CPC2017N
8-Pin Dual SOIC OptoMOS® Relay

Parameter	Rating	Units
Blocking Voltage	60	V_P
Load Current	120	mA
Max On-resistance	16	Ω
LED Current to operate	1	mA

Features
- Designed for use in security systems complying with EN50130-4
- Small 8-Pin SOIC 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
- Medical Equipment—Patient/Equipment Isolation
- Aerospace
- Industrial Controls

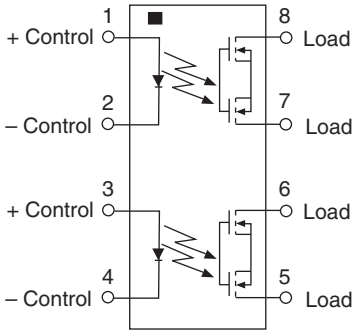
Description
The CPC2017N is a miniature device with two independent 1-Form-A solid state relays in an 8-Pin SOIC package that employs optically coupled MOSFET technology to provide 1500V_{rms} of input/output isolation. The super efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS architecture. The optically coupled outputs are controlled by highly efficient GaAlAs infrared LEDs. The CPC2017N uses Clare's state of the art, double-molded, vertical construction packaging to produce one of the world's smallest relays. The CPC2017N offers substantial board space savings over the competitor's larger 8-Pin SOIC relay.

Approvals
- UL Recognized Component: Pending
- EN/IEC 60950-1: Pending
- CSA Certified Component: Pending

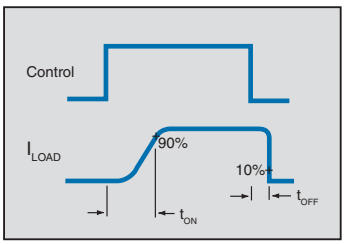
Ordering Information

Part #	Description
CPC2017N	8-Pin SOIC (50/tube)
CPC2017NTR	8-Pin SOIC (2000/reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings (@ 25˚C)

Parameter	Ratings	Units
Blocking Voltage	60	V_P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Total Power Dissipation [1]	600	mW
Isolation Voltage, Input to Output	1500	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate Linearly 5.0 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.

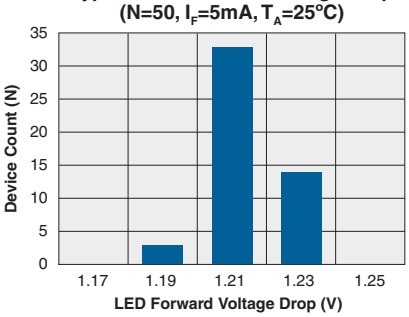
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current						
Continuous [1]	I_F=1mA	I_L	-	-	120	mA
Peak	t =10ms	I_{LPK}	-	-	350	mA_P
On-Resistance [2]	I_L=120mA	R_{ON}	-	7.1	16	Ω
Off-State Leakage Current	V_L=60V_P	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	I_F=5mA, V_L=10V	t_{ON}	-	1.25	3	ms
Turn-Off		t_{OFF}	-	0.45	3	
Output Capacitance	50V; f=1MHz	C_{OUT}	-	25	-	pF
Capacitance Input to Output	-	-	-	1	-	pF
Input Characteristics @ 25°C						
Input Control Current [3]	I_L=120mA	I_F	-	0.40	1	mA
Input Dropout Current	-	I_F	0.1	0.35	-	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

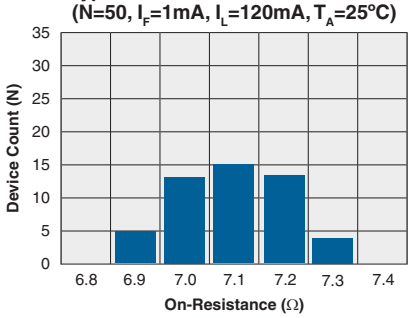
[1] Load current derates linearly from 120mA @ 25ºC to 60mA @80ºC, and must be derated for both poles operating simultaneously.
[2] Measurement taken within 1 second of on time.
[3] For applications requiring high temperature operation (greater than 60ºC) an LED drive current of 3mA is recommended.

PERFORMANCE DATA*

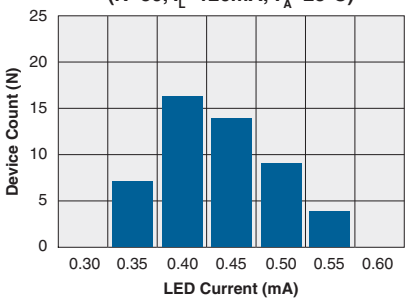
Typical LED Forward Voltage Drop
(N=50, I_F=5mA, T_A=25°C)



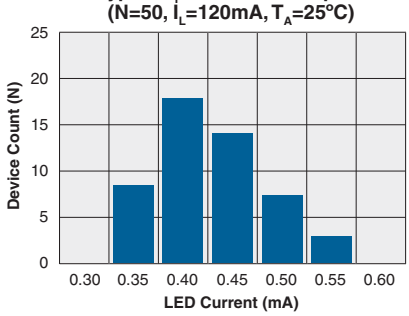
Typical On-Resistance Distribution
(N=50, I_F=1mA, I_L=120mA, T_A=25°C)



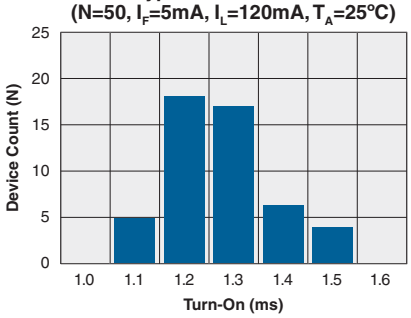
Typical I_F for Switch Operation
(N=50, I_L=120mA, T_A=25°C)



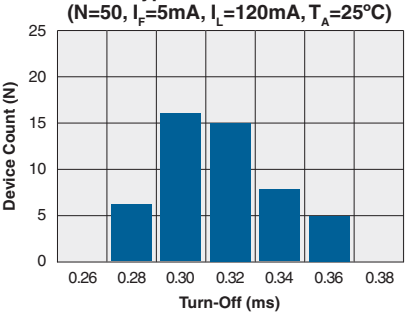
Typical I_F for Switch Dropout
(N=50, I_L=120mA, T_A=25°C)



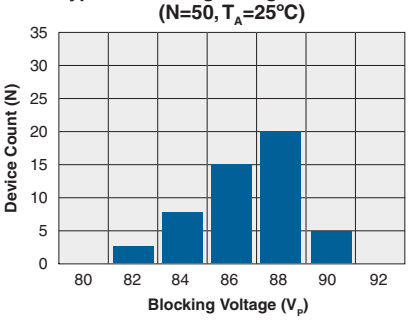
Typical Turn-On Time
(N=50, I_F=5mA, I_L=120mA, T_A=25°C)



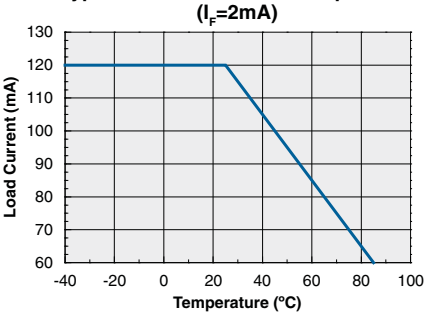
Typical Turn-Off Time
(N=50, I_F=5mA, I_L=120mA, T_A=25°C)



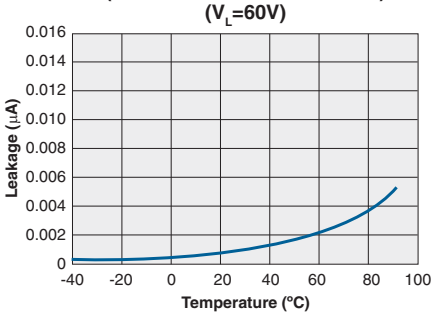
Typical Blocking Voltage Distribution
(N=50, T_A=25°C)



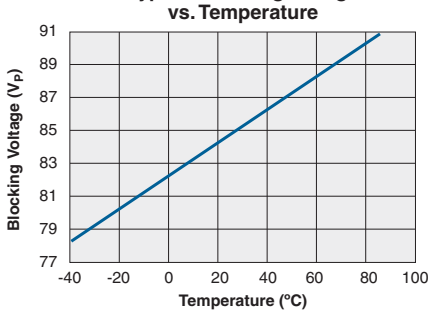
Typical Load Current vs. Temperature
(I_F=2mA)



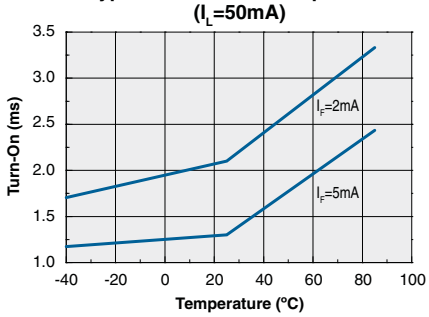
Typical Leakage vs. Temperature
(Measured Across Pins 3 & 4)
(V_L=60V)



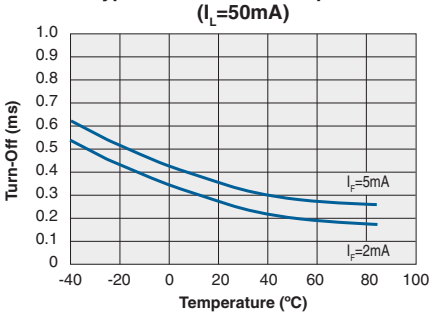
Typical Blocking Voltage
vs. Temperature



Typical Turn-On vs. Temperature
(I_L=50mA)



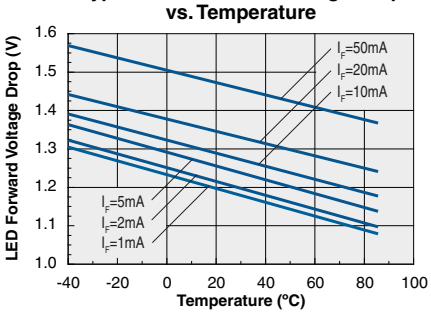
Typical Turn-Off vs. Temperature
(I_L=50mA)



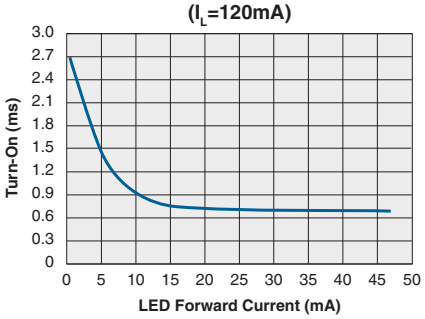
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

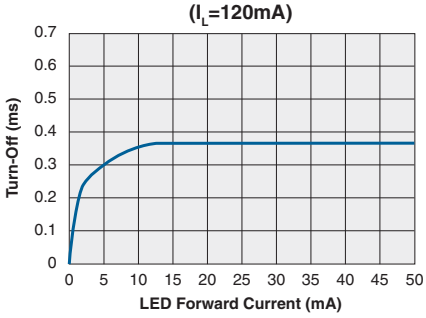
Typical LED Forward Voltage Drop vs. Temperature



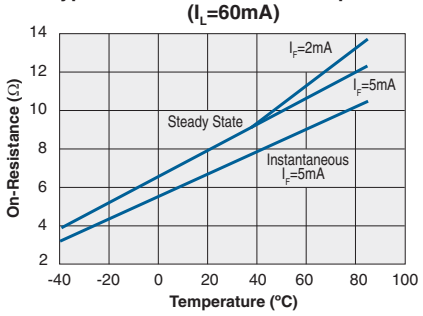
Typical Turn-On vs. LED Forward Current (I_L=120mA)



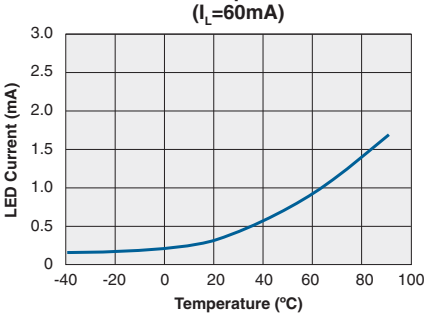
Typical Turn-Off vs. LED Forward Current (I_L=120mA)



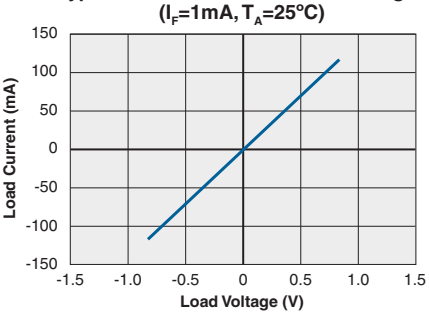
Typical On-Resistance vs. Temperature (I_L=60mA)



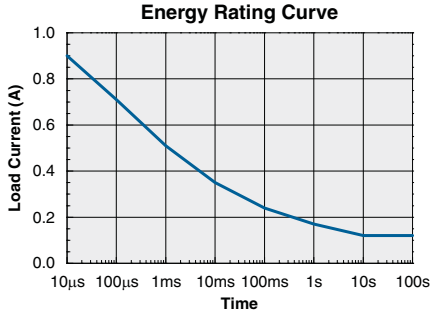
Typical I_F for Switch Operation vs. Temperature (I_L=60mA)



Typical Load Current vs. Load Voltage (I_F=1mA, T_A=25°C)



Energy Rating Curve



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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

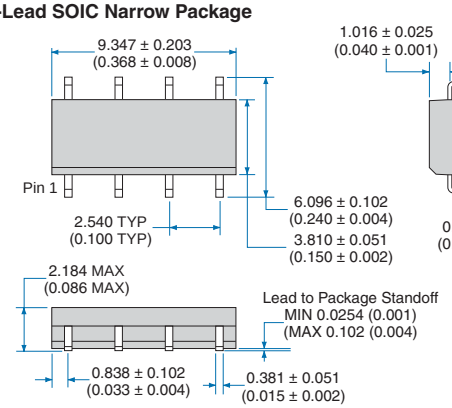
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

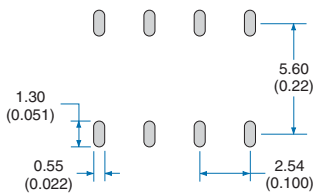
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

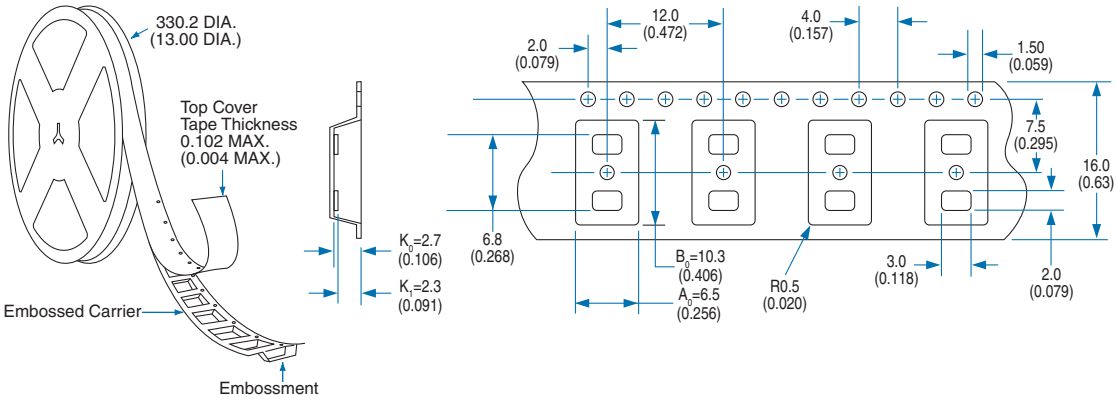
8-Lead SOIC Narrow Package



Recommended PCB Land Pattern



Dimensions
mm
(inches)



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