



Parameters	Ratings	Units
Blocking Voltage	600	$V_p$
AC Operating Voltage	260	$V_{rms}$
Load Current <sup>1</sup>	250	$mA_{rms}$
On State Voltage Drop	3	$V_{rms}$ (at $I_L = 250mA_{rms}$ )

<sup>1</sup> One Pole Operating

### Features

- Load Current up to 250  $mA_{rms}$
- 600 $V_p$  Blocking Voltage
- 5mA Sensitivity
- Zero-Crossing Detection
- DC Control, AC Output
- Optically Isolated
- TTL and CMOS Compatible
- Low EMI and RFI Generation
- High Noise Immunity
- Machine Insertable, Wave Solderable
- Flammability classification rating of V-0

### Applications

- Programmable Control
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Contactors
- Large Relays
- Solenoids
- Motors
- Heaters

### Description

The CPC1961 is a dual pole AC solid state switch that uses optical coupling with dual monolithic SCR outputs to produce an alternative to optocoupler and triac circuits. The CPC1961 switches are robust enough to provide a blocking voltage of up to 600V. In addition, tightly controlled zero cross circuitry ensures switching of AC loads without the generation of transients. The input and output circuits are optically coupled to provide 3750 $V_{rms}$  of isolation and noise immunity between control and load circuits. As a result the CPC1961 is well suited for industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays. The CPC1961 is offered in a space saving 8 pin DIP package with two independent switches.

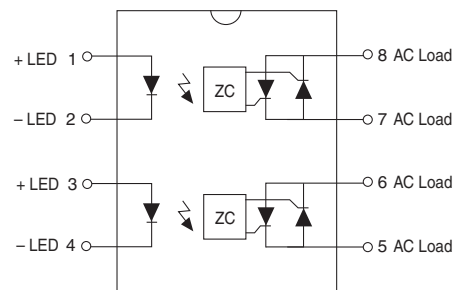
### Approvals

- UL Recognized Component: File # 69938
- CSA Certified Component: Certificate # 1172007

### Ordering Information

Part #	Description
CPC1961G	8-Pin Dip (50/Tube)
CPC1961GS	8-Pin Surface Mount (50/Tube)
CPC1961GSTR	8-Pin Surface Mount (1000/Reel)

### Pin Configuration



## Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	600	V <sub>P</sub>
Reverse Input Voltage	5	V <sub>P</sub>
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation <sup>1</sup>	150	mW
Total Package 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 6.67 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

Parameters	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Operating Voltage Range	V <sub>L</sub>	-	20	-	260	V <sub>rms</sub>
Load Current <sup>1</sup> , Continuous	V <sub>L</sub> =120-240V <sub>rms</sub>	I <sub>L</sub>	0.005	-	250	mA <sub>rms</sub>
Non-repetitive Single Cycle Surge Current	t ≤ 10ms	I <sub>TSM</sub>	-	-	1	A
Off State Leakage Current	V <sub>L</sub> =600V	I <sub>LEAK</sub>	-	-	1	μA
On-State Voltage Drop	I <sub>L</sub> =250 mA <sub>rms</sub>	-	-	-	3	V <sub>rms</sub>
Critical Rate of Rise <sup>2</sup>	-	dv/dt	500	-	-	V/μs
Holding Current	I <sub>F</sub> =5 mA	I <sub>H</sub>	-	300	-	μA
Switching Speeds	I <sub>F</sub> =5 mA	t <sub>ON</sub> t <sub>OFF</sub>	-	-	0.5 0.5	cycles
Turn-on						
Turn-off						
Zero-Cross Turn-On Voltage	1st half cycle	-	-	5	20	V
	Subsequent half cycles	-	-	-	5	V
Operating Frequency <sup>3</sup>	-	-	20	-	500	Hz
Load Power Factor for Guaranteed Turn-On <sup>4</sup>	-	PF	0.25	-	-	-
<b>Input Characteristics @ 25°C</b>						
Input Control Current <sup>5</sup>	-	I <sub>F</sub>	-	1.2	5	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Input Drop-out Voltage	-	-	0.8	-	-	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA
<b>Common Characteristics @ 25°C</b>						
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

<sup>1</sup> Maximum continuous load current of a single pole or the sum of the load currents with both poles operating simultaneously.

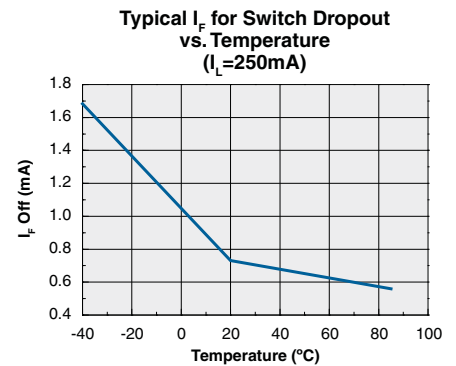
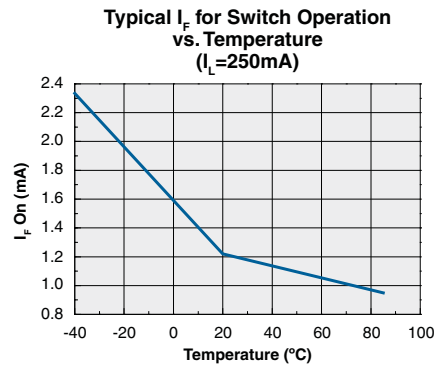
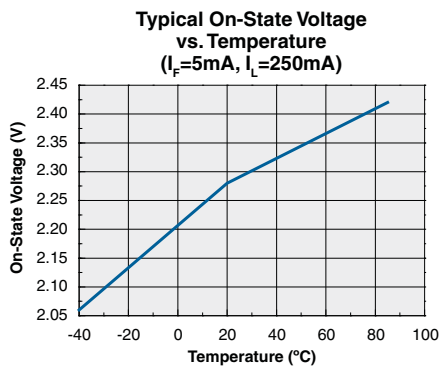
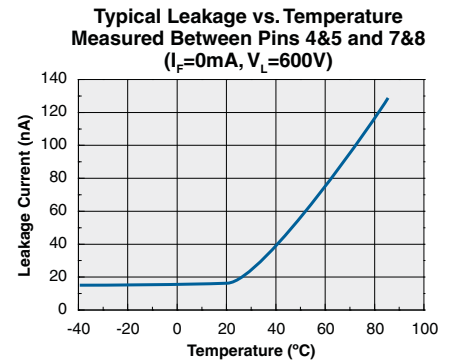
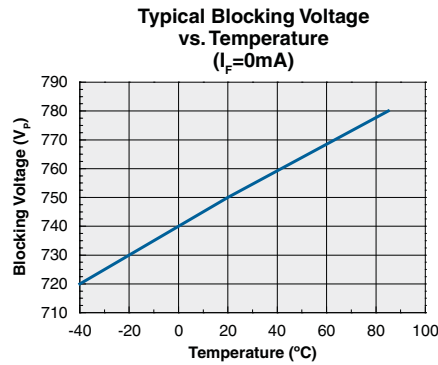
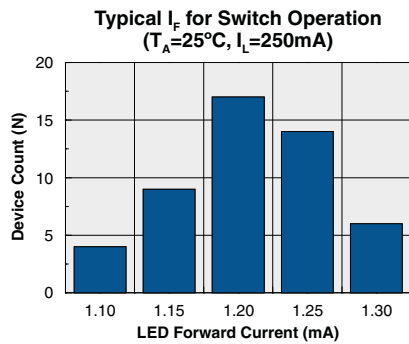
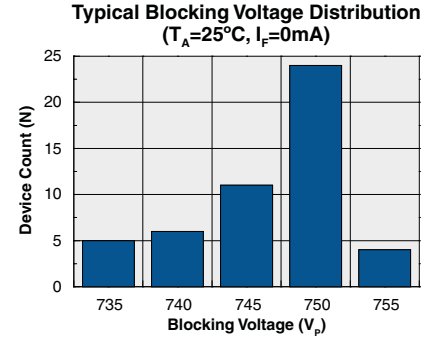
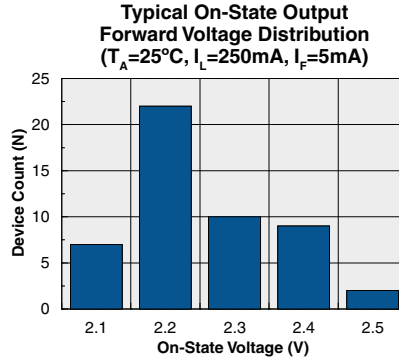
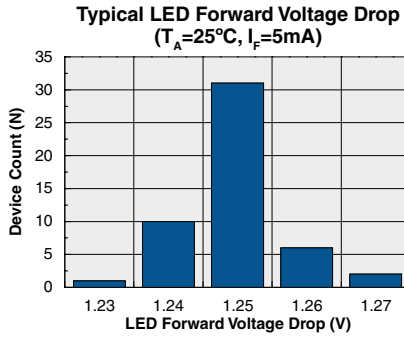
<sup>2</sup> Tested in accordance with EIA/NARM standard RS-443.

<sup>3</sup> Zero Cross 1st half cycle @ <100Hz

<sup>4</sup> Snubber circuits may be required at low power factors.

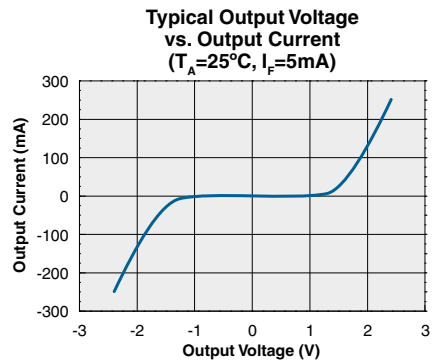
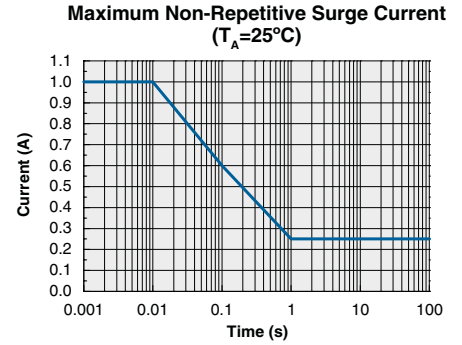
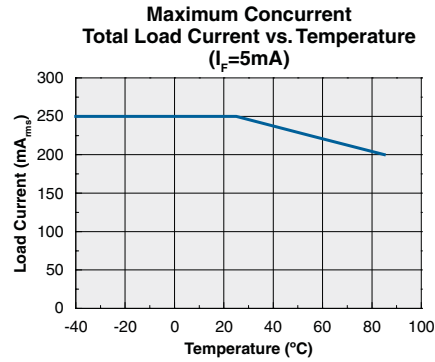
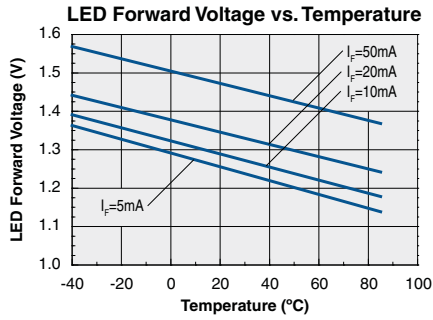
<sup>5</sup> For high noise environment use at least 10mA LED current.

**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.

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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.

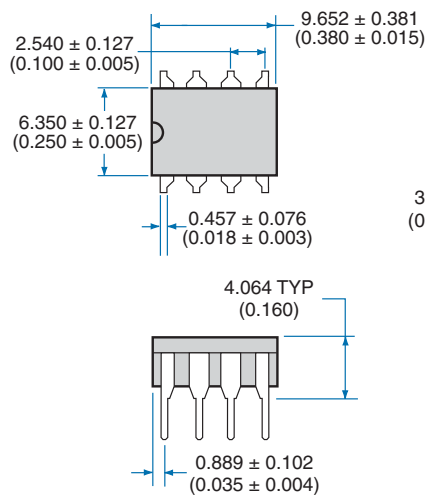
### Washing

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

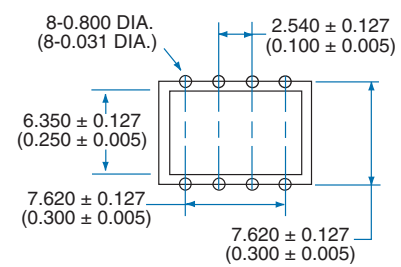


## MICHAICAL DIMENSIONS

### 8-Pin DIP Through-Hole Package

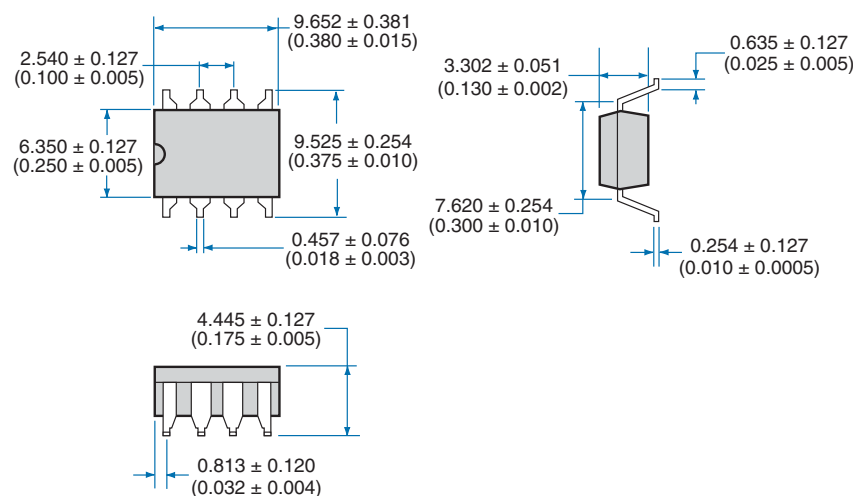


### PC Board Pattern

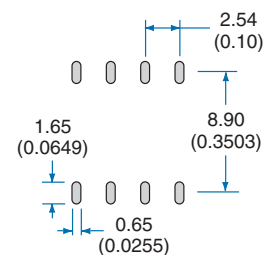


Dimensions  
mm  
(inches)

### 8-Pin Surface Mount Package

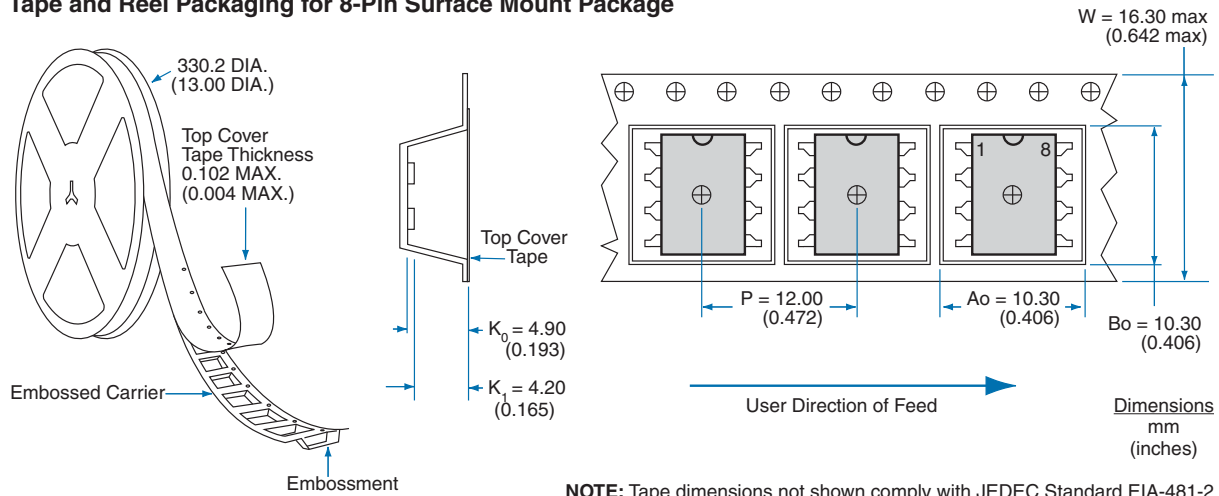


### Recommended PCB Land Pattern



Dimensions  
mm  
(inches)

**Tape and Reel Packaging for 8-Pin Surface Mount Package**



**NOTE:** Tape dimensions not shown comply with JEDEC Standard EIA-481-2

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

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