CPC1965Y
AC Solid State Relay

Parameter	Rating	Units
AC Operating Voltage	260	V_{rms}
Load Current	1	A_{rms}
On State Voltage Drop	1.6	V_{rms} (at I_L = $1A_{rms}$)

Features
- Load Current up to $1A_{rms}$
- $600V_P$ 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

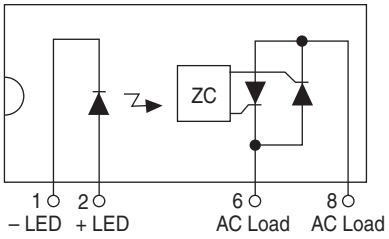
Description
The CPC1965Y is an AC Solid State Switch using patented waveguide coupling with dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. The switches are robust enough to provide a blocking voltage of up to $600V_P$. In addition, tightly controlled zero-cross circuitry 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 CPC1965Y is well suited for industrial environments where electromagnetic interference could disrupt the operation of electromechanical relays.

Approvals
- UL Recognized Component: File # E69938
- CSA Certified Component: Certificate # 1172007

Ordering Information

Part #	Description
CPC1965Y	4-Lead, 8-Pin SIP (25/Tube)

Pin Configuration



Absolute Maximum Ratings (@ 25˚ C)

Parameter	Ratings	Units
Blocking Voltage	600	V_P
Reverse Input Voltage	5	V
Input Control Current	100	mA
Peak (10ms)	1	A
Input Power Dissipation [1]	150	mW
PD , Total Package Dissipation [2]	1600	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 16.6 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.

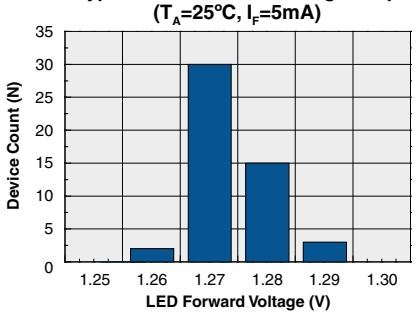
Electrical Characteristcs

Parameters	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Operating Voltage Range	V_L	-	20	-	260	V_{rms}
Load Current, Continuous	V_L=120-260V_{rms}	I_L	0.005	-	1.0	A_{rms}
Non-Repetitive Single Cycle Surge Current	-	I_{TSM}	-	-	10	A
Off State Leakage Current	V_L=600V_P	I_{LEAK}	-	-	1	mA
On-State Voltage Drop	I_L=1A_{rms}	-	-	-	1.6	V_{rms}
Critical Rate of Rise [3]	-	dV/dt	1000	-	-	V/µs
Switching Speeds						
Turn-on	I_F=5 mA	t_{ON}	-	-	0.5	cycles
Turn-off		t_{OFF}	-	-	0.5	
Zero-Cross Turn-On Voltage	1st half cycle	-	-	2	10	V
	Subsequent half cycle	-	-	1	-	V
Operating Frequency [1]	-	-	20	-	400	Hz
Load Power Factor for Guaranteed Turn-On [2]	-	PF	0.25	-	-	-
Input Characteristics @ 25°C						
Input Control Current [4]	-	I_F	-	0.8	5	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.2	1.4	V
Input Drop-out Voltage	-	-	0.8	-	-	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics @ 25°C						
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF

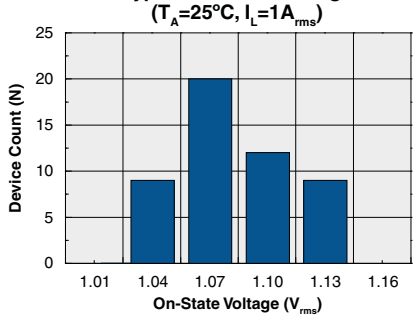
[1] Zero Cross 1st half cycle @ <100Hz
[2] Snubber circuits may be required at low power factors.
[3] Tested in accordance with EIA/NARM standard RS-443.
[4] For high noise environments, use I_F=10mA.

PERFORMANCE DATA*

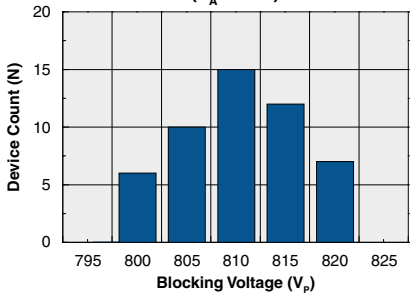
Typical LED Forward Voltage Drop
(T_A=25°C, I_F=5mA)



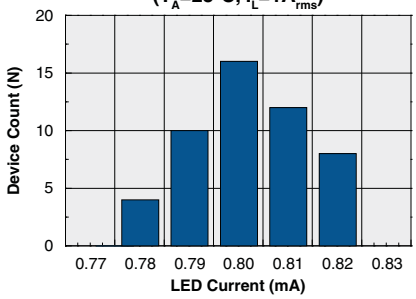
Typical On-State Voltage
(T_A=25°C, I_L=1A_{rms})



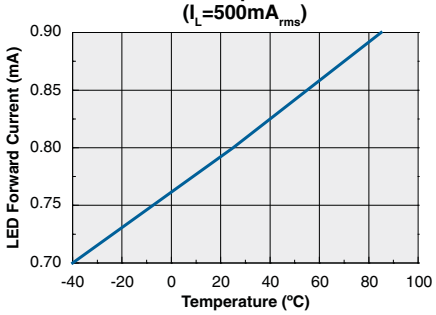
Typical Blocking Voltage Distribution
(T_A=25°C)



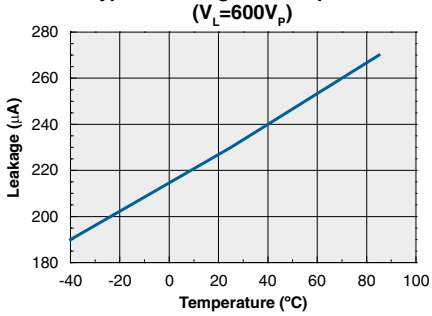
Typical I_F for Switch Operation
(T_A=25°C, I_L=1A_{rms})



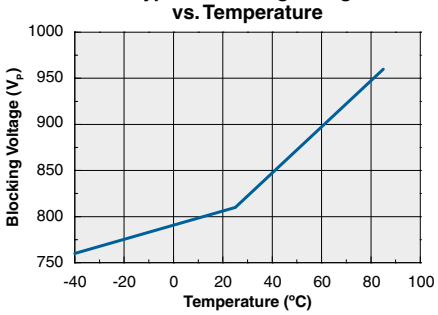
Typical I_F for Switch Operation
vs. Temperature
(I_L=500mA_{rms})



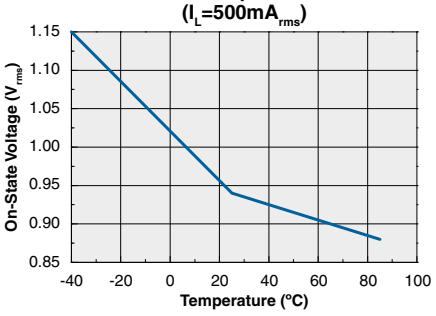
Typical Leakage vs. Temperature
(V_L=600V_P)



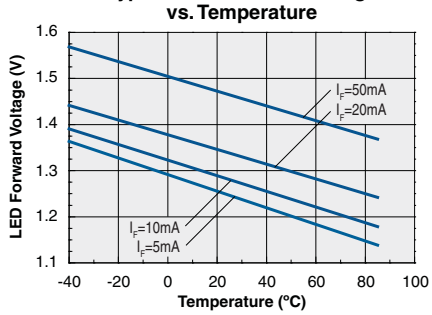
Typical Blocking Voltage
vs. Temperature



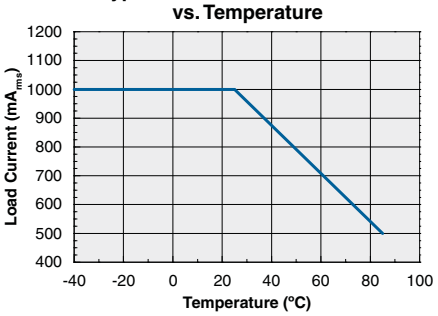
Typical On-State Voltage
vs. Temperature
(I_L=500mA_{rms})



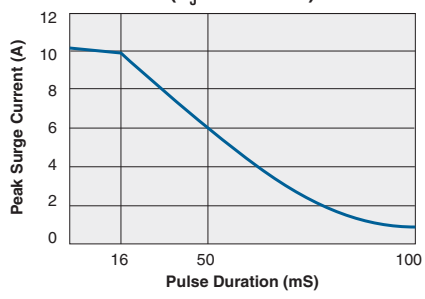
Typical LED Forward Voltage
vs. Temperature



Typical Maximum Load Current
vs. Temperature



Maximum Surge Current
(non-repetitive)
(T_J=50°C max)



*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

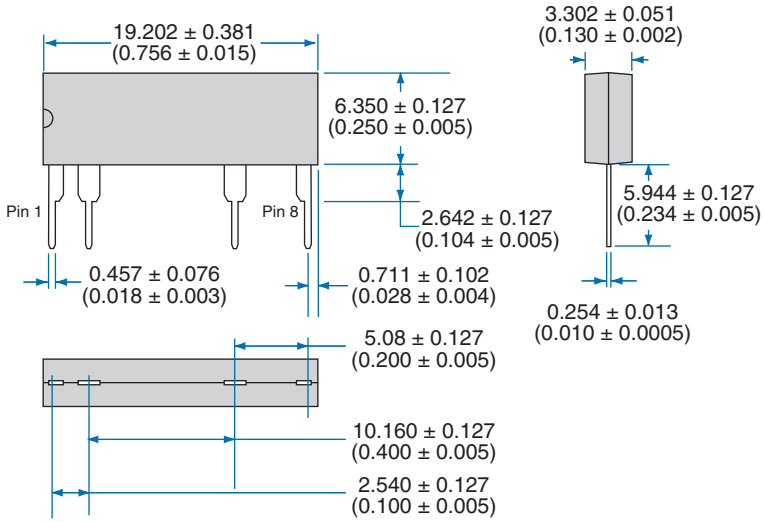
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

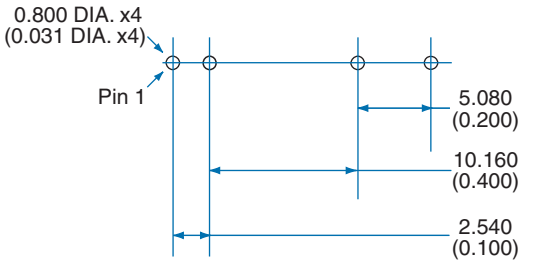
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

4-Lead, 8-Pin, SIP Package



Recommended PCB Hole Pattern



Dimensions
mm
(inches)

For additional information please visit our website at: www.clare.com

Specification: DS-CPC1965Y-R04

9/16/08