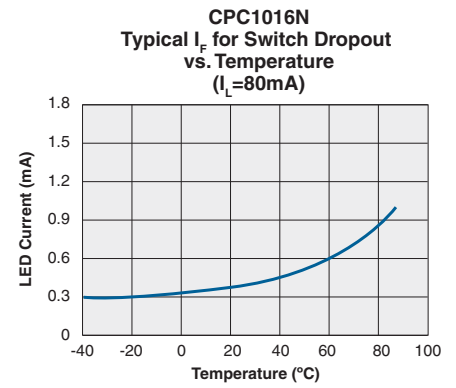
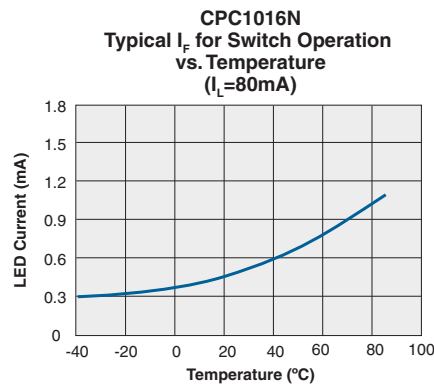
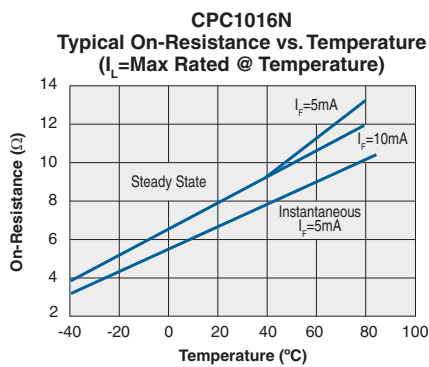
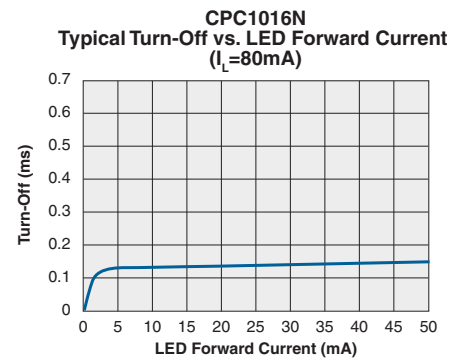
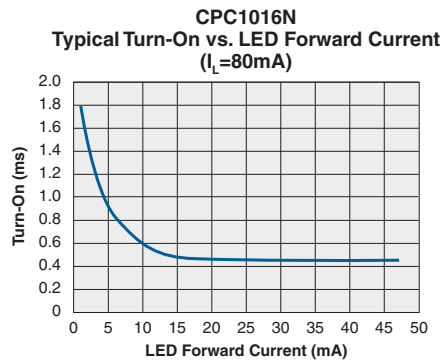
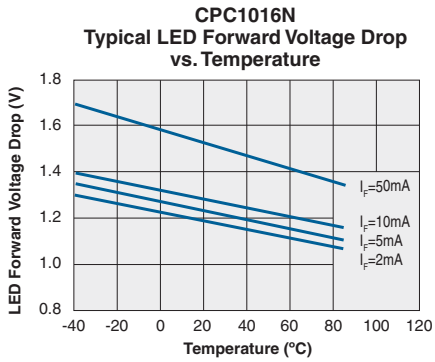
² Measurement taken within 1 second of on time.

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*



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Manufacturing Information

Moisture Sensitivity

Clare has characterized the moisture reflow sensitivity of this package, and has determined that this component must be handled in accordance with IPC/JEDEC standard J-STD-033 moisture sensitivity level (MSL), level 3 classification.

Soldering Reflow Profile

For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

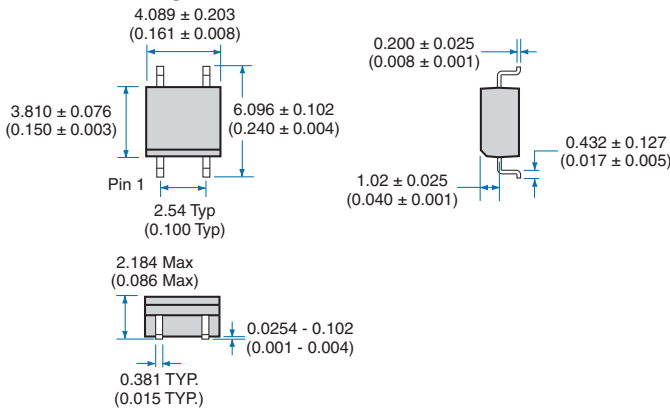


Washing

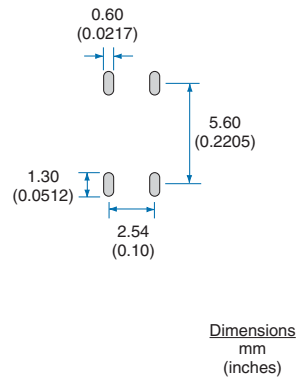
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

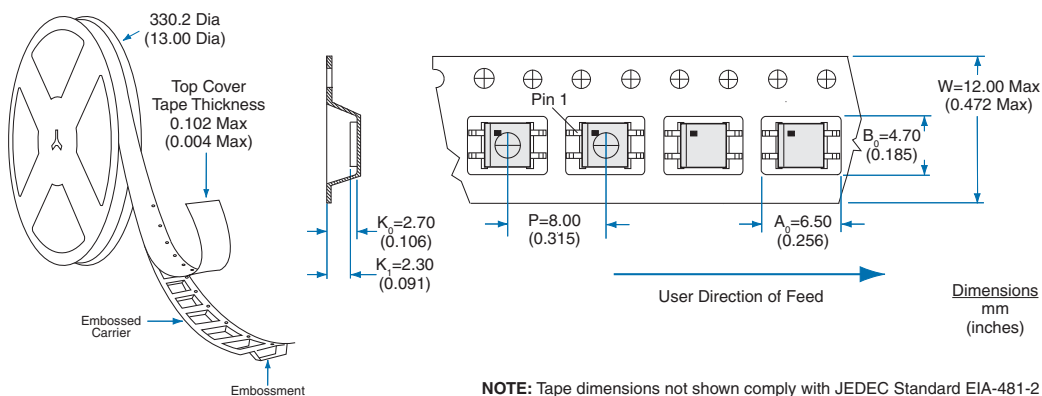
4-Pin SOP Package



Recommended PCB Land Pattern



Tape and Reel Packaging for 4-Pin SOP Package



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

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