



	CPC1945Y	Units
Load Voltage	120	V_{RMS}
Load Current	1.0	A
On-State Voltage Drop	1.6	V_{RMS} (at $I_L=1.0A$)

Features

- Load Current up to 1A
- Blocking Voltage to 400V
- 5mA Sensitivity
- Zero-Crossing Detection
- DC Control, AC Output
- Optically Isolated
- TTL and CMOS Compatible
- Low EMI and RFI Generation
- High Noise Immunity
- VDE compatible
- Machine Insertable, Wave Solderable

Applications

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

Description

The CPC1945Y is a AC Solid State Switch using patented waveguide coupling with dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. The CPC1945Y switches are robust enough to provide a blocking voltage of up to 400V. 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 of isolation and noise immunity between control and load circuits. As a result the CPC1945Y is well suited for industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

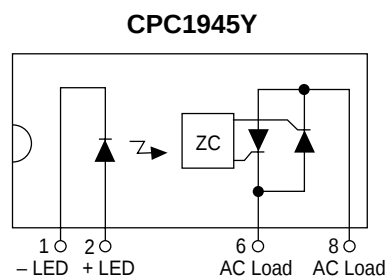
Approvals

- UL recognized file #: Pending
- CSA certified file #: Pending

Ordering Information

Part #	Description
CPC1945Y	8 Pin SIP (25/Tube)

Pin Configuration



Absolute Maximum Ratings (@ 25° C)

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150 ¹	mW
Input Control Current	-	-	50	mA
Peak (10ms)	-	-	1	A
Reverse Input Voltage	-	-	5	V
Total Package Dissipation PD	-	-	1600 ²	mW
Isolation Voltage Input to Output	3750	-	-	V _{RMS}
Operational Temperature	-40	-	+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature (10 Seconds Max.) DIP Package	-	-	+260	°C

¹ Derate Linearly 1.33 mW/°C² 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 these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.

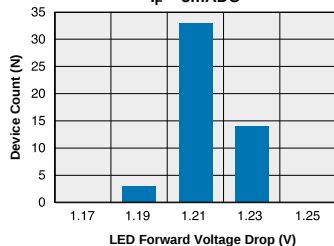
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Operating Voltage Range	V _T		20	-	120	V _{RMS}
Peak Blocking Voltage	-	V _{DRM}	-	-	400	V
Load Current (Continuous)	V _L =120VAC	I _L	0.005	-	1.0	I _{A RMS}
Non-repetitive Single Cycle Surge Current	-	I _{TSM}	-	-	10	A
Off State Leakage Current	V _{DRM}	I _{LEAK}	-	-	1	mA
On-State Voltage Drop	I _L =1.0A		-	-	1.6	V _{RMS}
Critical Rate of Rise ³		dv/dt	500	-	-	V/μS
Switching Speeds						
Turn-on	I _F =5 mA	T _{ON}	-	-	0.5	Cycles
Turn-off	I _F =5 mA	T _{OFF}	-	-	0.5	Cycles
Zero-Cross Turn-On Voltage	1st half cycle		-	2	10	V
	Sub. half cycle		-	-	1	V
Operating Frequency ¹	-		20	-	400	Hz
Load Power Factor for Guaranteed Turn-On ²	-	PF	0.25	-	-	-
Capacitance Input to Output	-	-	-	3	-	pF
Input Characteristics @ 25°C						
Input Control Current						
For Normal Environment	-	I _F	5	-	50	mA
For High Noise Environment	-	I _F	10	-	100	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	uA

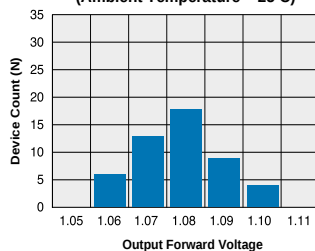
¹ Zero cross 1st 1/2 cycle @ <100Hz² Snubber circuits may be required at low power factors.³ Tested in accordance with EIA/NARM Standard RS-443.

PERFORMANCE DATA*

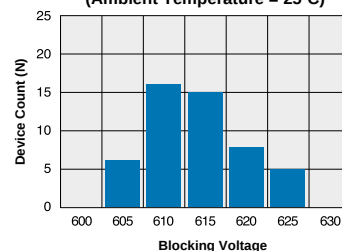
CPC1945Y
Typical LED Forward Voltage Drop
(Ambient Temperature = 25°C)
 $I_F = 5\text{mA}$



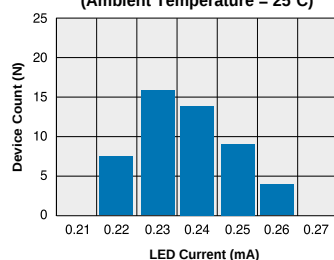
CPC1945Y
Typical On-State Output
Forward Voltage Distribution
(Ambient Temperature = 25°C)



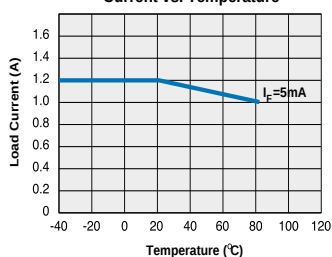
CPC1945Y
Typical Blocking Voltage Distribution
(Ambient Temperature = 25°C)



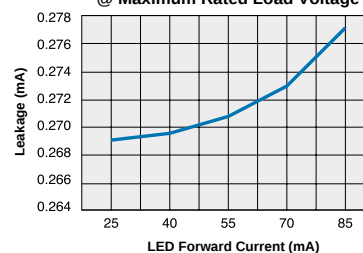
CPC1945Y
Typical I_F for Switch Operation
(Ambient Temperature = 25°C)



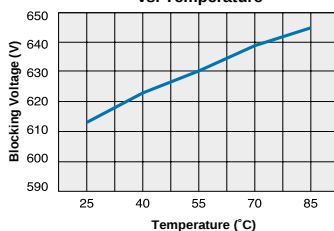
CPC1945Y
Typical Maximum Load
Current vs. Temperature



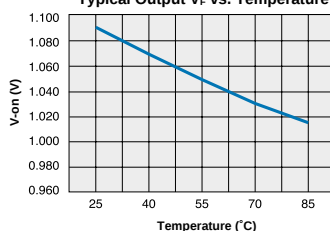
CPC1945Y
Typical Leakage vs. Temperature
@ Maximum Rated Load Voltage



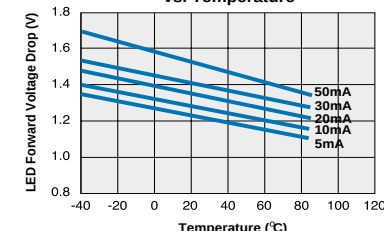
CPC1945Y
Typical Blocking Voltage
vs. Temperature



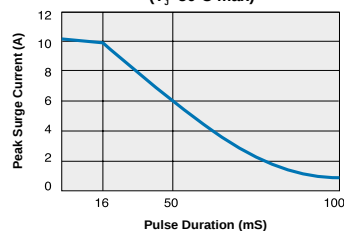
CPC1945Y
Typical Output V_F vs. Temperature



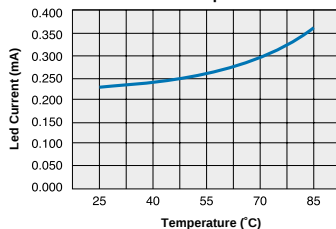
CPC1945Y
Typical LED Forward Voltage Drop
vs. Temperature



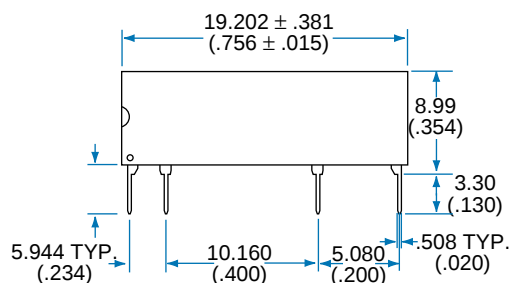
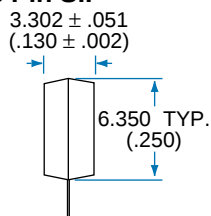
CPC1945Y
Maximum Surge Current (non-repetitive)
($T_J = 50^\circ\text{C}$ max)



CPC1945Y
Typical I_F for Switch Operation
Over Temperature



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
8 Pin SIP


Dimensions
mm
(inches)

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