



Parameter	Ratings	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 $0.5A_{rms}$
- $600V_p$ 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 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 $600V_p$. 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 $3750V_{rms}$ 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.

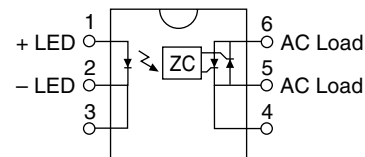
Approvals

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

Ordering Information

Part Number	Description
CPC1963G	6-Pin DIP (50/Tube)
CPC1963GS	6-Pin Surface Mount (50/Tube)
CPC1963GSTR	6-Pin Surface Mount (1000/Reel)

Pin Configuration



Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	600	V_P
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation ¹	150	mW
Total Package Dissipation ²	800	mW
Isolation Voltage, Input to Output	3750	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

¹ Derate Linearly 1.33 mW/°C

² 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

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Operating Voltage Range	V_T	-	20	-	260	V_{rms}
Load Current, Continuous	$V_L=120V_{rms}$	I_L	0.005	-	0.5	A
Off State Leakage Current	$V = 600V$	I_{LEAK}	-	-	1	mA
On-State Voltage Drop	$I_L=500\text{ mA}$	V_{ON}	-	-	1.4	V_{rms}
Critical Rate of Rise ³	-	dv/dt	1000	-	-	V/ μ s
Switching Speeds						
Turn-on	$I_F=5\text{ mA}$	T_{ON}	-	-	0.5	cycles
Turn-off	$I_F=5\text{ mA}$	T_{OFF}	-	-	0.5	cycles
Zero-Cross Turn-On Voltage ¹	1st half cycle	-	-	2	10	V
Sub. half cycle	-	-	-	1	-	V
Operating Frequency	-	-	20	-	500	Hz
Load Power Factor for Guaranteed Turn-On ²	-	PF	0.25	-	-	-
Input Characteristics @ 25°C						
Input Control Current ⁴	-	I_F	5	-	-	mA
Input Drop-out Voltage	-	-	0.8	-	-	V
Input Voltage Drop	$I_F=5\text{ mA}$	V_F	0.9	1.2	1.4	V
Reverse Input Current	$V_R=5V$	I_R	-	-	10	μ A
Common Characteristics @ 25°C						
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF

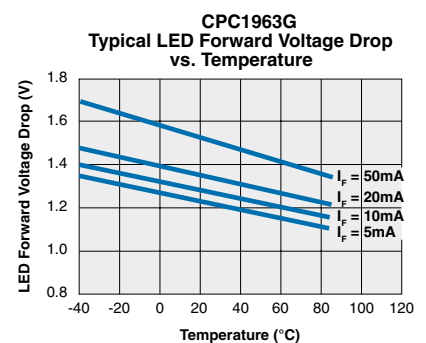
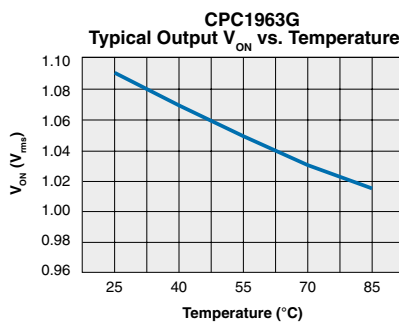
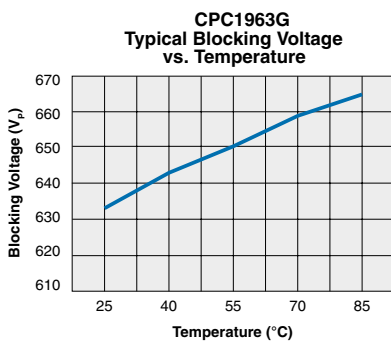
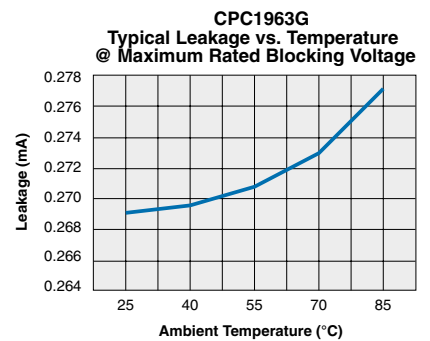
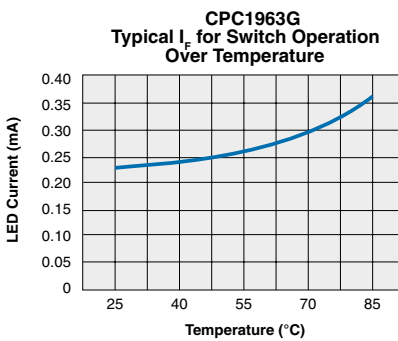
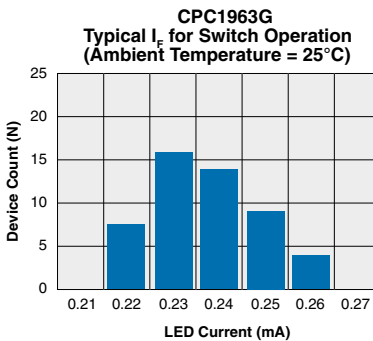
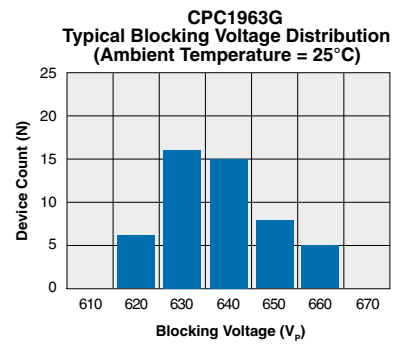
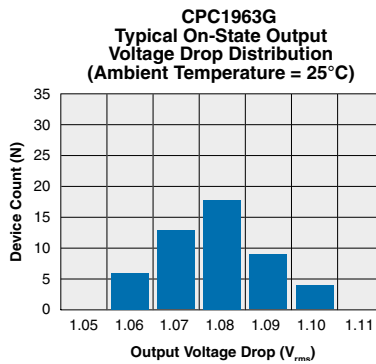
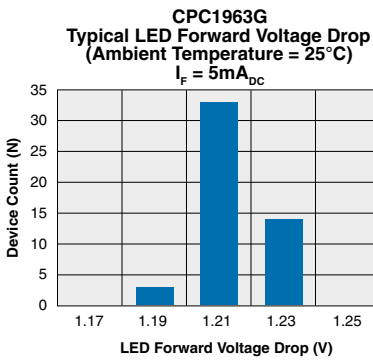
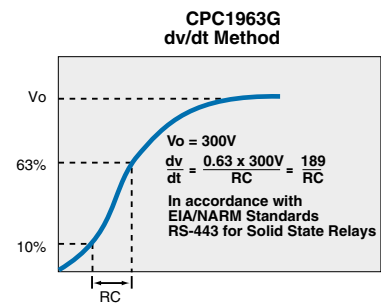
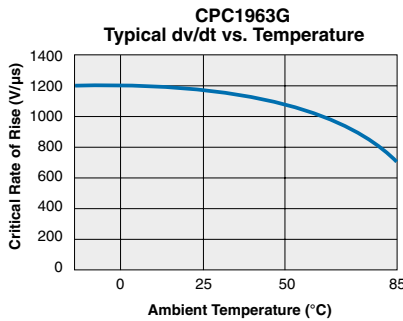
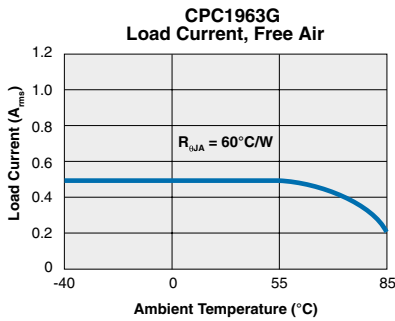
¹ Zero Cross 1st half cycle @ <100Hz

² Snubber circuits may be required at low power factors.

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

⁴ For high noise environments 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.

Manufacturing Information

Soldering

Recommended soldering processes are limited to 260°C component body temperature for 10 seconds.

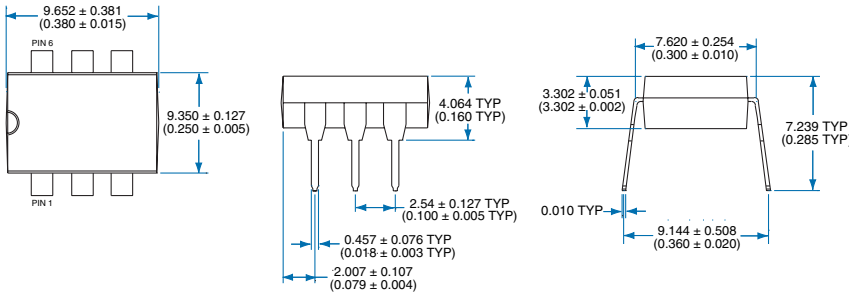


Washing

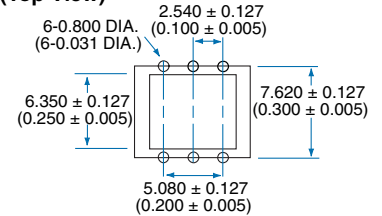
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

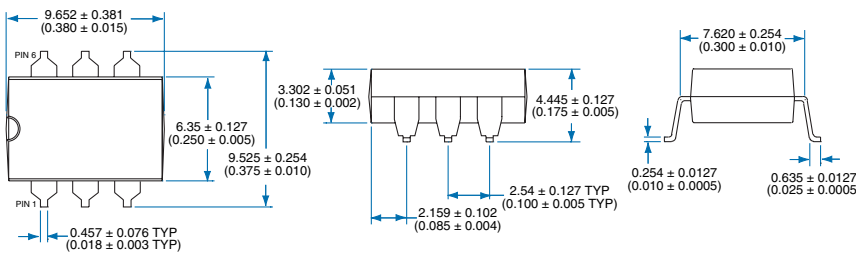
6-Pin Power DIP Through Hole (Standard)



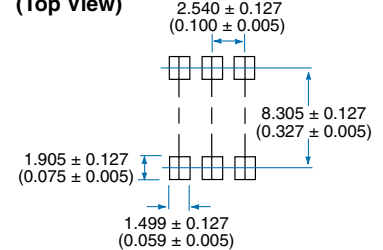
PC Board Pattern (Top View)



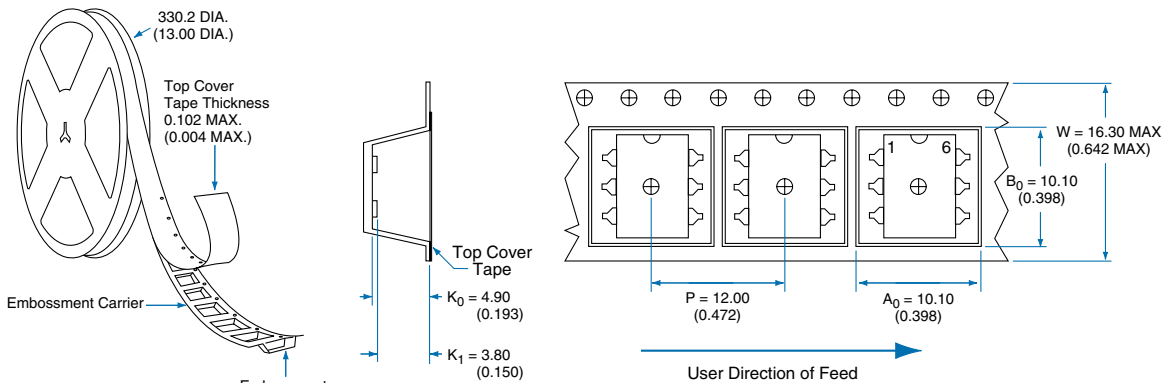
6-Pin Surface Mount ("S" Suffix)



PC Board Pattern (Top View)



Tape and Reel Packaging for Surface Mount Package



Dimensions:
mm
(inches)

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