

	<b>CPC2017N</b>
8-Pin Dual SOIC	OptoMOS <sup>®</sup> Relay



Parameter	Rating	Units
Blocking Voltage	60	V <sub>P</sub>
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<sub>rms</sub> 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<sub>rms</sub> 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.

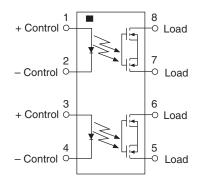
## **Approvals**

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

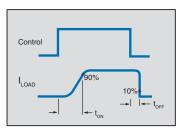
# **Ordering Information**

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 <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Total Power Dissipation <sup>1</sup>	600	mW
Isolation Voltage, Input to Output	1500	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°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.

<sup>1</sup> Derate Linearly 5.0 mW / °C

## **Electrical Characteristics**

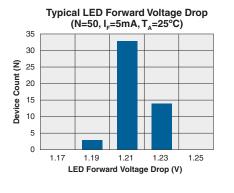
Parameter	Conditions	Symbol	Min	Тур	Max	Units
Output Characteristics @ 25°C						
Load Current						
Continuous <sup>1</sup>	I <sub>F</sub> =1mA	I <sub>L</sub>	-	-	120	mA
Peak	t =10ms	I <sub>LPK</sub>	-	-	350	mA <sub>P</sub>
On-Resistance <sup>2</sup>	I <sub>L</sub> =120mA	R <sub>on</sub>	-	7.1	16	Ω
Off-State Leakage Current	V <sub>L</sub> =60V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μΑ
Switching Speeds						
Turn-On	L EmA \/ 10\/	t <sub>on</sub>	-	1.25	3	
Turn-Off	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	t <sub>OFF</sub>	-	0.45	3	— ms
Output Capacitance	50V; f=1MHz	C <sub>OUT</sub>	-	25	-	pF
Capacitance Input to Output	-	-	-	1	-	pF
Input Characteristics @ 25°C	1					
Input Control Current <sup>3</sup>	I <sub>L</sub> =120mA	۱ <sub>۶</sub>	-	0.40	1	mA
Input Dropout Current	-	۱ <sub>۶</sub>	0.1	0.35	-	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μΑ

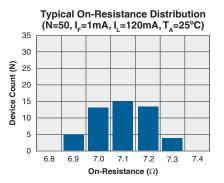
Load current derates linearly from 120mA @ 25°C to 60mA @ 80°C, and must be derated for both poles operating simultaneously. Measurement taken within 1 second of on time. 2

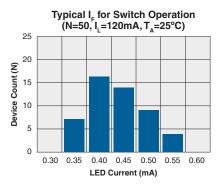
<sup>3</sup> For applications requiring high temperature operation (greater than 60°C) an LED drive current of 3mA is recommended.

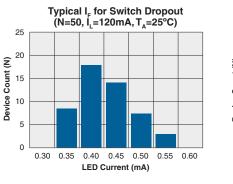


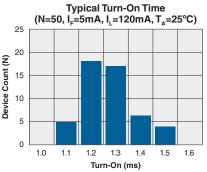
# **PERFORMANCE DATA\***











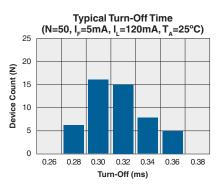
**Typical Load Current vs. Temperature** 

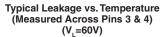
(I\_=2mA)

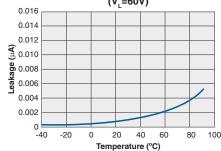
Temperature (°C)

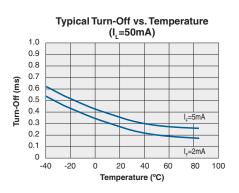
-40 -20 0 20 40 60 80 100

Load Current (mA)

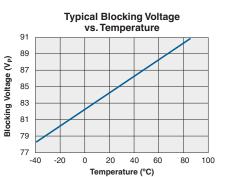


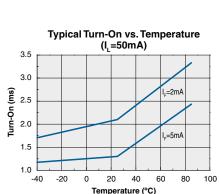






**Typical Blocking Voltage Distribution** (N=50, T,=25°C) Device Count (N) Blocking Voltage (V<sub>p</sub>)

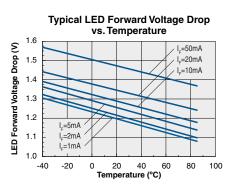


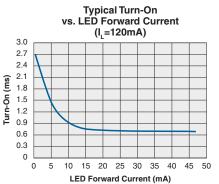


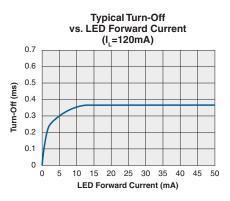
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.



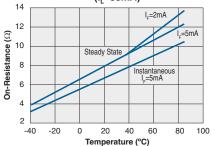
## **PERFORMANCE DATA\***



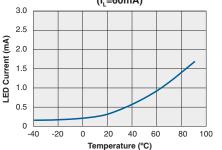


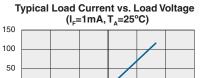


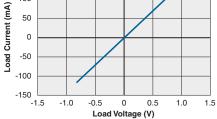
Typical On-Resistance vs. Temperature (I<sub>L</sub>=60mA)

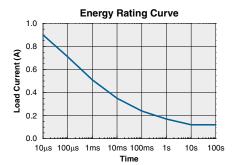


Typical I<sub>F</sub> for Switch Operation vs. Temperature (I<sub>L</sub>=60mA)









\*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.





## **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.

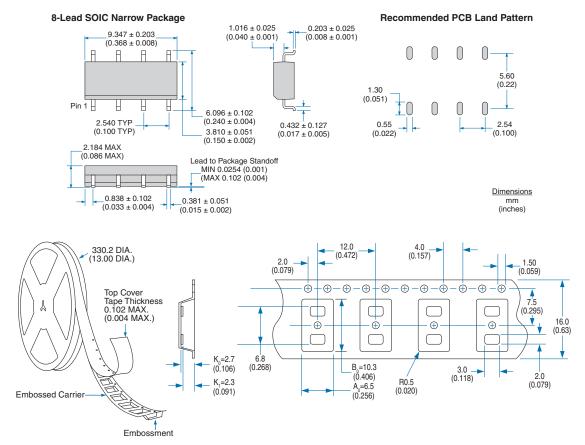


#### **Soldering Reflow Profile**

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**

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