



Parameter	Rating	Units
Blocking Voltage	60	V <sub>P</sub>
Load Current	200	mA
Max R <sub>ON</sub>	16	Ω
Input Voltage to operate	5-12	V

## Features

- Designed for use in Security Systems Complying with EN50130-4
- Voltage-Controlled Operation
- 2500V<sub>rms</sub> Input/Output Isolation
- 100% Solid State
- Small 4-Pin SIP Package
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Immune to Radiated EM Fields
- Auto Pick & Place, Wave Solderable

## Applications

- Security
  - Passive Infrared Detectors (PIR)
  - Data Signalling
  - Sensor Circuitry
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Energy Meters
- Medical Equipment—Patient/Equipment Isolation
- Aerospace
- Industrial Controls

## Description

The CPC1219 is a voltage-controlled, single-pole, normally closed (1-Form-B) optically coupled solid state relay in a 4-pin Single In-line Package (SIP). Clare's patented OptoMOS architecture makes available the optically coupled technology necessary to activate the output's efficient MOSFET switches while providing a 2500V<sub>rms</sub> input-to-output isolation barrier. Control of the isolated output is accomplished by means of a highly effective GaAlAs infrared LED at the input. An internal resistor in series with the LED enables the voltage-controlled operation of the input.

Because the input is solid state there is no need for snubbers or "catch" diodes to suppress the inductive fly-back transient voltage normally associated with EMR coils.

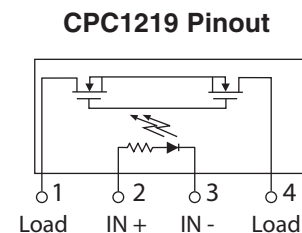
## Approvals

- UL 508 Approved Component: File E69938
- CSA Certified Component: Certificate 1172007

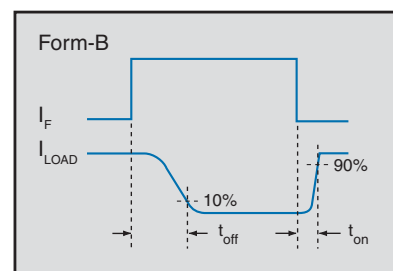
## Ordering Information

Part #	Description
CPC1219Y	4-Pin SIP (8-Pin Body) (25/tube)

## Pin Configuration



## Switching Characteristics of Normally Closed Devices



### Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	60	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Voltage	15	V
Input Power Dissipation	225	mW
Total Power Dissipation <sup>1</sup>	800	mW
Isolation Voltage, Input to Output	2500	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate linearly 6.67 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.*

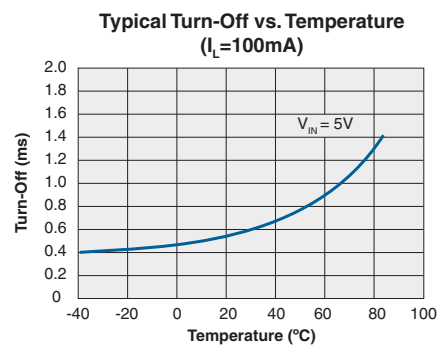
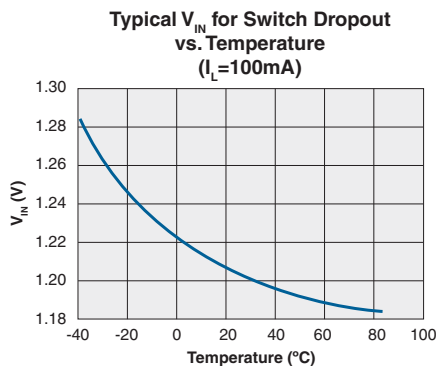
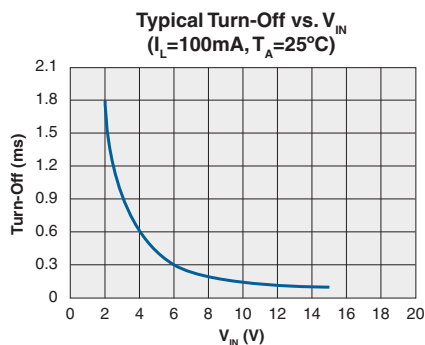
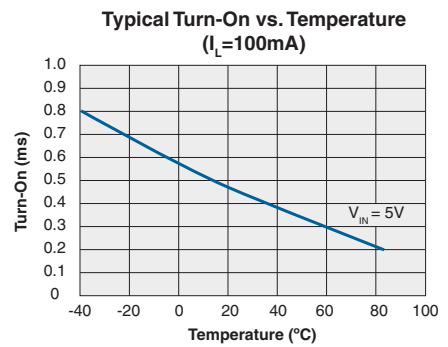
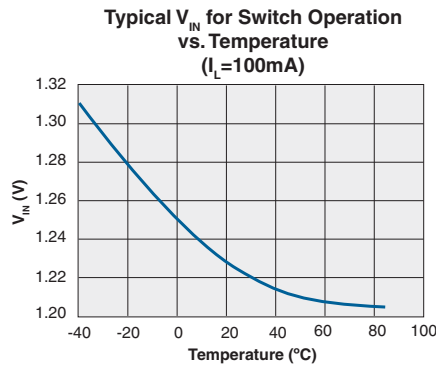
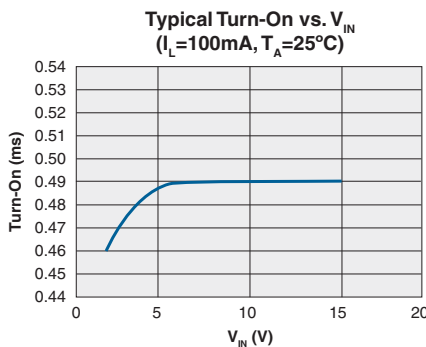
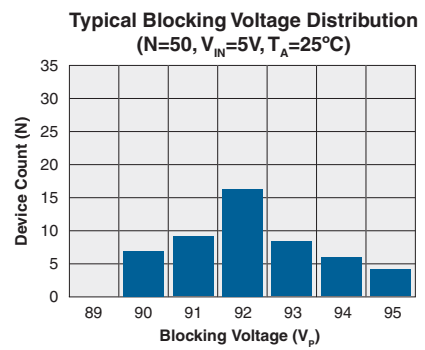
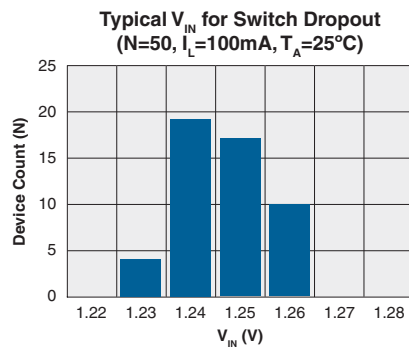
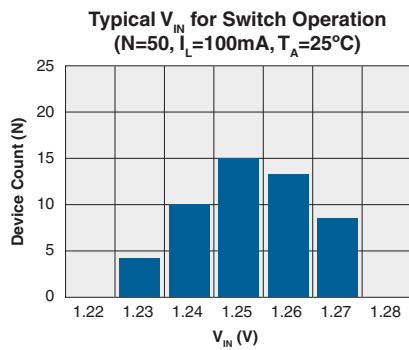
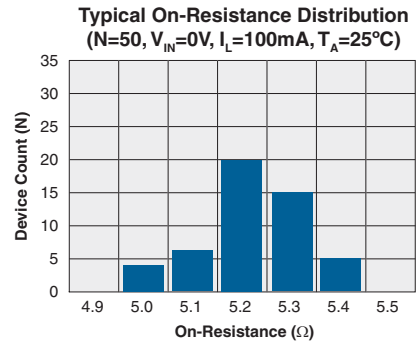
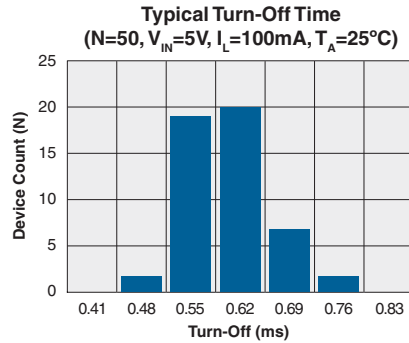
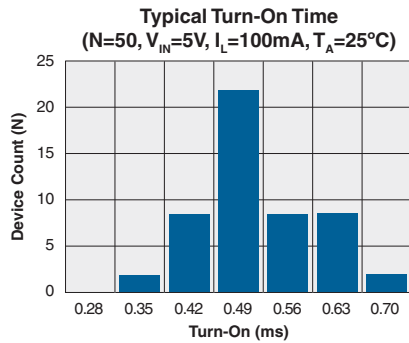
### Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics</b>						
Load Current						
Continuous <sup>1</sup>	-	I <sub>L</sub>	-	-	200	mA
Peak	t≤10ms	I <sub>LPK</sub>	-	-	400	mA
On-Resistance <sup>2</sup>	I <sub>L</sub> =200mA	R <sub>ON</sub>	-	-	16	Ω
Off-State Leakage Current	V <sub>IN</sub> =5V, V <sub>L</sub> =60V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μA
<b>Switching Speeds</b>						
Turn-On (Output Closed)	V <sub>IN</sub> = 5V, V <sub>L</sub> = 10V	t <sub>on</sub>	-	-	5	ms
Turn-Off (Output Open)		t <sub>off</sub>	-	-	5	ms
Output Capacitance	V <sub>IN</sub> =5V, V <sub>L</sub> =50V, f=1MHz	C <sub>OUT</sub>	-	25	-	pF
<b>Input Characteristics</b>						
Input Control Voltage						
Output Open	I <sub>L</sub> = 200mA	V <sub>IN</sub>	-	-	3.75	V
Output Closed			1	-	-	V
Recommended Operating Range			5	-	12	V
Reverse Input Current	V <sub>IN</sub> = -5V	I <sub>R</sub>	-	-	10	μA
Input Resistor	-	-	900	1000	1100	Ω
<b>Common Characteristics</b>						
Capacitance, Input to Output	-	-	-	1	-	pF

<sup>1</sup> Load current derates linearly from 200mA @ 25°C to 125mA @ 80°C.

<sup>2</sup> Measurement taken within 1 second of on-time.

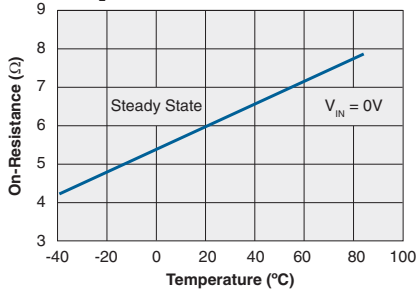
**PERFORMANCE DATA \***



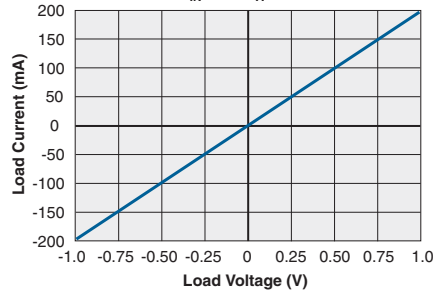
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

**PERFORMANCE DATA\***

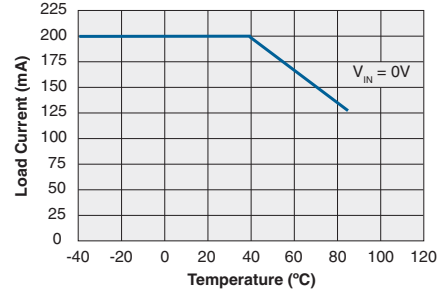
**Typical On-Resistance vs. Temperature**  
( $I_L$ =Max Rated @ Temperature)



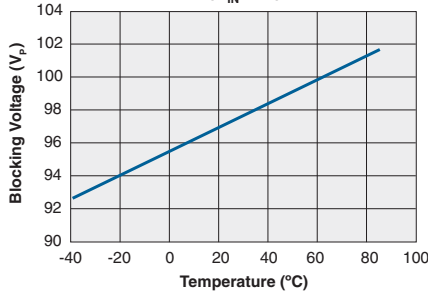
**Typical Load Current vs. Load Voltage**  
( $V_{IN}=0V, T_A=25°C$ )



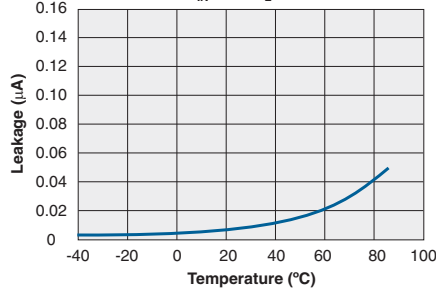
**Typical Maximum Load Current vs. Temperature**



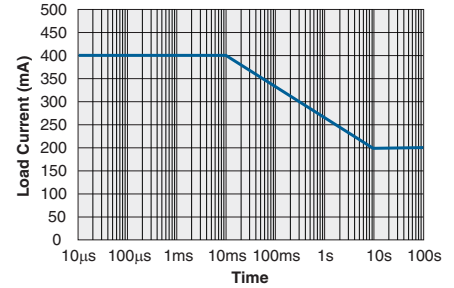
**Typical Blocking Voltage vs. Temperature**  
( $V_{IN}=5V$ )



**Typical Leakage vs. Temperature Measured Across Pins 1&4**  
( $V_{IN}=5V, V_L=60V$ )



**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 ingress. Clare 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
CPC1219Y	MSL 1

### ESD Sensitivity



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

### Reflow 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
CPC1219Y	245°C for 30 seconds

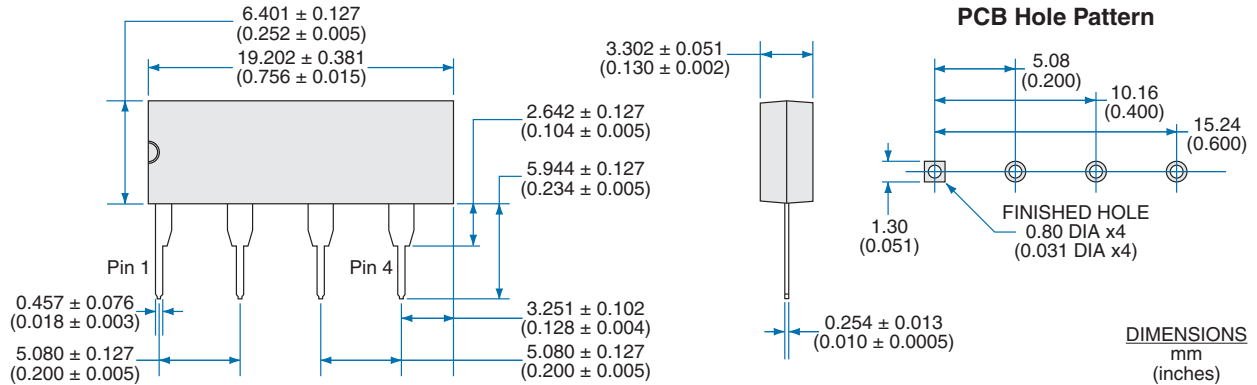
### Board Wash

Clare recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since Clare 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 solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.



**MECHANICAL DIMENSIONS**

**CPC1219Y**



**For additional information please visit our website at: [www.clare.com](http://www.clare.com)**

Clare, Inc. makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in Clare's Standard Terms and Conditions of Sale, Clare, Inc. assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of Clare's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. Clare, Inc. reserves the right to discontinue or make changes to its products at any time without notice.

Specification: DS-CPC1219-R05  
©Copyright 2010, Clare, Inc.  
OptoMOS® is a registered trademark of Clare, Inc.  
All rights reserved. Printed in USA.  
10/18/2010