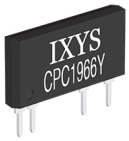
IXYS
INTEGRATED CIRCUITS DIVISION



CPC1966Y
600V, 3A$_{rms}$
AC Power Switch

Parameter	Rating	Units
AC Operating Voltage	20 - 240	V_{rms}
Load Current	3	A_{rms}
On-State Voltage Drop	0.8	V_{rms} (at I_L = 3A_{rms})
Blocking Voltage	600	V_P

Features

- Load Current up to 3A_{rms}
- 600V_P Blocking Voltage
- 5mA Sensitivity
- Zero-Crossing Detection
- DC Control, AC Output
- Optically Isolated
- Low EMI and RFI Generation
- High Noise Immunity
- Flammability Rating UL 94 V-0

Applications

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

Description

CPC1966Y is an AC Solid State Switch utilizing dual power SCR outputs. This device also includes zero-cross turn-on circuitry, and is specified with a blocking voltage of 600V_P .

In addition, the tightly controlled zero-cross circuitry ensures low noise switching of AC loads by minimizing the generation of transients.

The optically coupled input and output circuits provide 3750V_{rms} of isolation and noise immunity between the control and load circuits. As a result, the CPC1966Y is well suited for industrial environments where electromagnetic interference would disrupt the operation of plant facility communication and control systems.

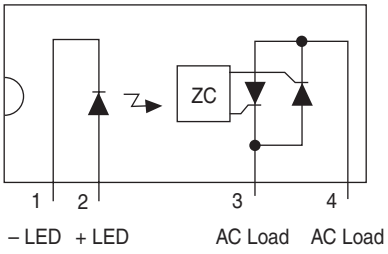
Approvals

- UL Recognized Component: File E69938
- CSA Certified Component: File 1172007

Ordering Information

Part #	Description
CPC1966Y	4-Pin (8-Pin Body) Power SIP Package(25/Tube)

Pin Configuration



Absolute Maximum Ratings @ 25ºC

Parameter	Ratings	Units
Blocking Voltage (V_{DRM})	600	V_P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation [1]	150	mW
Total Power Dissipation [2]	2400	mW
Isolation Voltage, Input to Output	3750	V_{rms}
Operational Temperature, Ambient	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate linearly 1.33 mW / ºC
[2] Derate output power linearly 20 mW / ºC

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.

Typical values are characteristic of the device at +25°C, and are the result of engineering evaluations. They are provided for information purposes only, and are not part of the manufacturing testing requirements.

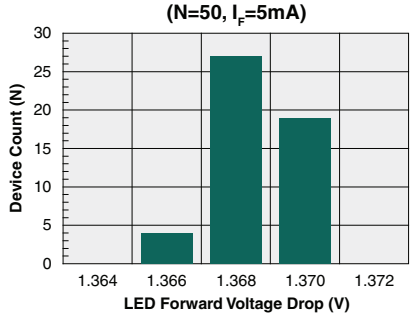
Electrical Characteristics @ 25ºC

Parameters	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Blocking Voltage	I_L=1µA	V_{DRM}	600	-	-	V
Load Current	Free Air, V_L=120-240V_{rms}					
Continuous		I_L	0.1	-	3	A_{rms}
Surge	t ≤ 16ms	I_P	-	-	30	A
Off State Leakage Current	V_{DRM}	I_{LEAK}	-	-	100	μA_P
On-State Voltage Drop [1]	I_L=2A_P	-	-	0.88	1.1	V_P
Off-State dV/dt	-	dV/dt	500	-	-	V/µs
Switching Speeds						
Turn-on	I_F = 5 mA	t_{on}	-	-	0.5	cycles
Turn-off		t_{off}	-	-	0.5	cycles
Zero-Cross Turn-On Voltage [2]	1st half-cycle	-	-	5	20	V
	Subsequent half-cycle	-	-	-	5	V
Holding Current	-	I_H	-	44	50	mA
Latching Current	-	I_L	-	48	75	mA
Operating Frequency	-		20	-	500	Hz
Load Power Factor for Guaranteed Turn-On [3]	60Hz	PF	0.25	-	-	-
Input Characteristics						
Input Control Current to Activate [4]	60Hz	I_F	-	-	5	mA
Input Drop-out Voltage	-	-	0.8	-	-	V
Input Voltage Drop	I_F=5mA	V_F	0.9	1.36	1.5	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics						
Input to Output Capacitance	V_{IO}=0V, f=1MHz	C_{IO}	-	-	3	pF

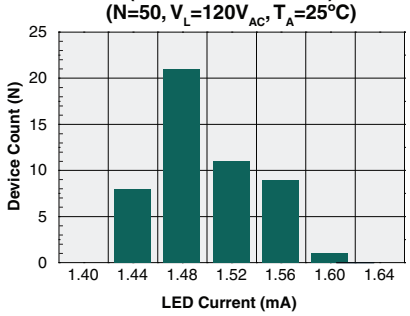
[1] Tested at a peak value equivalent.
[2] Zero Cross 1st half-cycle @ <100Hz.
[3] Snubber circuits may be required at low power factors.
[4] For high-noise environments, or for high-frequency operation, use $I_F \geq$ 10mA.

PERFORMANCE DATA*

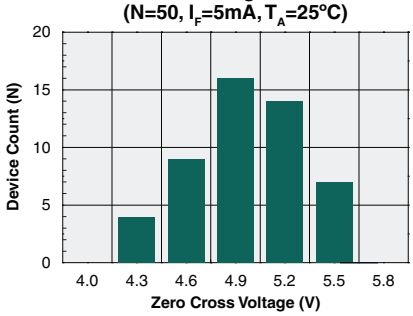
Typical LED Forward Voltage Drop
(N=50, I_F=5mA)



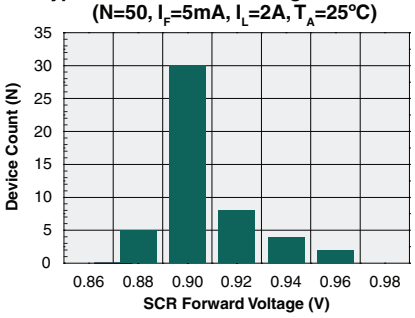
LED Current to Operate Distribution
(60Hz Resistive Load)
(N=50, V_L=120V_{AC}, T_A=25°C)



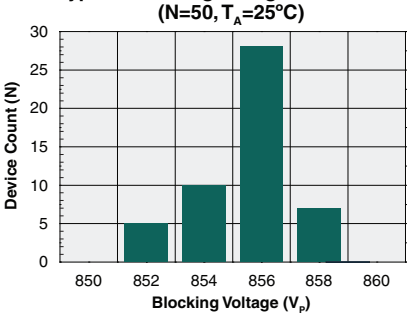
Zero Cross Voltage Distribution
(N=50, I_F=5mA, T_A=25°C)



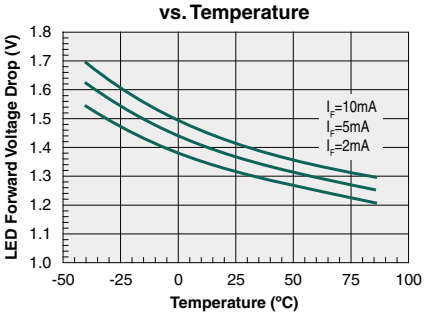
Typical SCR Forward Voltage Distribution
(N=50, I_F=5mA, I_L=2A, T_A=25°C)



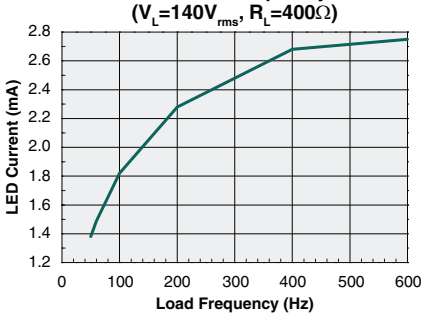
Typical Blocking Voltage Distribution
(N=50, T_A=25°C)



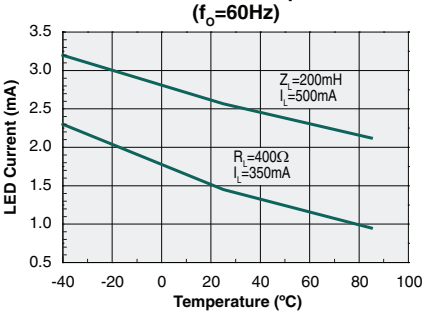
Typical LED Forward Voltage Drop
vs. Temperature



LED Current to Operate
vs. Load Frequency
(V_L=140V_{rms}, R_L=400Ω)



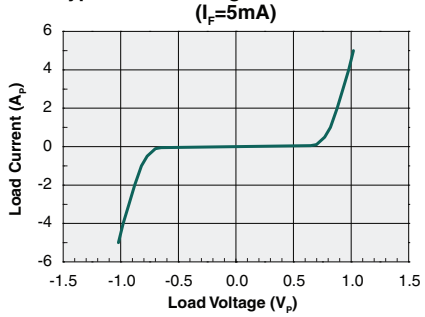
LED Current to Operate
(f_O=60Hz)



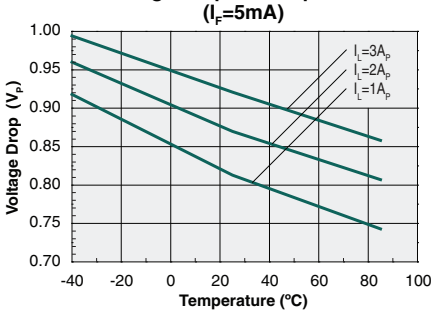
*Unless otherwise noted, data presented in these graphs is typical of device operation at 25ºC.

PERFORMANCE DATA*

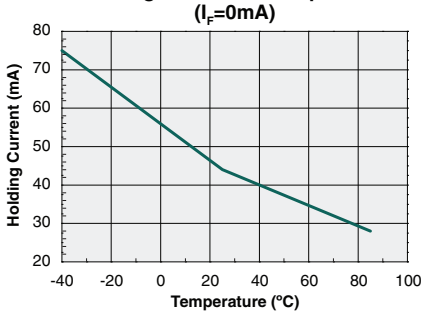
Typical Load Voltage vs. Load Current (I_F=5mA)



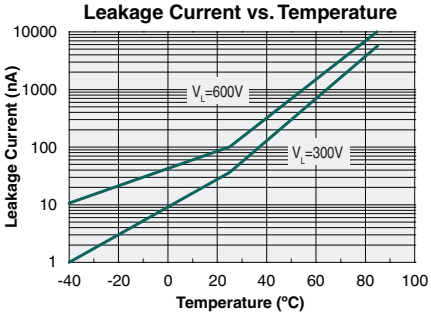
Voltage Drop vs. Temperature (I_F=5mA)



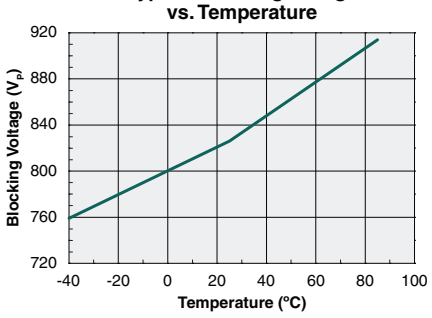
Holding Current vs. Temperature (I_F=0mA)



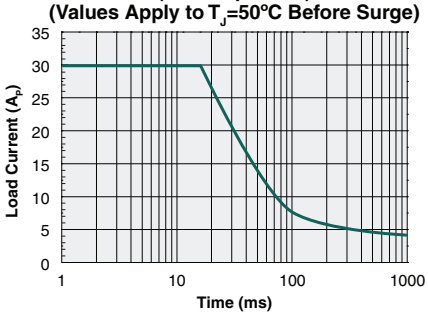
Leakage Current vs. Temperature



Typical Blocking Voltage vs. Temperature



Maximum Surge Current (Non-Repetitive) (Values Apply to T_J=50°C Before Surge)



*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.

Manufacturing Information

ESD Sensitivity

This product is ESD Sensitive, and should be handled according to the industry standard **JESD-625**.

Soldering Profile

The Maximum Solder Temperature and the Maximum Total Dwell Time in all solder waves the device pins (leads) may be at the Maximum Solder Temperature is given in the table below. The body temperature of the device must not exceed the Maximum Body Temperature shown below at any time during the soldering process.

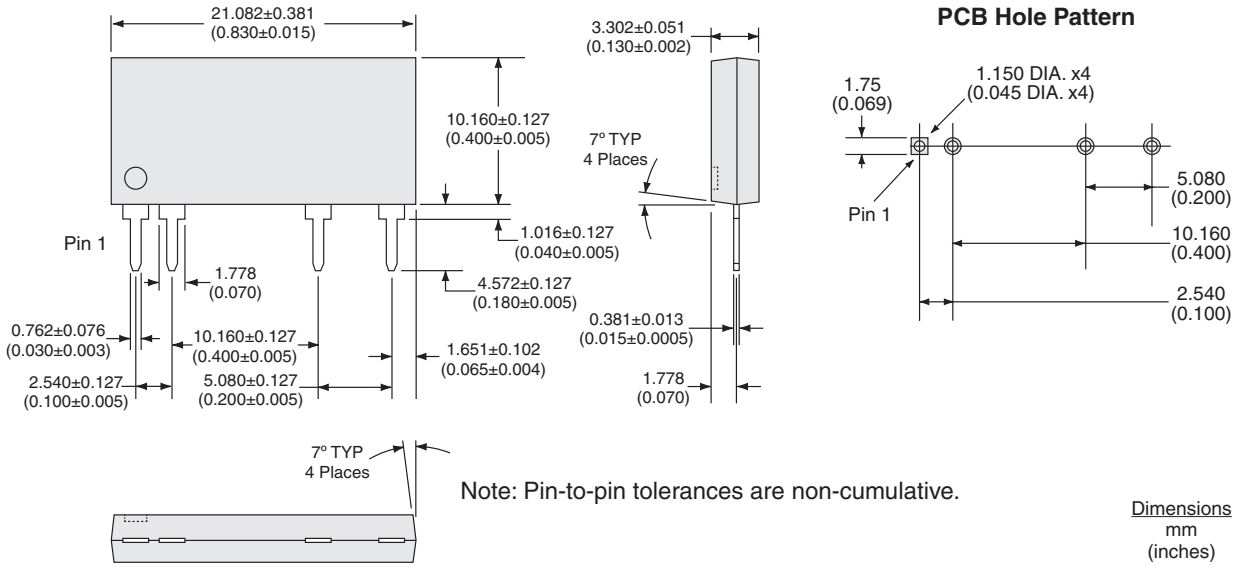
Device	Maximum Solder Temperature	Maximum Body Temperature	Maximum Total Dwell Time	Wave Cycles
CPC1966Y	260°C	245°C	10 seconds	1

Board Wash

IXYS Integrated Circuits recommends the use of no-clean flux formulations. Board washing to reduce or remove flux residue following the solder reflow process is acceptable provided proper precautions are taken to prevent damage to the device. These precautions include but are not limited to: using a low pressure wash and providing a follow up bake cycle sufficient to remove any moisture trapped within the device due to the washing process. Due to the variability of the wash parameters used to clean the board, determination of the bake temperature and duration necessary to remove the moisture trapped within the package is the responsibility of the user (assembler). Cleaning or drying methods that employ ultrasonic energy may damage the device and should not be used. Additionally, the device must not be exposed to halide flux or solvents.

MECHANICAL DIMENSIONS

CPC1966Y



Note: Pin-to-pin tolerances are non-cumulative.

Dimensions
mm
(inches)

For additional information please visit our website at: https://www.ixysic.com

IXYS
A Littelfuse Technology

Specification: DS-CPC1966-R06

8/3/2021