

Parameter	Ratings	Units
Blocking Voltage	60	$V_P$
Load Current	2	$A_{rms} / A_{DC}$
On-Resistance (max)	0.15	$\Omega$

### Features

- Dual Relays
- Low On-resistance: 150m $\Omega$  Max
- 2 Amp Load Current; Single-Pole Operation
- 4000V<sub>rms</sub> Input/Output Isolation
- Low Drive Power Requirements
- High Reliability
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- 8-Pin SOIC Surface Mount Package
- Flammability Rating UL 94 V-0

### Applications

- Security
- Instrumentation
- Multiplexers
- Data Acquisition
- Electronic Switching
- I/O Subsystems
- Medical Equipment-Patient/Equipment Isolation
- Industrial Controls

### Description

CPC2907B is a dual, normally open (1-Form-A) Solid State Relay that comprises two independent, optically coupled MOSFET switches. The combination of highly efficient LEDs and photovoltaic die makes possible an input to output isolation of 4000V<sub>rms</sub>.

The optically coupled output driver, which uses the patented OptoMOS architecture, is controlled by a highly efficient infrared LED.

Dual OptoMOS relays provide a more compact design solution than discrete single-pole relays in a variety of applications, saving board space by incorporating both switches in a single 8-pin package.

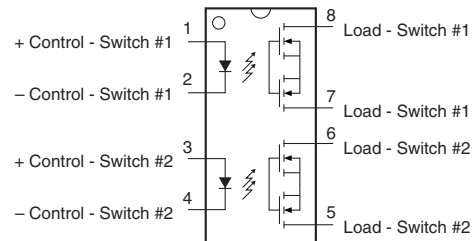
### Approvals

- UL 508 Certified Component: File E69938
- CSA Certified Component: Certificate 1175739
- EN/IEC 60950-1 Certified Component: TUV Certificate B 13 12 82667 003

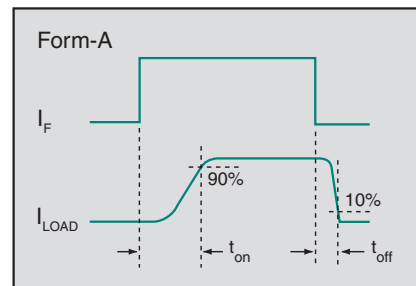
### Ordering Information

Part #	Description
CPC2907B	8-Pin Power SOIC (25/Tube)

### Pin Configuration



### Switching Characteristics of Normally Open (Form A) Devices



### Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	60	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation <sup>1</sup>	150	mW
Output Power Dissipation		
Single Pole <sup>2</sup>	1125	mW
Both Poles <sup>3</sup>	1700	
Isolation Voltage, Input to Output	4000	V <sub>rms</sub>
Operational Temperature (T <sub>A</sub> )	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate linearly 1.33 mW / °C

<sup>2</sup> Derate linearly 11.4 mW / °C

<sup>3</sup> Derate linearly 17.1 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.

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.

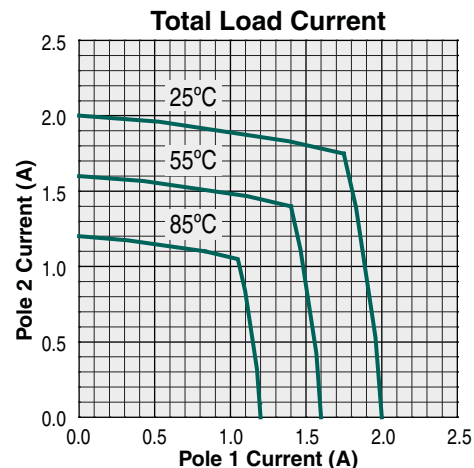
### Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics</b>						
Load Current						
Continuous, Single-pole <sup>1</sup>	-	I <sub>L</sub>	-	-	2	A <sub>rms</sub> / A <sub>DC</sub>
Peak	t=10ms	I <sub>LPK</sub>	-	-	±10	A <sub>P</sub>
On-Resistance <sup>2</sup>	I <sub>F</sub> =5mA, I <sub>L</sub> =1A	R <sub>ON</sub>	-	0.10	0.15	Ω
Off-State Leakage Current	V <sub>L</sub> =60V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	t <sub>on</sub>	-	0.62	2.5	ms
Turn-Off		t <sub>off</sub>	-	0.09	0.25	
Output Capacitance	I <sub>F</sub> =0mA, V <sub>L</sub> =50V, f=1MHz	C <sub>OUT</sub>	-	60	-	pF
<b>Input Characteristics</b>						
Input Control Current to Activate <sup>3</sup>	I <sub>L</sub> =1A	I <sub>F</sub>	-	0.78	5	mA
Input Control Current to Deactivate	-	-	0.4	0.78	-	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA
<b>Common Characteristics</b>						
Capacitance, Input to Output	V <sub>IO</sub> =0V, f=1MHz	C <sub>IO</sub>	-	3	-	pF

<sup>1</sup> If both poles operate at the same time, the load current must be derated in order not to exceed the package power dissipation value. See Total Load Current chart on this page.

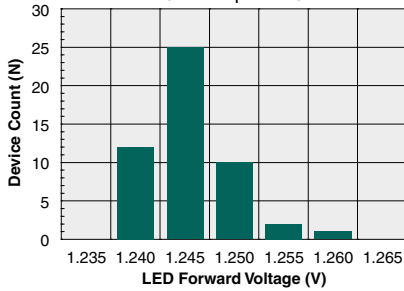
<sup>2</sup> Measurement taken within one (1) second of on-time.

<sup>3</sup> For applications requiring operation at temperatures greater than 60°C, a minimum LED drive current of 10mA is recommended.

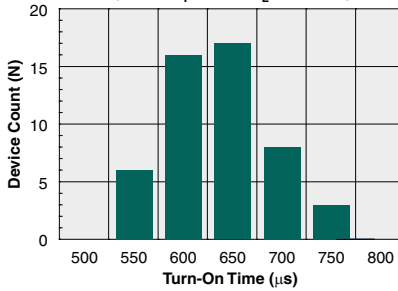


**PERFORMANCE DATA\***

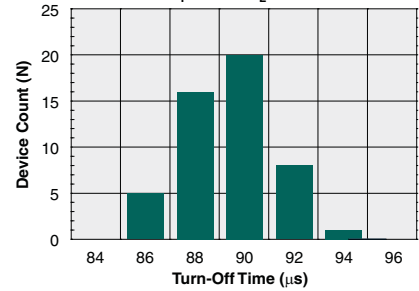
**LED Forward Voltage Distribution**  
(N=50,  $I_F=5\text{mA}$ )



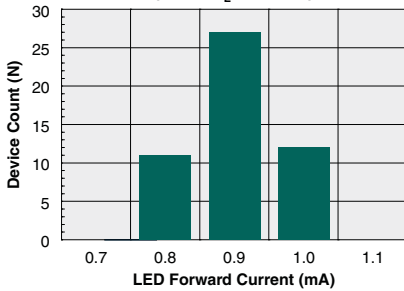
**Typical Turn-On Time**  
(N=50,  $I_F=5\text{mA}$ ,  $I_L=100\text{mA}$ )



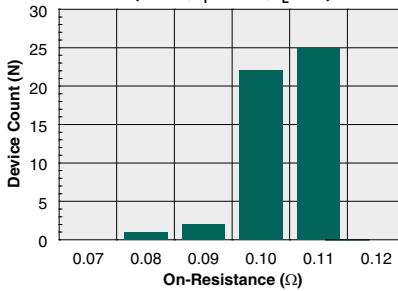
**Typical Turn-Off Time**  
(N=50,  $I_F=5\text{mA}$ ,  $I_L=100\text{mA}$ )



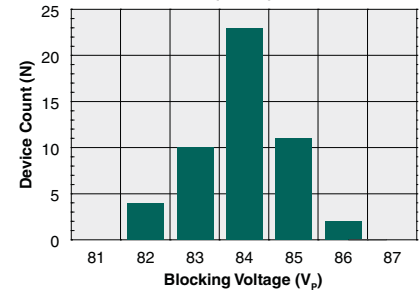
**Typical  $I_F$  for Switch Operation**  
(N=50,  $I_L=100\text{mA}$ )



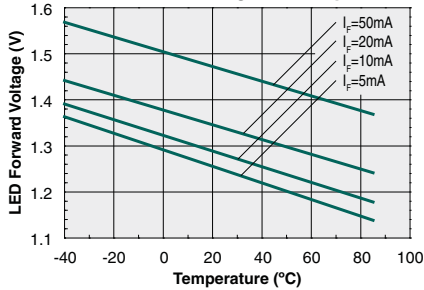
**Typical On-Resistance Distribution**  
(N=50,  $I_F=5\text{mA}$ ,  $I_L=1\text{A}$ )



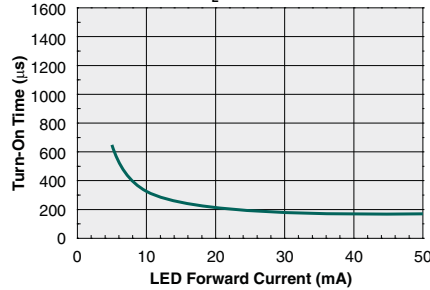
**Typical Blocking Voltage Distribution**  
(N=50)



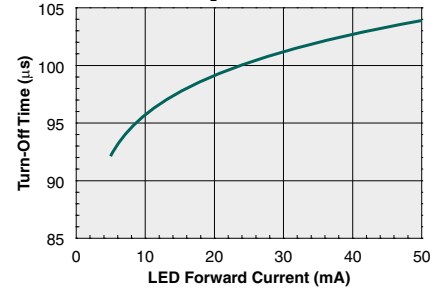
**LED Forward Voltage vs. Temperature**



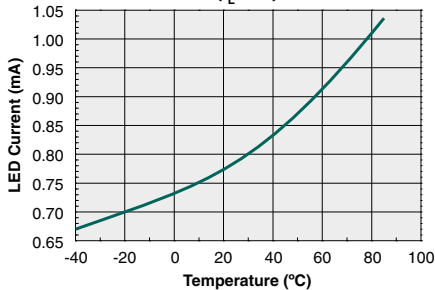
**Typical Turn-On Time vs. LED Forward Current**  
( $I_L=100\text{mA}$ )



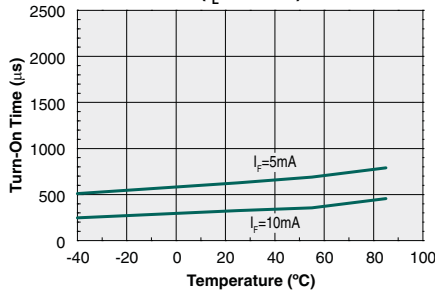
**Typical Turn-Off Time vs. LED Forward Current**  
( $I_L=100\text{mA}$ )



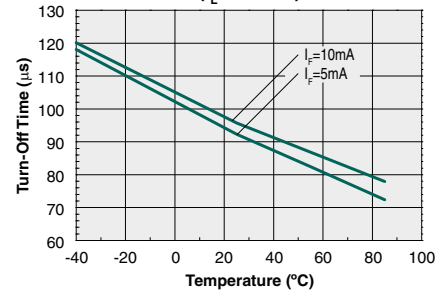
**Typical  $I_F$  for Switch Operation**  
( $I_L=1\text{A}$ )



**Typical Turn-On Time vs. Temperature**  
( $I_L=100\text{mA}$ )

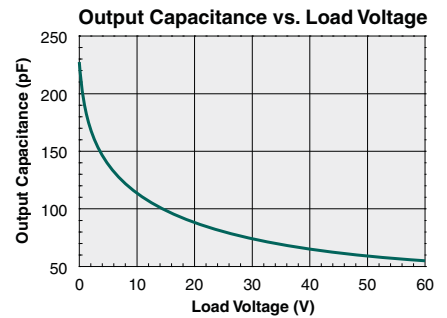
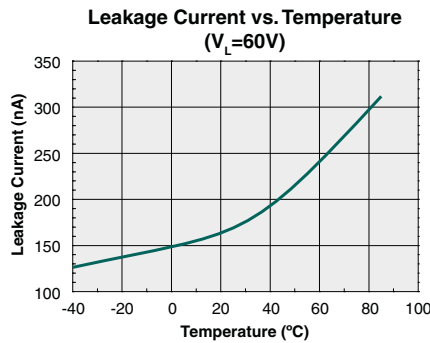
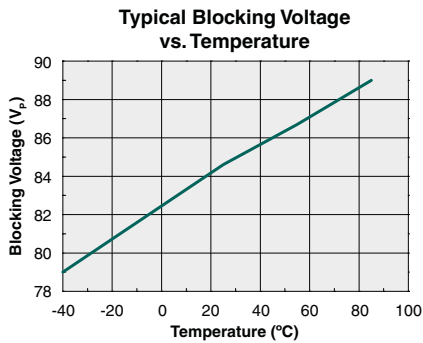
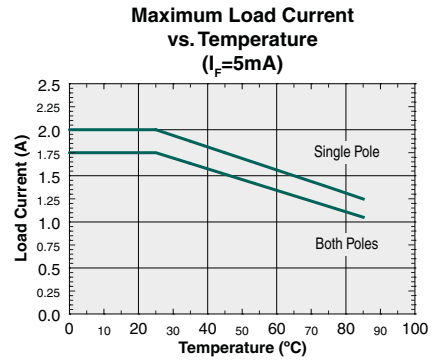
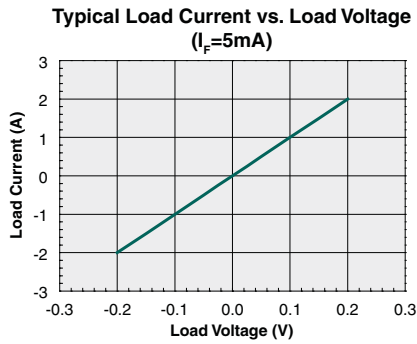
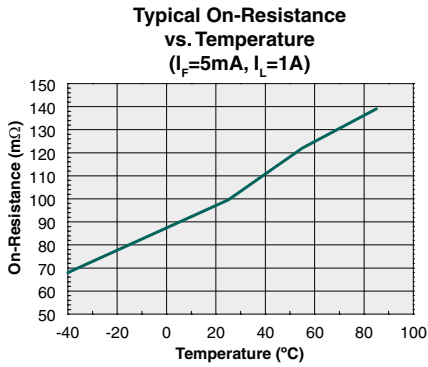


**Typical Turn-Off Time vs. Temperature**  
( $I_L=100\text{mA}$ )



\*The Performance data shown in the graphs above is typical of device operation. Unless otherwise noted, data is presented at 25°C. For guaranteed parameters not indicated in the written specifications, please contact our application department.

**PERFORMANCE DATA\***



\*The Performance data shown in the graphs above is typical of device operation. Unless otherwise noted, data is presented at 25°C. For guaranteed parameters not indicated in the written specifications, please contact our application department.

## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division 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
CPC2907B	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 Classification Temperature ( $T_C$ ) of this product and the maximum dwell time the body temperature of this device may be ( $T_C - 5$ )°C or greater. The classification temperature sets the Maximum Body Temperature allowed for this device during lead-free reflow processes. For through-hole devices, and any other processes, the guidelines of **J-STD-020** must be observed.

Device	Classification Temperature ( $T_C$ )	Dwell Time ( $t_p$ )	Max Reflow Cycles
CPC2907B	245°C	30 seconds	3

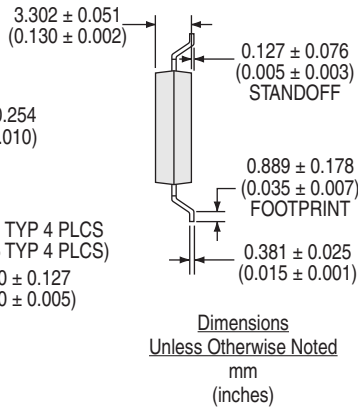
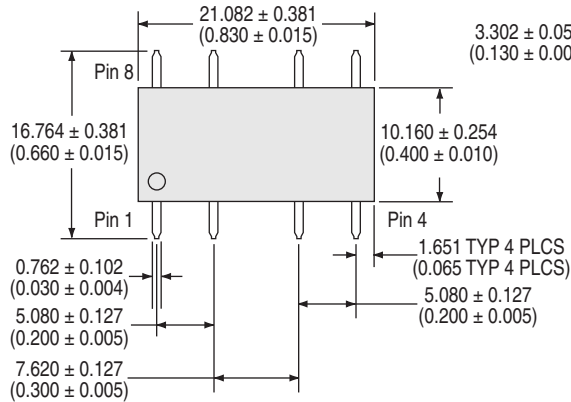
### Board Wash

IXYS Integrated Circuits Division 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 flux or solvents that are Chlorine- or Fluorine-based.

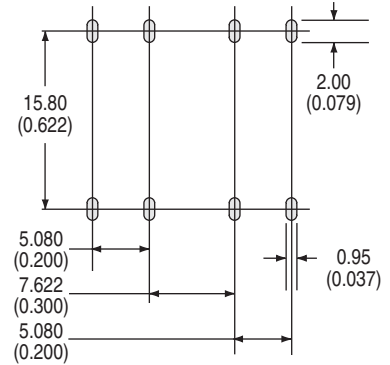


**MECHANICAL DIMENSIONS**

**CPC2907B**



**Recommended PCB Pattern**



- Notes:
1. Pin-to-pin tolerances are non-cumulative.
  2. Lead thickness does not include plating (1000 microinches minimum).
  3. Package outline exclusive of mold flash and metal burr.

For additional information please visit our website at: [www.ixysic.com](http://www.ixysic.com)

IXYS Integrated Circuits Division makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in IXYS Integrated Circuits Division's Standard Terms and Conditions of Sale, IXYS Integrated Circuits Division assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of IXYS Integrated Circuits Division's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. IXYS Integrated Circuits Division reserves the right to discontinue or make changes to its products at any time without notice.