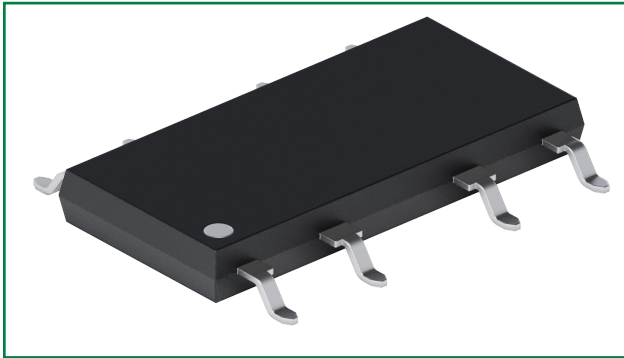


CPC1966B

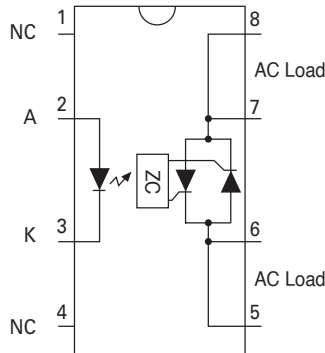
AC Power Switch

Key Attributes

Characteristic	Rating	Unit
AC Operating Voltage	20 - 280	V_{rms}
Load Current	3	A_{rms}
On-State Voltage Drop	0.8	V_{rms} (at $I_L = 3 A_{rms}$)
Blocking Voltage	800	V_P



Pin Configuration



Description



CPC1966B 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 800 V_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 5000 V_{rms} of isolation and noise immunity between the control and load circuits. As a result, the CPC1966B is well suited for industrial environments where electromagnetic interference would disrupt the operation of plant facility communication and control systems.

Features

- Load Current up to 3 A_{rms}
- 800 V_P Blocking Voltage
- 5 mA Sensitivity
- 5000 V_{rms} Input/Output Isolation
- Off-State dV/dt : 1000 $V/\mu s$ Minimum
- 12.5 mm External Creepage Distance with Appropriate Layout
- Zero-Cross Switching
- DC Control, AC Output
- Optically Isolated
- TTL and CMOS Compatible
- Low EMI and RFI Generator
- High Noise Immunity

Applications

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

Approvals

- UL 508 Recognized Component: File E69938
- EN IEC 62368-1: TUV Certificate B 082667 0008

Ordering Information

Part Number	Description
CPC1966B	8-Pin Power SOIC Package (25 per tube)

Specifications

Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage (V_{DRM})	800	V_{P}
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10 ms)	1	A
Input Power Dissipation ¹	150	mW
Total Power Dissipation ²	2400	
Isolation Voltage, Input to Output (60 Seconds Maximum)	5000	V_{rms}
ESD, Human Body Model	8	kV
Operational Temperature, Ambient	-40 to +85	°C
Storage Temperature	-40 to +125	

¹ Derate linearly 1.33 mW/°C

² Derate linearly 20 mW/°C

Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Value			Units
			Minimum	Typical	Maximum	

Output Characteristics

Load current:						
Continuous	$V_{\text{L}} = 120 - 280 V_{\text{rms}}$	I_{L}	0.1	—	3	A_{rms}
Maximum Surge Current	$t \leq 16 \text{ ms}$	I_{P}	—	—	30	A_{P}
Off-state leakage current	V_{DRM}	I_{LEAK}	—	—	100	μA_{P}
On-state Voltage Drop ¹	$I_{\text{L}} = 2 A_{\text{P}}$	—	—	0.88	1.1	V_{P}
Off-State dV/dt	$I_{\text{F}} = 0 \text{ mA}$	dV/dt	1000	—	—	V/ μs
Switching speeds:						
Turn-on	$I_{\text{F}} = 5 \text{ mA}$	t_{on}	—	—	0.5	cycles
Turn-off		t_{off}	—	—	0.5	
Zero-Cross Turn-On Voltage ²	1st half cycle	—	—	5	20	V
	Subsequent half cycle	—	—	—	5	
Holding Current	—	I_{H}	—	44	50	mA
Latching Current	—	I_{L}	—	48	75	
Operating Frequency	—	—	20	—	500	Hz
Load Power Factor for Guaranteed Turn-On ³	60 Hz	PF	0.25	—	—	—

Input Characteristics

LED Control Current ⁴	$f = 60 \text{ Hz}$, $I_{\text{L}} = 1 \text{ A}$ Resistive	I_{F}	—	—	5	mA
Input Drop-out Voltage	—	—	0.8	—	—	V
Input Voltage Drop	$I_{\text{F}} = 5 \text{ mA}$	V_{F}	0.9	1.2	1.5	V
Reverse Input Current	$V_{\text{R}} = 5 \text{ V}$	I_{R}	—	—	10	μA

Common Characteristics

Input to Output Capacitance	$V_{\text{IO}} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{IO}	—	—	3	pF
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¹ Tested at a peak value equivalent.

² Zero Cross 1st half cycle @ < 100 Hz.

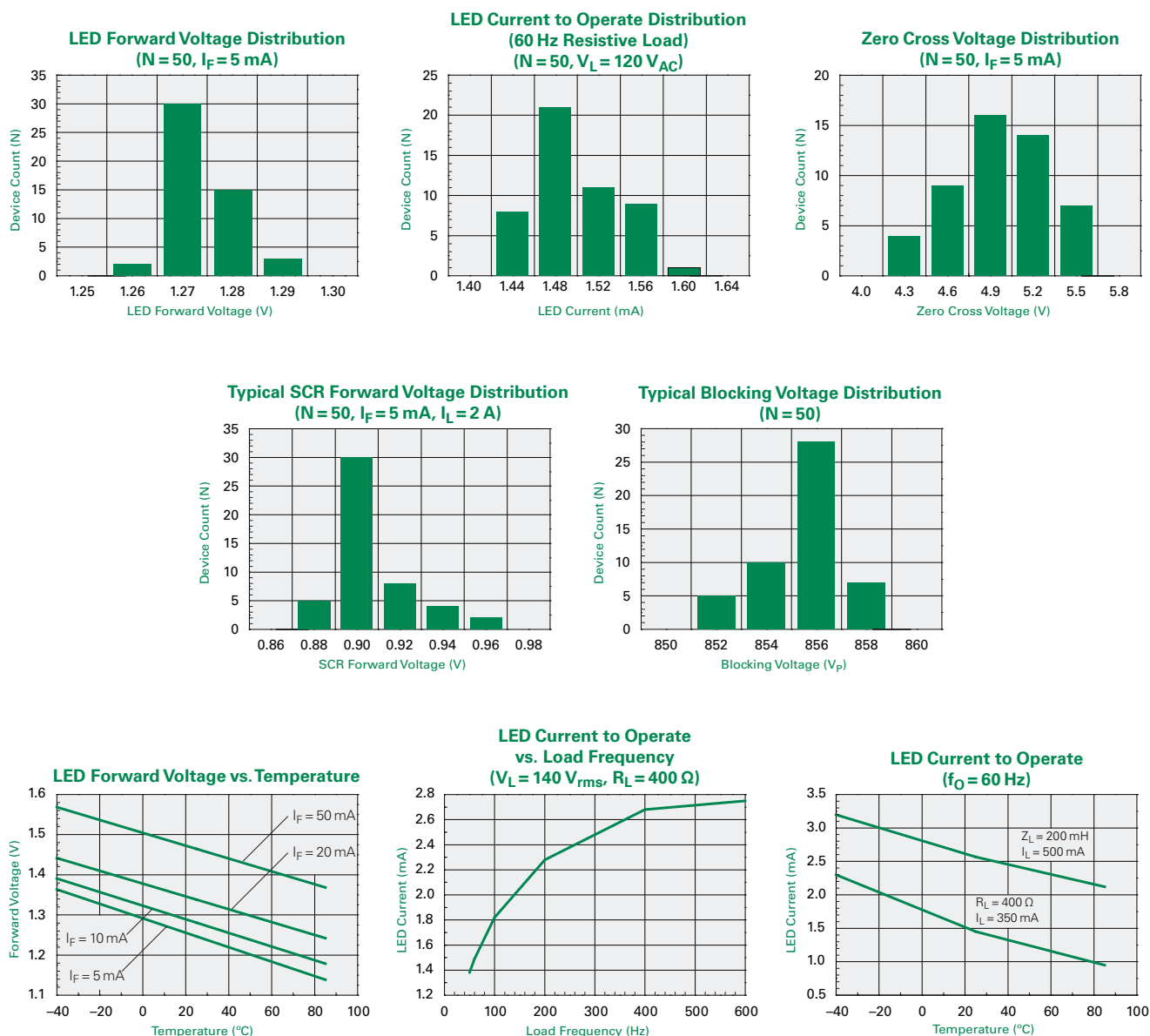
³ Snubber circuits may be required at low power factors.

⁴ For high-noise environments, or for high-frequency operation, use $I_{\text{F}} \geq 10 \text{ mA}$.

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.

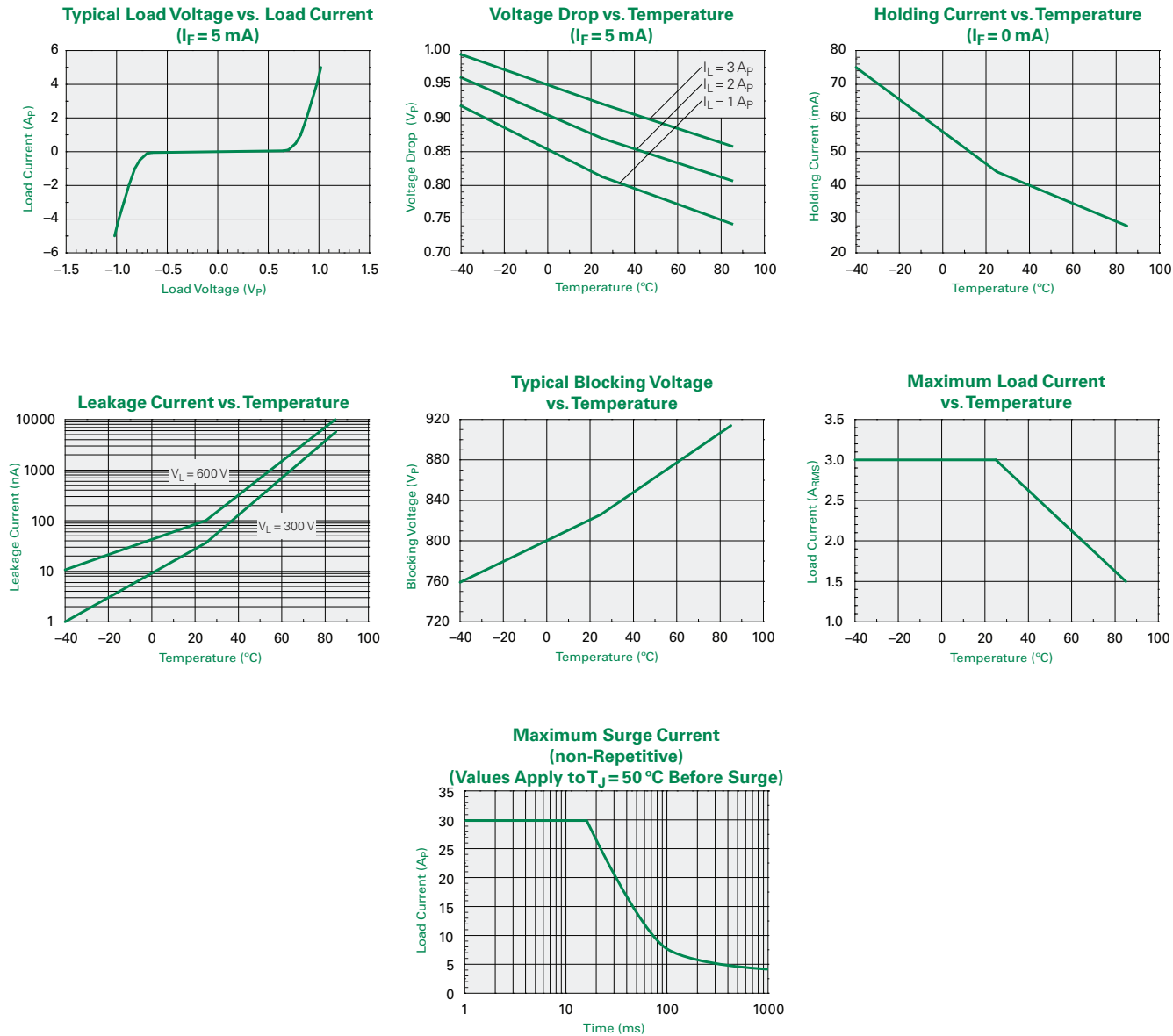
Typical values are characteristic of the device at +25°C, and are the result of engineering evaluations. They are provided for information purposes only, and are not part of the manufacturing testing requirements.

Performance Data (@ 25 °C Unless Otherwise Noted)*



*Unless otherwise noted, data presented in these graphs is typical of device operation at $T_A = 25^\circ\text{C}$.

Performance Data (@ 25 °C Unless Otherwise Noted)*



*Unless otherwise noted, data presented in these graphs is typical of device operation at $T_A = 25^\circ\text{C}$.

Manufacturing Information

Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Littelfuse classifies its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL)** classification as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Classification
CPC1966B	MSL 1

ESD Sensitivity



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

Soldering Profile

Provided in the table below is the **IPC/JEDEC J-STD-020** Classification Temperature (T_C) and the maximum dwell time ($T_C - 5^\circ\text{C}$). The Classification Temperature sets the Maximum Body Temperature allowed for these devices during reflow soldering processes.

Device	Maximum Temperature x Time
CPC1966B	245°C for 30 seconds

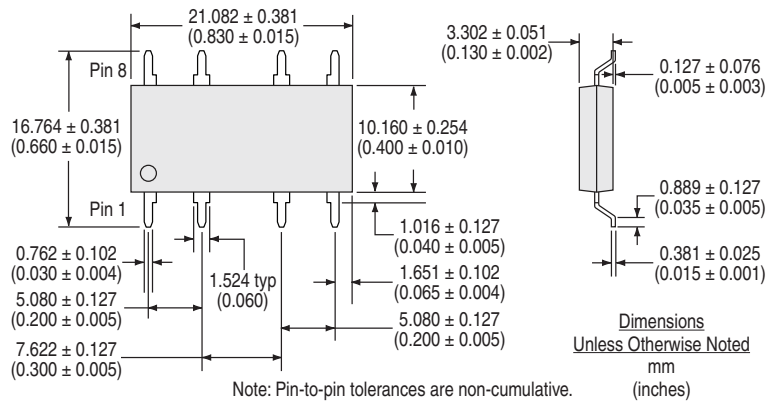
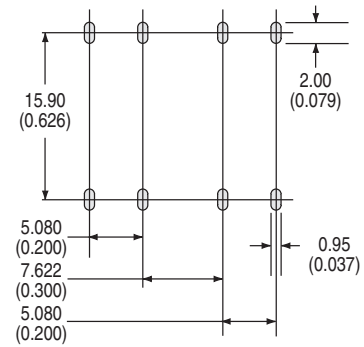
Board Wash

Littelfuse 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

CPC1966B

**Recommended PCB Pattern**

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <https://www.littelfuse.com/disclaimer-electronics>