

|                     | CPC1510 | Units |
|---------------------|---------|-------|
| Load Voltage        | 200     | V     |
| Load Current        | 200     | mA    |
| Max R <sub>ON</sub> | 15      | Ω     |

### Features

- Current-limit Protection Built-in
- Linear AC/DC Operation
- High-reliability Monolithic Receptor
- Low Power Consumption
- Clean, Bounce-free Switching
- High Surge Capability
- Surface Mountable
- High Reliability
- Low Power Drive Requirements

### Applications

- General Telecom Switching
  - On/Off-hook
  - Ringing Relay
  - Dial Pulsing
  - Ground Start
  - Ground Fault Protection
- Instrumentation
  - Automatic Tuning/Balancing
  - Flying Capacitor
  - Analog Multiplex
- Industrial Controls
  - Triac Predrivers
  - Output Modules
- Peripherals
  - Automatic Tuning/Balancing
  - Transducer Driver
- Security
- Medical Equipment

### Description

The CPC1510 is a current limiting 1-Form-A normally open switch solid state relay that can replace electromechanical relays in many 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 circuitry, and MOSFET switches. In addition, the relay employs current limiting circuitry enabling it to pass FCC 68.302 and other regulatory voltage surge requirements when overvoltage protection is provided. The CPC1510 relay provides current limiting for unidirectional dc applications in addition to typical AC applications.

### Approvals

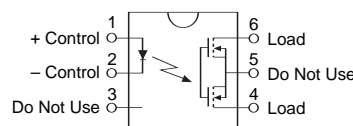
- TBD

### Ordering Information

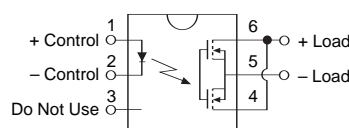
| Part #     | Description                      |
|------------|----------------------------------|
| CPC1510    | 6 Pin Dip, (50/Tube)             |
| CPC1510S   | 6 Pin Surface Mount, (50/Tube)   |
| CPC1510STR | 6 Pin Surface Mount, (1000/Reel) |

### Pin Configuration

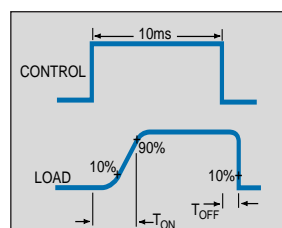
AC/DC Configuration



DC Only Configuration



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



**Absolute Maximum Ratings (@ 25° C)**

| Parameter  | Range      | Units     |
|--|------------|-----------|
| Ambient Temperature ( $T_A$ )                                    | -40 to 85  | °C        |
| Storage Temperature ( $T_{stg}$ )                                | -40 to 150 | °C        |
| Pin Soldering Temperature<br>DIP Package                         | 260        | °C        |
| Input/Output Isolation Voltage ( $V_{ISO}$ )                     | TBD        | $V_{RMS}$ |
| Pin Soldering Temperature<br>Surface Mount Package (10 secs max) | 220        | °C        |
| LED Continuous Forward Current ( $I_F$ )                         | 50         | mA        |
| LED Reverse Voltage ( $I_R \leq 10\mu A$ ) ( $V_R$ )             | 8.0        | V         |
| Continuous DC Load Current ( $I_L$ )<br>Bidirectional Operation  | 200        | mA        |
| Unidirectional Operation   | 350        | mA        |
| Peak Load Current ( $t=100ms$ )<br>(single shot) ( $I_P$ )       | -          |           |
| Output Power Dissipation<br>(continuous) ( $P_{DISS}$ )          | TBD        | MW        |

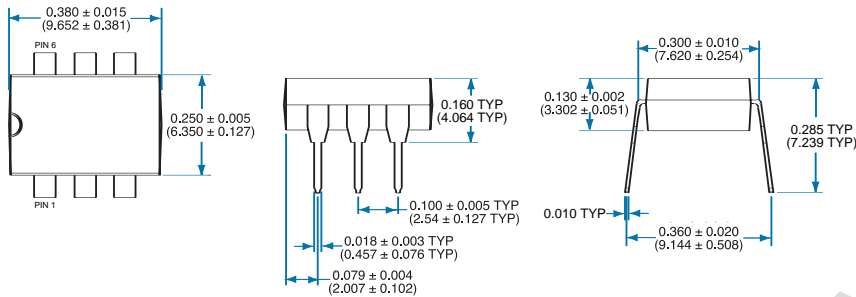
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

**Electrical Characteristics**

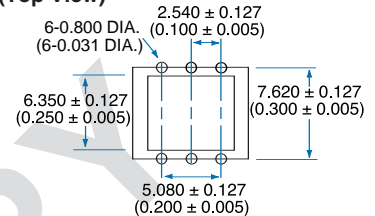
| Parameter                              | Conditions                                  | Symbol     | Min  | Typ  | Max  | Units     |
|--|---|------------|------|------|------|-----------|
| <b>Output Characteristics @ 25°C</b>   |   |            |      |      |      |           |
| On-Resistance<br>AC/DC Configuration   | $I_F=5.0mA$ , $I_L=50mA$                    | $R_{ON}$   | 6.0  | 11.0 | 15   | $\Omega$  |
| DC Configuration                       | $I_F=5.0mA$ , $I_L=100mA$                   | $R_{ON}$   | 1.5  | 2.8  | 3.75 | $\Omega$  |
| OFF - resistance                       | $I_F=0mA$ , $V_L=\pm 100V$                  | $R_{OFF}$  | 0.5  | -    | -    | $G\Omega$ |
| Current Limit<br>AC/DC Configuration   | $I_F=5.0mA$ , $I_L=5.0ms$<br>$V_L=\pm 5.0V$ | $I_{LMT}$  | 300  | 366  | 450  | mA        |
| DC Configuration                       | $I_F=5.0mA$ , $V_L=4.0V$<br>$t=5.0ms$       | $I_{LMT}$  | 600  | 700  | 920  | mA        |
| Off-State Leakage Current              | $V_L=200V$                                  | $I_{LEAK}$ | -    | 0.02 | 1    | $\mu A$   |
| Switching Offset                       | $I_F=5.0mA$                                 | $V_{OS}$   | -    | -    | -    | $\mu V$   |
| Output Capacitance                     | $I_F=0mA$ , $V_L=1.0V$                      | $C_O$      | -    | -    | -    | pF        |
|  | $I_F=0mA$ , $V_L=50V$                       | $C_O$      | -    | -    | -    | pF        |
| <b>Input Characteristics @ 25°C</b>    |   |            |      |      |      |           |
| Input Control Current                  | $I_L=200mA$                                 | $I_F$      | 5    | -    | 50   | mA        |
| Input Dropout Current                  | $I_L=200mA$                                 | $I_F$      | 0.2  | -    | -    | mA        |
| LED Forward Voltage                    | $I_F=10mA$                                  | $V_F$      | 1.15 | 1.29 | 1.45 | V         |
| <b>Transfer Characteristics @ 25°C</b> |   |            |      |      |      |           |
| Input to Output Capacitance            | $V_{ISO}=1.0V$                              | $C_{ISO}$  | -    | -    | -    | pF        |
| Turn-on Time                           | $I_F=5.0mA$ , $I_L=50mA$                    | $t_{on}$   | -    | 0.30 | 2.0  | ms        |
| Turn-off Time                          | $I_F=5.0mA$ , $I_L=50mA$                    | $t_{off}$  | -    | 0.16 | 2.0  | ms        |

## MECHANICAL DIMENSIONS

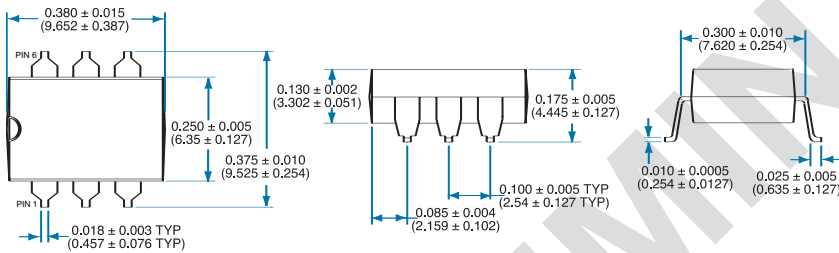
### 6Pin DIP Through Hole (Standard)



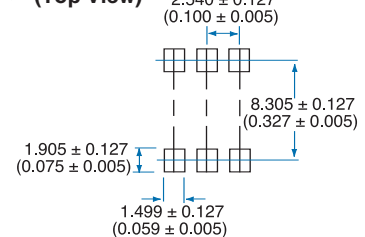
### PC Board Pattern (Top View)



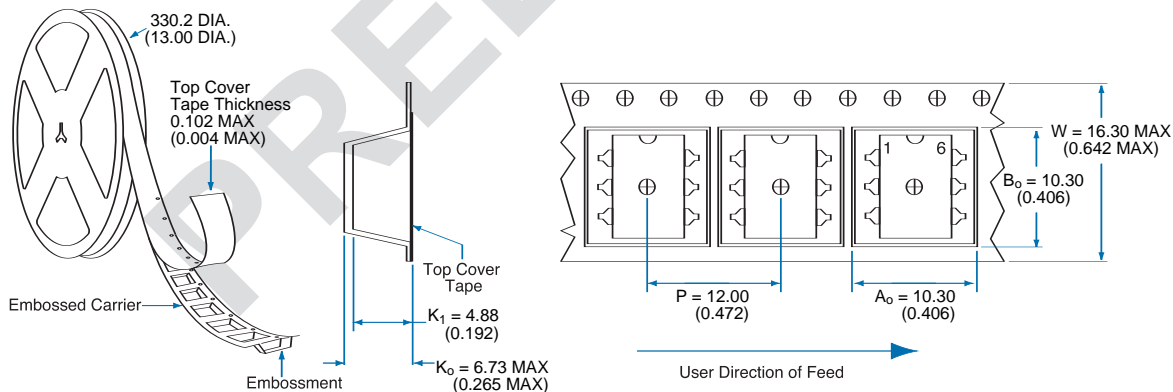
### 6Pin Surface Mount ("S" Suffix)



### PC Board Pattern (Top View)



### Tape and Reel Packaging for 6 Pin Surface Mount Package



Dimensions  
mm  
(inches)

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