



	CPC1963G	Units
Blocking Voltage	600	$V_p$
Load Current	500	$mA_{rms}$
On State Voltage Drop	1.4	$V_{rms}$ (at $I_L = 500mA$ )

#### Features

- Load Current up to 0.5A
- 600V 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 CPC1963G is an AC Solid State Switch using optical coupling with dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. The CPC1963G 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 3750V<sub>rms</sub> of isolation and noise immunity between control and load circuits. As a result the CPC1963G is well suited for industrial environments where electromagnetic interference could disrupt the operation of electromechanical relays.

#### Approvals

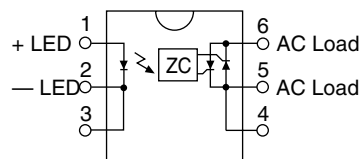
- UL recognized file #: E69938
- CSA certified to CSA 14, file #: LR43639

#### Ordering Information

Part #	Description
CPC1963G	6 Pin Dip (50/Tube)
CPC1963GS	6 Pin Surface Mount (50/Tube)
CPC1963GSTR	6 Pin Surface Mount (1000/Reel)

#### Pin Configuration

##### CPC1963G Pinout



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

Parameter	Ratings	Units
Blocking Voltage	600	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	100	mA
Peak (10ms)	1	A
Input Power Dissipation	150 <sup>1</sup>	mW
Total Package Dissipation	800 <sup>2</sup>	mW
Isolation Voltage Input to Output	3750	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C
Soldering Temperature		
DIP Package	+260	°C
Surface Mount Package (10 Seconds Max.)	+220	°C

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

<sup>2</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**

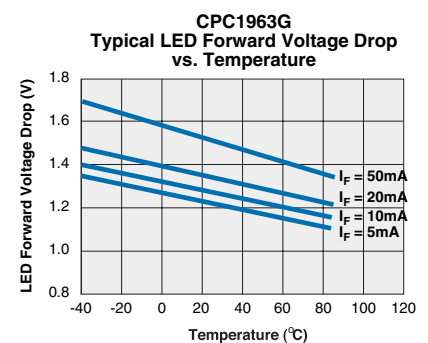
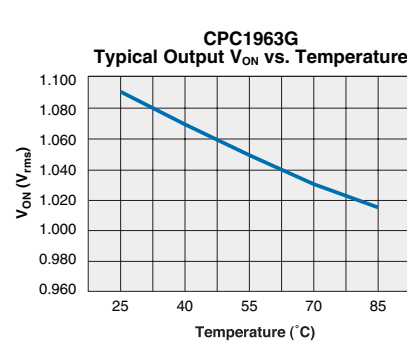
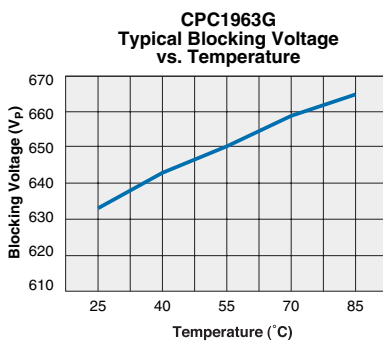
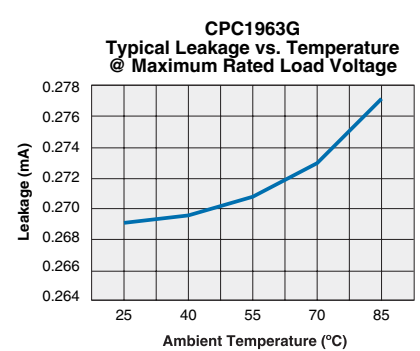
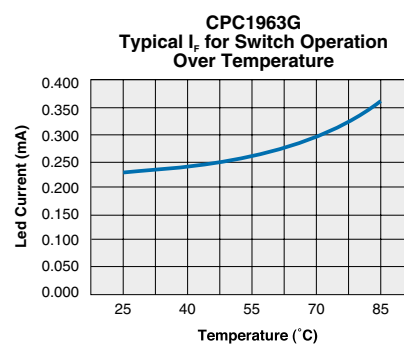
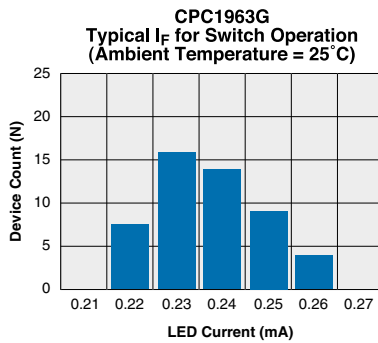
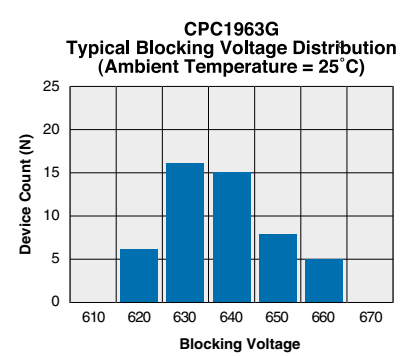
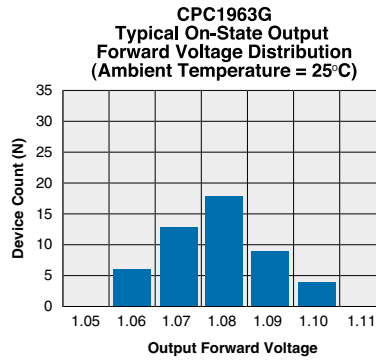
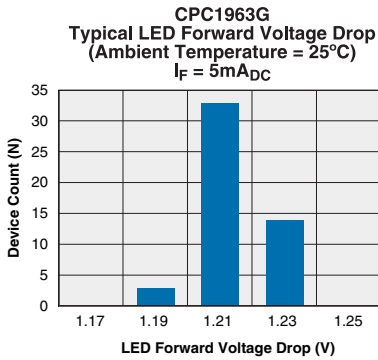
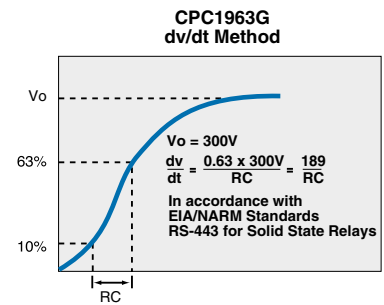
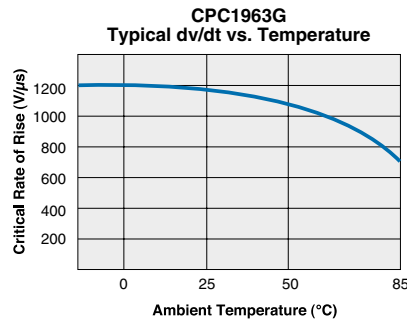
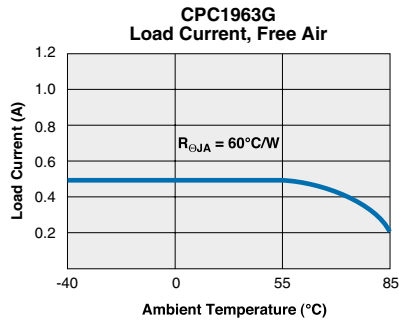
Parameters	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Operating Voltage Range	V <sub>T</sub>	-	20	-	120	V <sub>rms</sub>
Load Current	Continuous, V <sub>L</sub> =120V <sub>rms</sub>	I <sub>L</sub>	0.005	-	0.5	A
Off State Leakage Current	V <sub>DRM</sub>	I <sub>LEAK</sub>	-	-	1	mA
On-State Voltage Drop	I <sub>L</sub> =500 mA	V <sub>ON</sub>	-	-	1.4	V <sub>rms</sub>
Critical Rate of Rise <sup>3</sup>	-	dv/dt	1000	-	-	V/μs
Switching Speeds						
Turn-on	I <sub>F</sub> =5 mA	T <sub>ON</sub>	-	-	0.5	cycles
Turn-off	I <sub>F</sub> =5 mA	T <sub>OFF</sub>	-	-	0.5	cycles
Zero-Cross Turn-On Voltage	1st half cycle		-	2	10	V
Sub. half cycle		-	-	1	-	V
Operating Frequency <sup>1</sup>	-		20	-	500	Hz
Load Power Factor for Guaranteed Turn-On <sup>2</sup>	-	PF	0.25	-	-	-
<b>Input Characteristics @ 25°C</b>						
Input Control Current						
For Normal Environment	-	I <sub>F</sub>	5	-	-	mA
For High Noise Environment	-	I <sub>F</sub>	10	-	-	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> Zero Cross 1st half cycle @ <100Hz

<sup>2</sup> Snubber circuits may be required at low power factors.

<sup>3</sup> Tested in accordance with EIA/NARM standard RS-443.

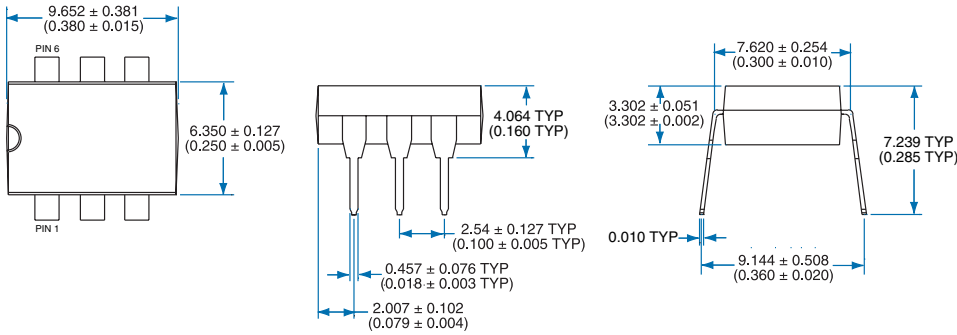
**PERFORMANCE DATA\***



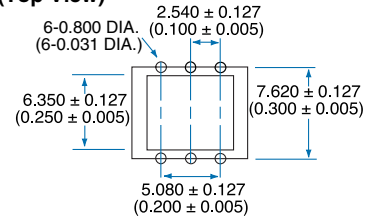
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

## MECHANICAL DIMENSIONS

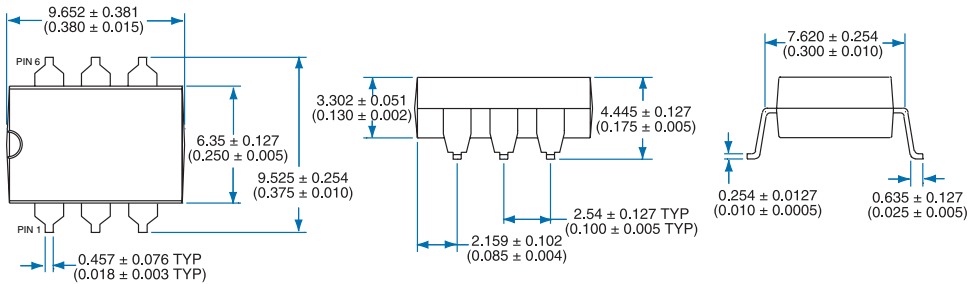
### 6 Pin Power DIP Through Hole (Standard)



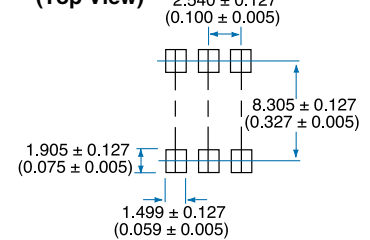
### PC Board Pattern (Top View)



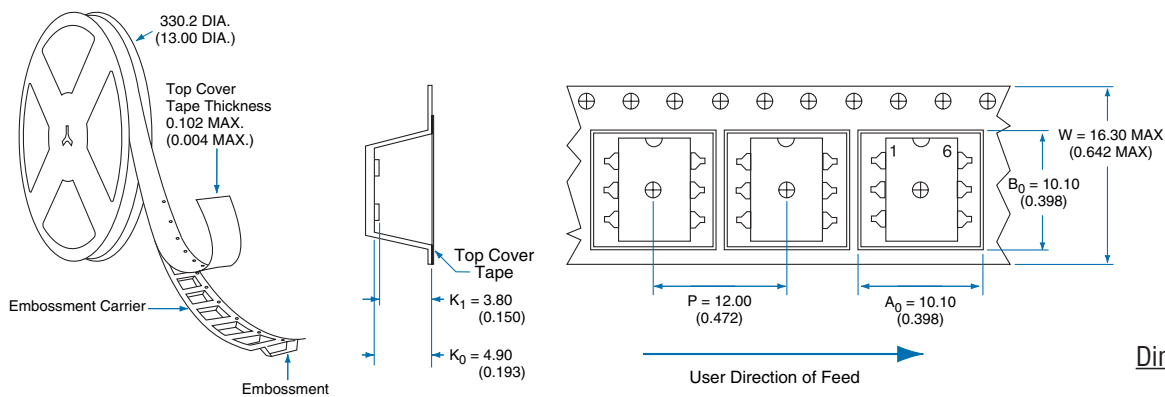
### 6 Pin Power DIP Surface Mount ("S" Suffix)



### PC Board Pattern (Top View)



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



Dimensions:  
mm  
(inches)

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