



Parameter	Rating	Units
Blocking Voltage	60	V _p
Load Current	750	mA
Load Current, Peak AC	1	A
Max On-resistance	0.6	Ω
LED Current to operate	2	mA

Features

- Low On-Resistance
- Low Drive Current
- High Load Current
- 100% Solid State
- Compact 4-Pin SOP Package
- TTL/CMOS Compatible input
- Arc-Free With No Snubbing Circuits
- 1500V_{rms} Input/Output Isolation
- No EMI/RFI Generation
- Immune to radiated EM fields
- SMD Pick & Place, Wave Solderable
- Tape & Reel Version Available

Applications

- Security
 - Passive Infrared Detectors (PIR)
 - Data Signalling
 - Sensor Circuitry
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Utility Meters (gas, oil, electric and water)
- Medical Equipment—Patient/Equipment Isolation
- Aerospace
- Industrial Controls
- ATE

Description

CPC1019N is a miniature, low-voltage, low on-resistance, 1-Form-A solid state relay in a small, 4-Pin SOP package.

Embodying Clare's patented OptoMOS technology, the CPC1019N comprises a highly efficient GaAlAs infrared LED that is optically coupled to efficient MOSFET output switches to provide 1500V_{rms} of input-to-output isolation.

Clare's state of the art double-molded vertical construction packaging produces a very compact solid state relay that is ideal for replacing larger, less-reliable reed and electromechanical relays.

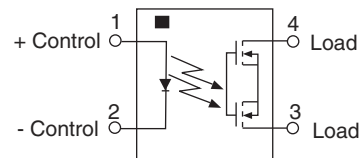
Approvals

- UL Recognized Component: File # E76270
- EN/IEC 60950-1 Compliant

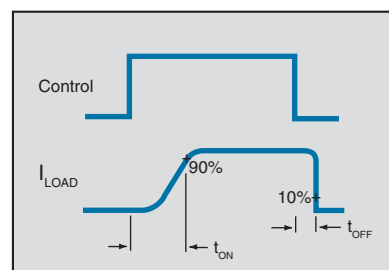
Ordering Information

Part #	Description
CPC1019N	4-Pin SOP (100/tube)
CPC1019NTR	4-Pin SOP (2000/reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	60	V _P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	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.

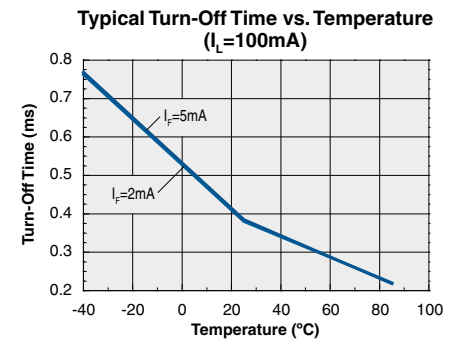
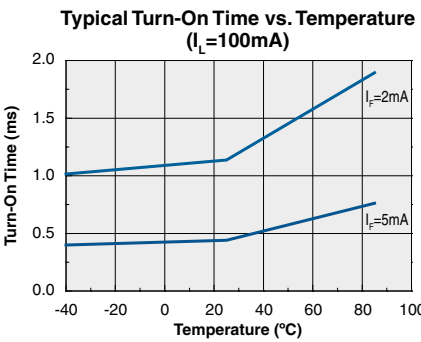
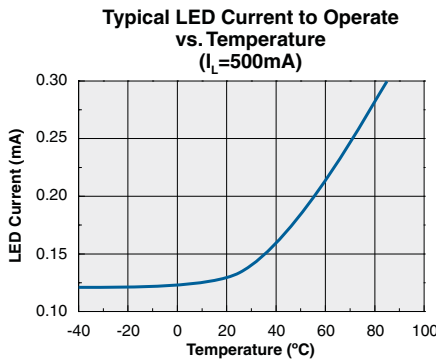
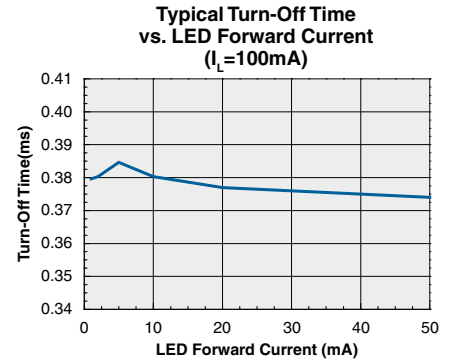
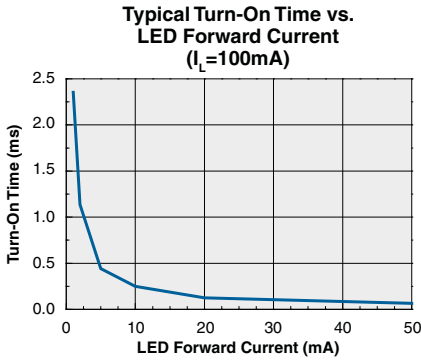
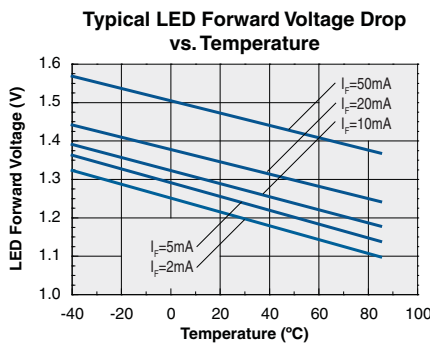
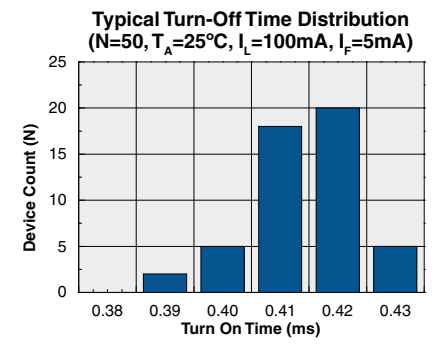
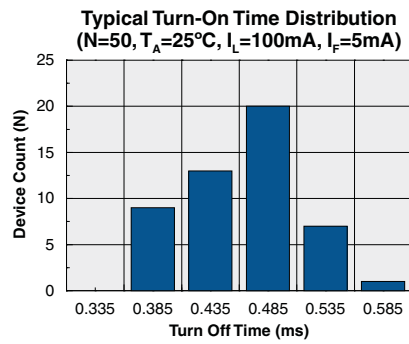
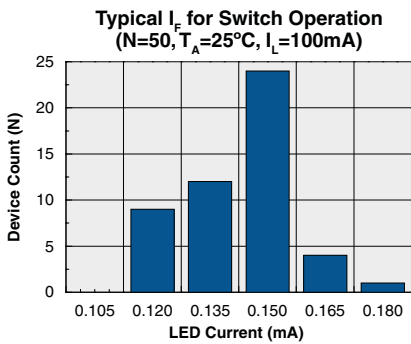
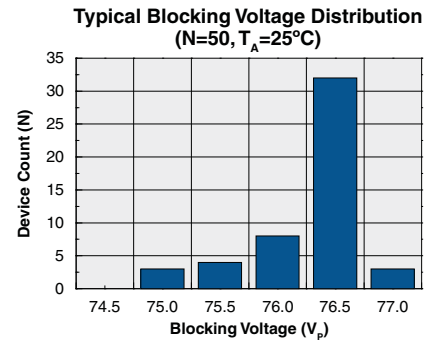
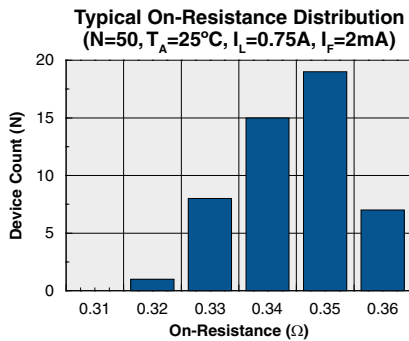
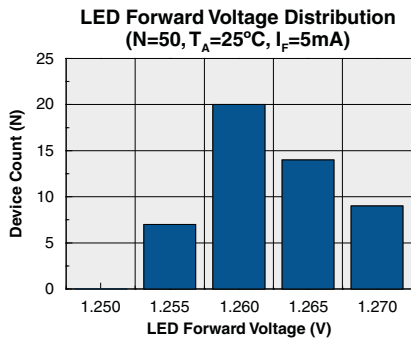
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current						
Continuous	I _F =2mA	I _L	-	-	750	mA _{DC}
Continuous, AC Peak			-	-	1	A
Peak	t ≤ 10ms	I _{LPK}	-	-	3	A
On-Resistance ¹	I _L =750mA	R _{ON}	-	0.35	0.6	Ω
Off-State Leakage Current	V _L =60V	I _{LEAK}	-	-	1	μA
Switching Speeds						
Turn-On	I _F =5mA, V _L =10V	t _{ON}	-	0.4	3	ms
Turn-Off		t _{OFF}	-	0.4	3	ms
Output Capacitance	50V; f=1MHz	C _{OUT}	-	60	-	pF
Input Characteristics @ 25°C						
Input Control Current ²	I _L =750mA	I _F	-	0.15	2	mA
Input Dropout Current	-	I _F	0.1	0.14	-	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 _{I/O}	-	1	-	pF

¹ Measurement taken within 1 second of on time.

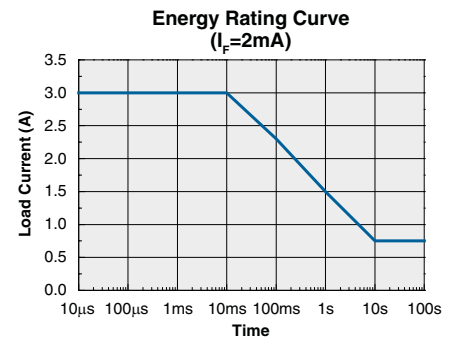
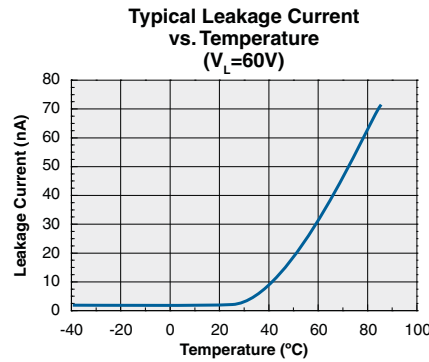
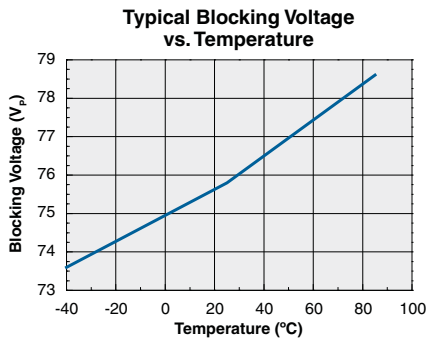
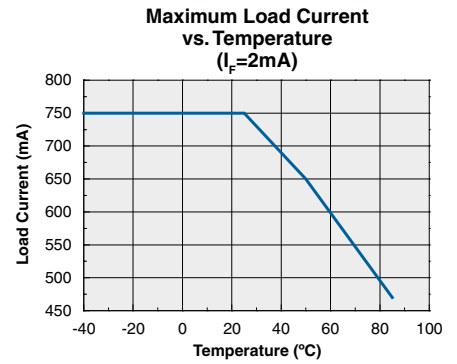
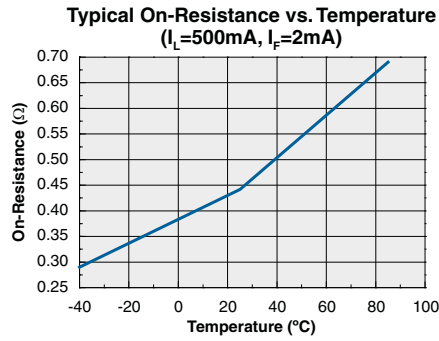
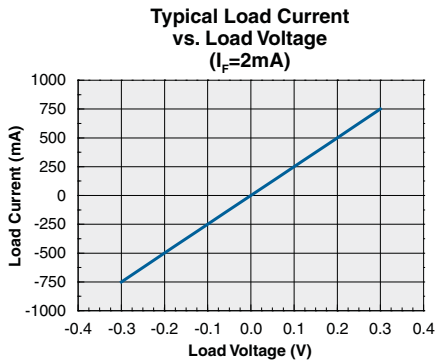
² For applications requiring high temperature operation (greater than 60°C) an LED drive current of 4mA is recommended.

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

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.

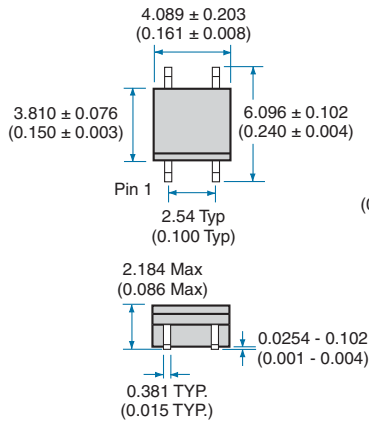


Washing

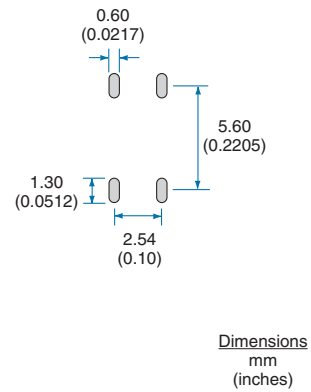
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

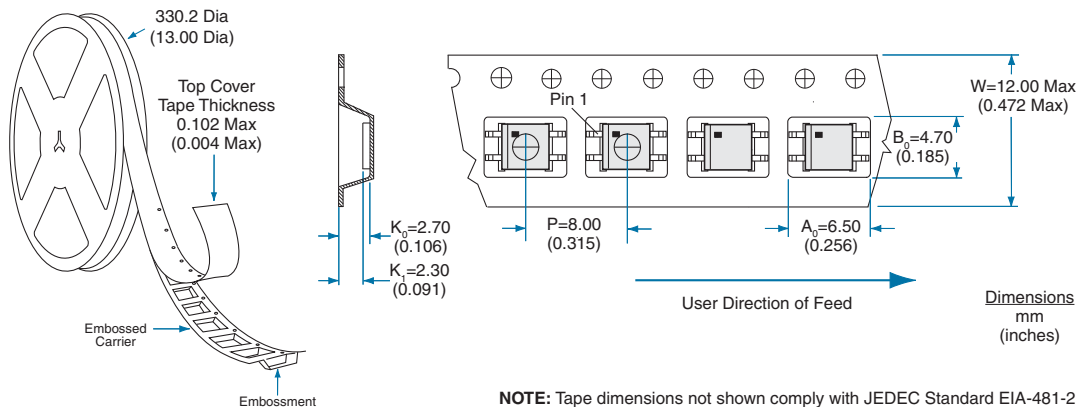
4-Pin SOP Package



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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