

Parameter	Rating	Units
Blocking Voltage	250	V <sub>p</sub>
Load Current	200	mA
Max R <sub>ON</sub>	15	Ω

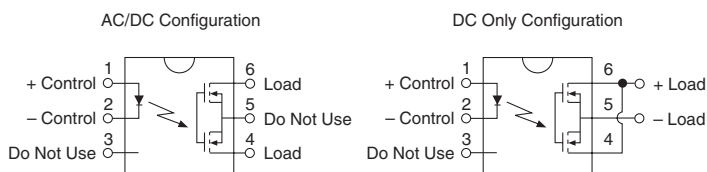
### Features

- Integrated Active Current-Limit Protection
- Thermal Shutdown
- Linear AC or DC Operation
- Low Power Consumption
- Clean, Bounce-free Switching
- High Surge Capability
- Low Power Drive Requirements
- Surface Mount version available
- Tape & Reel packaging available

### Applications

- General Telecom Switching
  - Hook Switch
  - Ringing Relay
  - Dial Pulsing
  - Ground Start
  - Ground Fault Protection
- Instrumentation
  - Automatic Tuning/Balancing
  - Flying Capacitor
  - Analog Multiplex
- Peripherals
  - Automatic Tuning/Balancing
  - Transducer Driver
- Security
- Medical Equipment

### Pin Configuration



### Description

The CPC1510 is a 1-Form-A normally open Solid State Relay with an integrated current limit feature that can replace electromechanical relays while enhancing the robustness of wireline-interface applications.

The relay is constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The die, fabricated in a high-voltage dielectrically isolated technology, is comprised of a photodiode array, switch control with active current limiting circuitry, and MOSFET switches. The active current limit circuitry in the CPC1510 also provides a thermal shutdown feature offering excellent power cross immunity for improved survivability in harsh environments.

These enhancements greatly improves the robustness of end systems using this device compared to systems using relays without the integrated current limit. In addition, the active current limit circuitry enables the CPC1510 to pass FCC 68.302 and other regulatory voltage surge requirements when adequate overvoltage protection is provided. The CPC1510 relay may be used in both unidirectional DC applications as well as bi-directional AC applications.

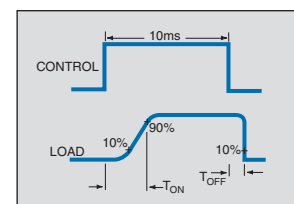
### Approvals

- UL - File # E76270

### Ordering Information

Part #	Description
CPC1510G	6 Pin 0.250" Wide, Through Hole (50/Tube)
CPC1510GS	6 Pin 0.250" Wide, Surface Mount (50/Tube)
CPC1510GSTR	6 Pin 0.250" Wide, Surface Mount (1000/Reel)

### Switching Characteristics of Normally Open (Form A) Devices



## Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	250	V <sub>p</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation <sup>1</sup>	150	mW
Total Power Dissipation <sup>2</sup>	800	mW
Isolation Voltage Input to Output	3750	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate Linearly 1.33 mW/°C

<sup>2</sup> Derate Linearly 1.67 mW/°C

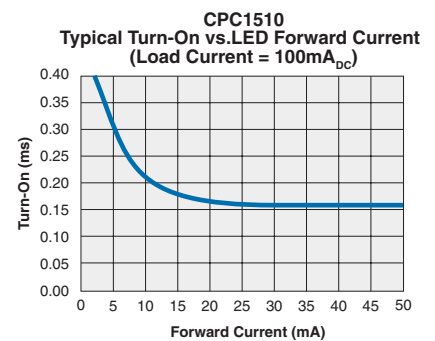
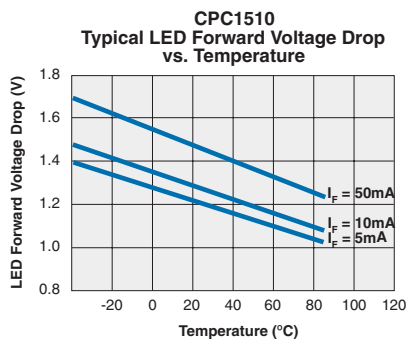
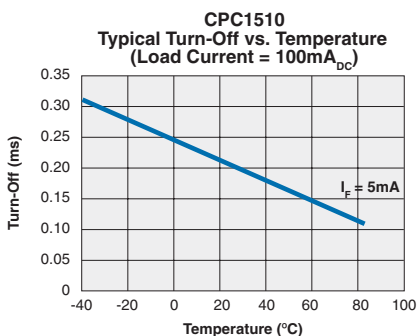
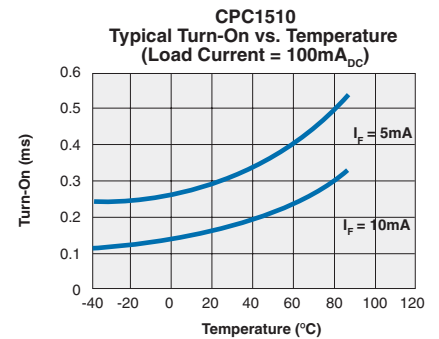
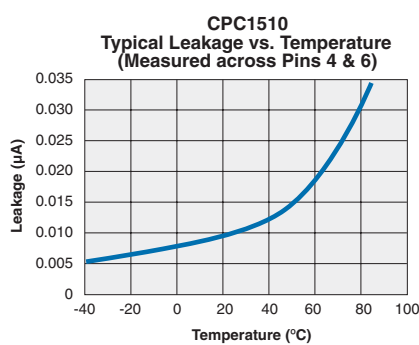
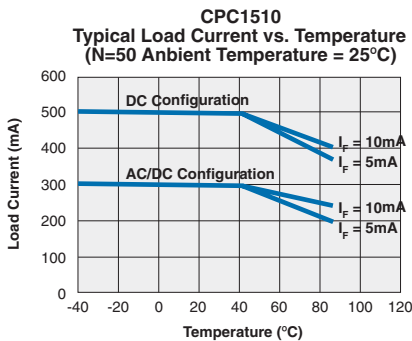
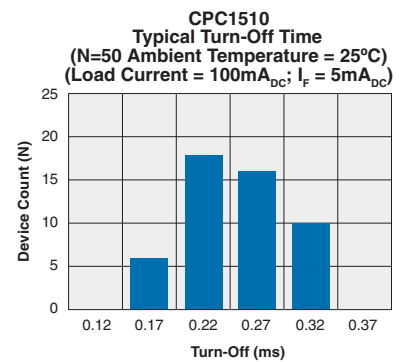
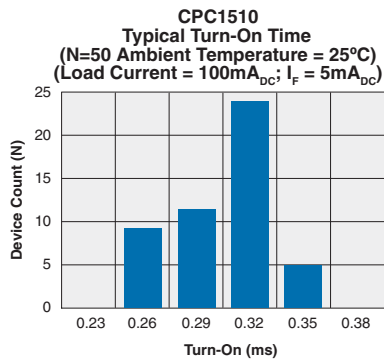
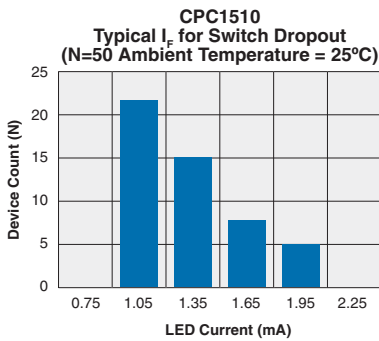
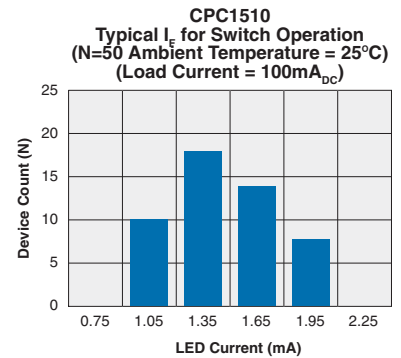
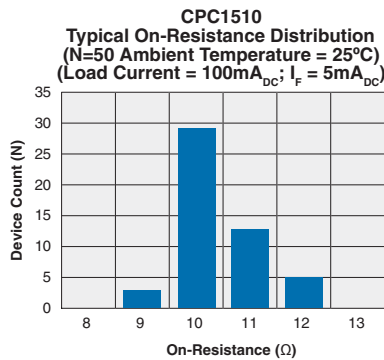
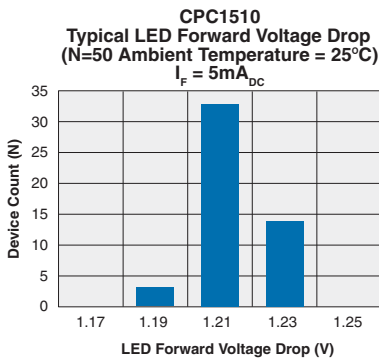
Electrical absolute maximum ratings are at 25°C

*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

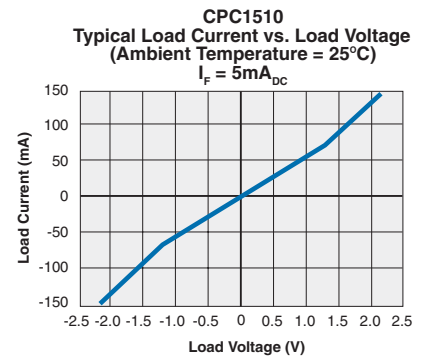
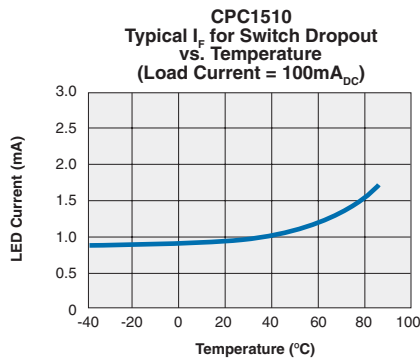
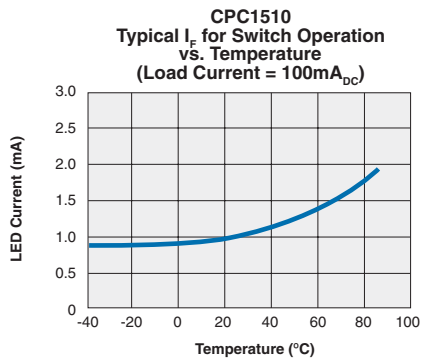
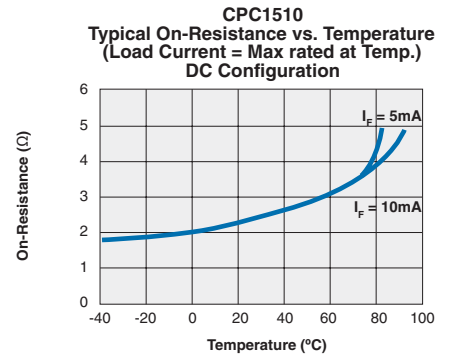
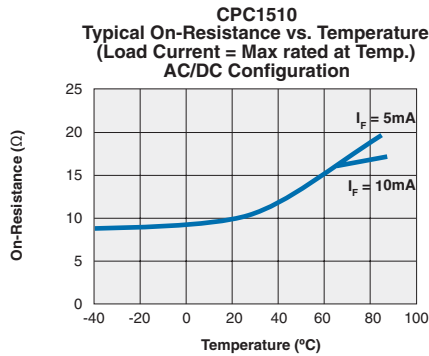
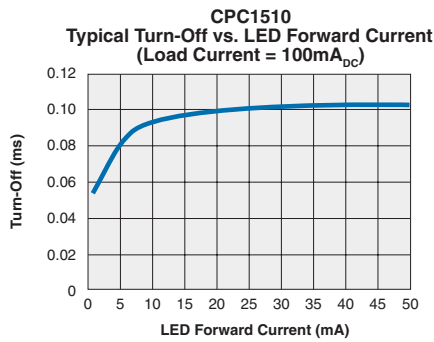
Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Current Limit						
AC/DC Configuration	I <sub>F</sub> =5mA, V <sub>L</sub> =±5V, t=5ms	I <sub>LMT</sub>	300	366	450	mA
DC Configuration			600	700	920	
On-Resistance						
AC/DC Configuration	I <sub>F</sub> =5mA, I <sub>L</sub> =100mA	R <sub>ON</sub>	6	11	15	Ω
DC Configuration			1.5	2.8	3.75	
Off-State Leakage Current	V <sub>L</sub> =200V	I <sub>LEAK</sub>	-	0.02	1	μA
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA, I <sub>L</sub> =100mA	T <sub>ON</sub>	-	0.30	2	ms
Turn-Off		T <sub>OFF</sub>	-	0.16		
Output Capacitance	I <sub>F</sub> =0mA, V <sub>L</sub> =1.0V	C <sub>O</sub>	-	-	-	pF
	I <sub>F</sub> =0mA, V <sub>L</sub> =50V					
<b>Input Characteristics @ 25°C</b>						
Input Control Current	I <sub>L</sub> =100mA	I <sub>F</sub>	5	-	-	mA
Input Dropout Current	I <sub>L</sub> =100mA	I <sub>F</sub>	0.2	-	-	mA
LED Forward Voltage	I <sub>F</sub> =10mA	V <sub>F</sub>	1.15	1.29	1.45	V
<b>Common Characteristics @ 25°C</b>						
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

**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\*



\*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

### Soldering

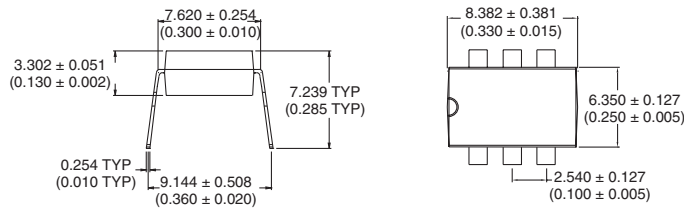
Recommended soldering processes are limited to 245°C component body temperature for 10 seconds.

### Washing

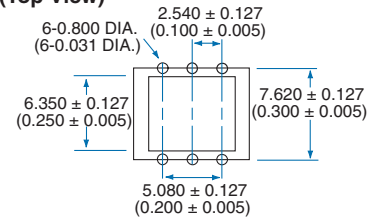
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

## MECHANICAL DIMENSIONS

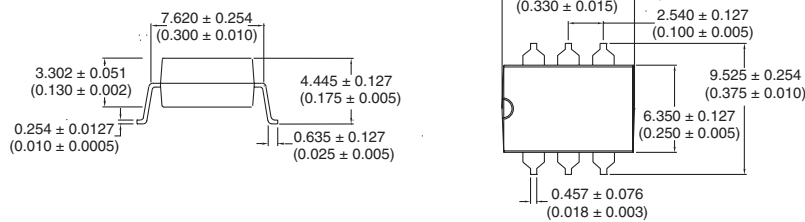
### 6 Pin Through Hole (G)



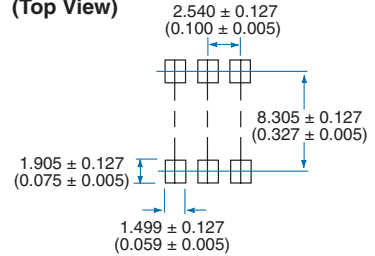
### PC Board Pattern (Top View)



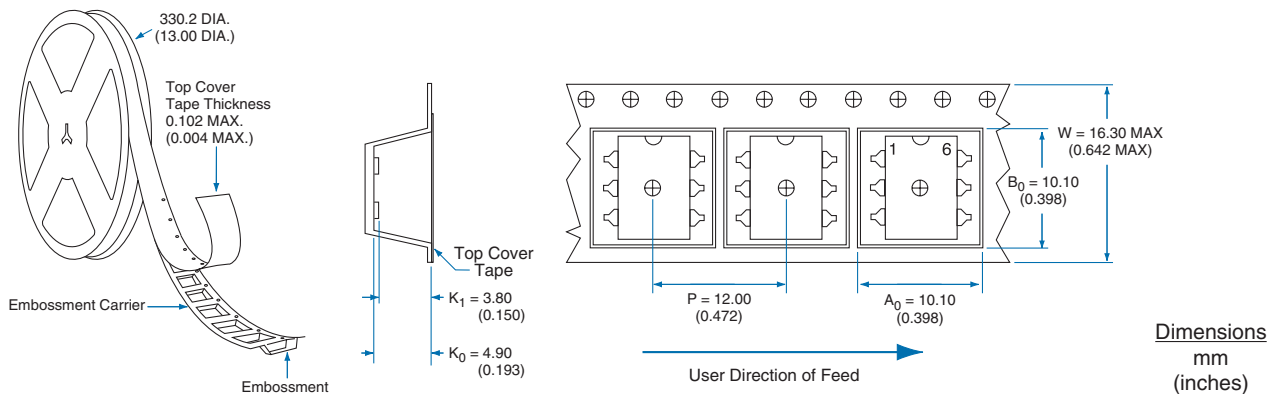
### 6 Pin Surface Mount ("GS" Suffix)



### PC Board Pattern (Top View)



### Tape and Reel Packaging for Surface Mount Package



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.