

|                          | CPC1219Y | 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

- 100% Solid State
- Voltage-controlled operation
- Designed for use in security systems complying with EN50130-4
- Small 4-Pin SIP Package
- Arc-Free With No Snubbing Circuits
- 2500V<sub>rms</sub> Input/Output Isolation
- 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 configuration 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 input voltage-controlled operation.

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

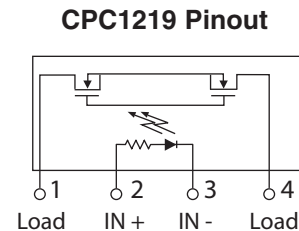
### Approvals

- UL and CSA Pending

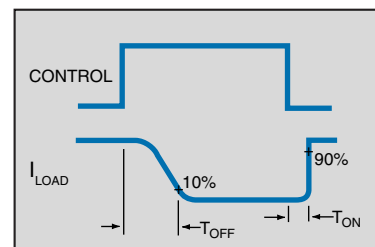
### Ordering Information

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

### Pin Configuration



### Switching Characteristics of Normally Closed (Form B) 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

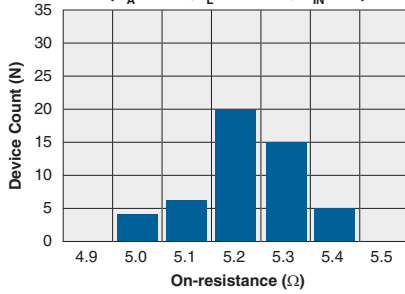
| Parameter                             | Conditions                                       | Symbol            | Min | Typ  | Max  | Units |
|---------------------------------------|--|-------------------|-----|------|------|-------|
| <b>Output Characteristics @ 25°C</b>  |  |                   |     |      |      |       |
| Load Current, Continuous <sup>1</sup> | -  | I <sub>L</sub>    | -   | -    | 200  | mA    |
| Peak Load Current                     | 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>L</sub> =60V, V <sub>IN</sub> =5V         | I <sub>LEAK</sub> | -   | -    | 1    | μA    |
| Switching Speeds                      |  |                   |     |      |      |       |
| 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 @ 25°C</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 @ 25°C</b>  |  |                   |     |      |      |       |
| Capacitance Input to Output           | -  | -                 | -   | 1    | -    | pF    |

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

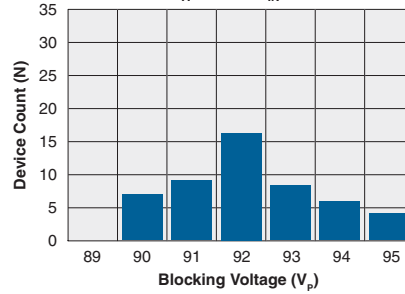
<sup>2</sup> Measurement taken within 1 second of on time.

**PERFORMANCE DATA\***

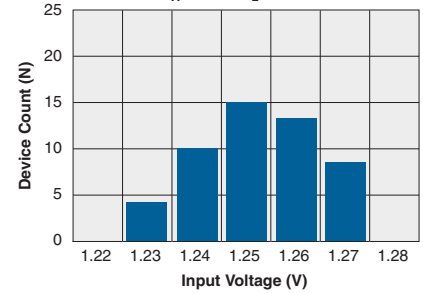
**Typical On-Resistance Distribution**  
( $T_A=25^\circ\text{C}$ ,  $I_L=100\text{mA}$ ,  $V_{IN}=0\text{V}$ )



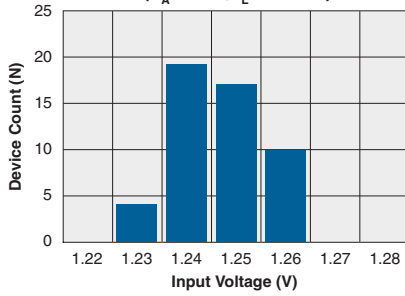
**Typical Blocking Voltage Distribution**  
( $T_A=25^\circ\text{C}$ ,  $V_{IN}=5\text{V}$ )



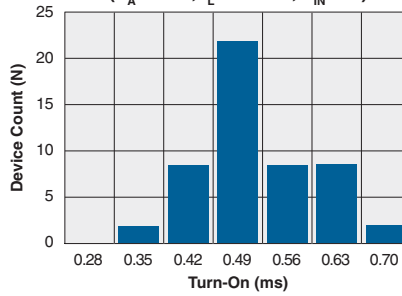
**Typical Input Voltage for Switch Operation**  
( $T_A=25^\circ\text{C}$ ,  $I_L=100\text{mA}$ )



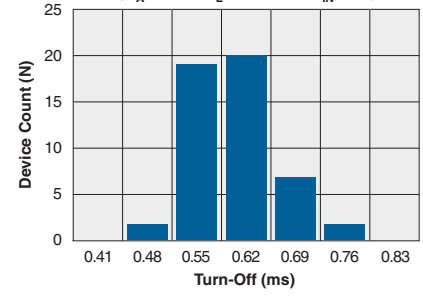
**Typical V<sub>OFF</sub> for Switch Dropout**  
( $T_A=25^\circ\text{C}$ ,  $I_L=100\text{mA}$ )



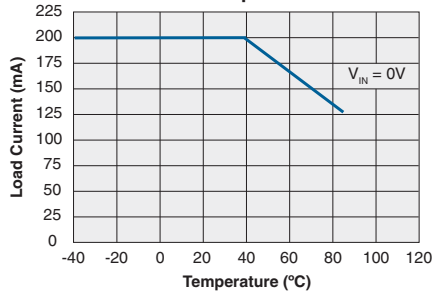
**Typical Turn-On Time**  
( $T_A=25^\circ\text{C}$ ,  $I_L=100\text{mA}$ ,  $V_{IN}=5\text{V}$ )



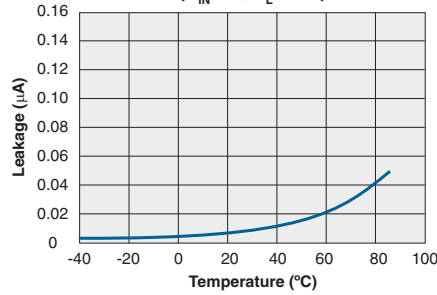
**Typical Turn-Off Time**  
( $T_A=25^\circ\text{C}$ ,  $I_L=100\text{mA}$ ,  $V_{IN}=5\text{V}$ )



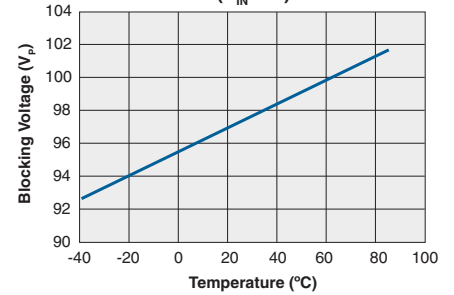
**Typical Maximum Load Current vs. Temperature**



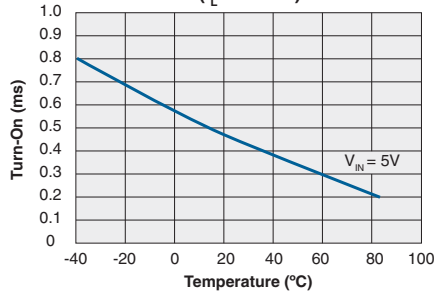
**Typical Leakage vs. Temperature**  
(Measured Across Pins 1 & 4)  
( $V_{IN}=5\text{V}$ ,  $V_L=60\text{V}$ )



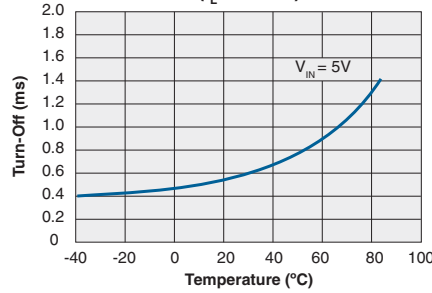
**Typical Blocking Voltage vs. Temperature**  
( $V_{IN}=5\text{V}$ )



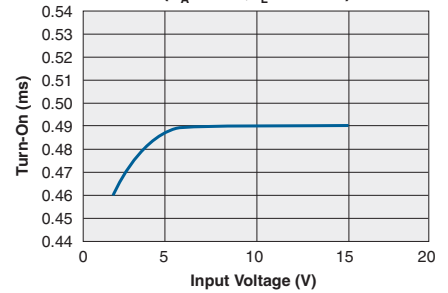
**Typical Turn-On vs. Temperature**  
( $I_L=100\text{mA}$ )



**Typical Turn-Off vs. Temperature**  
( $I_L=100\text{mA}$ )

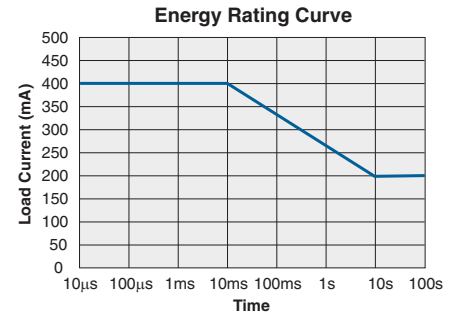
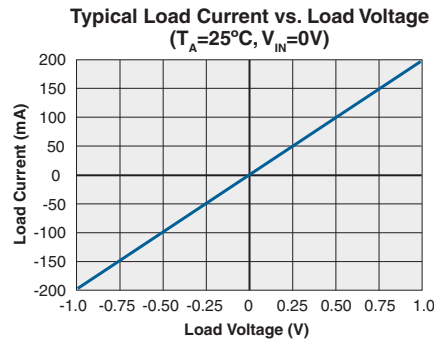
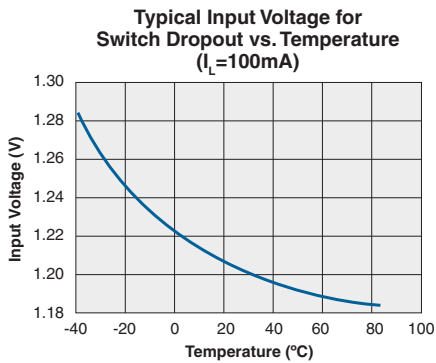
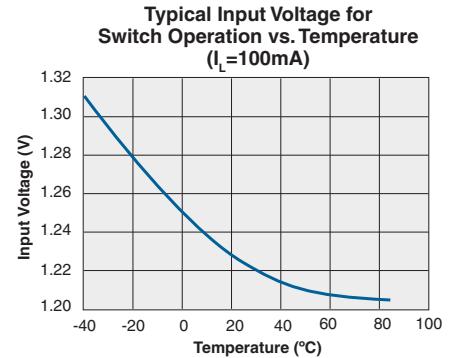
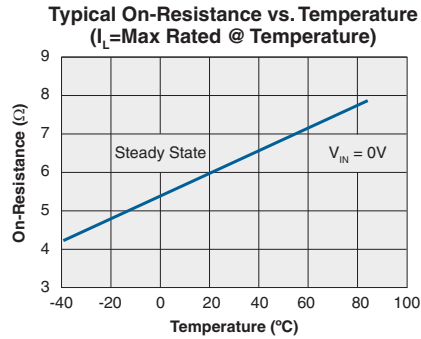
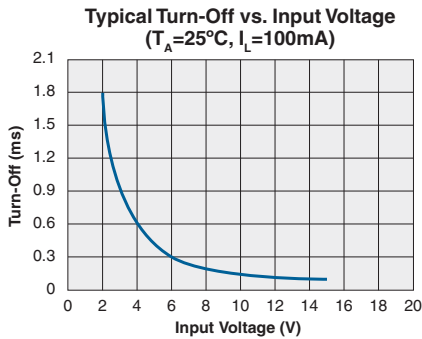


**Typical Turn-On vs. Input Voltage**  
( $T_A=25^\circ\text{C}$ ,  $I_L=100\text{mA}$ )



\*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

### Soldering

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.

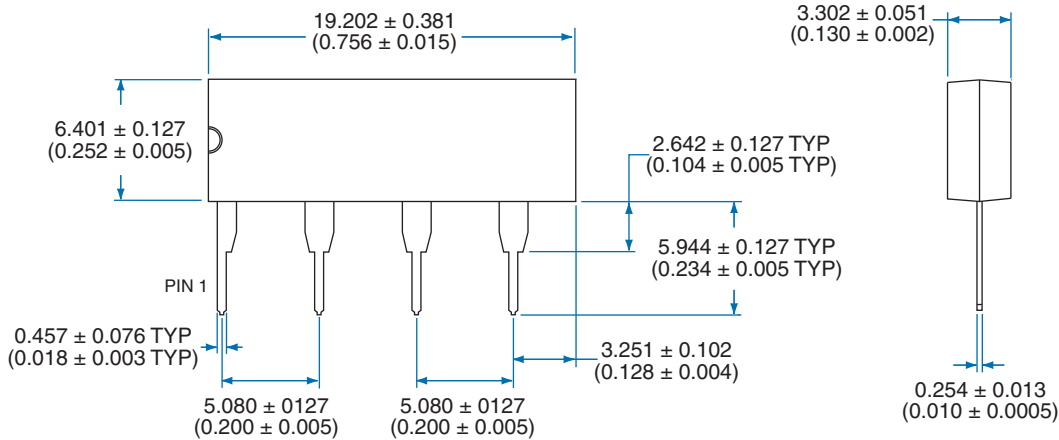
### Washing

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



## MECHANICAL DIMENSIONS

### 4-Pin SIP



**NOTES:**

1. Leadframe thickness does not include plating. (1000 microinches maximum)
2. Pin location tolerances are non-accumulative.

Dimensions:  
mm  
(inches)

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