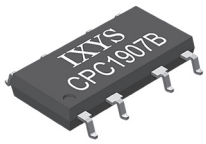
IXYS
INTEGRATED CIRCUITS DIVISION



CPC1907B
Single-Pole, Normally Open Power SOIC OptoMOS® Relay

Parameter	Rating	Units
Blocking Voltage	60	V_P
Load Current	±6	A_{DC}
On-Resistance	0.06	Ω

Features

- Load Current Up to ±6A_{DC} or 6A_{rms}
- 5000V_{rms} Input/Output Isolation
- Power SOIC Package
- 12.5mm External Creepage Distance with Appropriate Layout
- High Reliability
- Low Drive Power Requirements
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation

Applications

- Industrial Controls
- Security: Door Latches, Solenoids, Annunciators
- Motor Control
- Heating, Ventilation, and Air Conditioning Control (HVAC)
- Robotics
- Starter Ignition Circuits
- Medical Equipment—Patient/Equipment Isolation
- Instrumentation
- Multiplexers
- Electronic Switching
- I/O Subsystems
- Home Appliances
- DC Power Supplies
- Aerospace

Description

The CPC1907B is a single-pole, normally open (1-Form-A) solid state relay that employs optically coupled MOSFET technology to provide 5000V_{rms} of input to output isolation.

Switching of the efficient MOSFET switches is controlled by the photovoltaic die using the patented OptoMOS architecture while activation of the output is controlled by a highly efficient infrared LED. The combination of low on-resistance and high load current handling capabilities makes the relay suitable for a variety of high-performance switching applications.

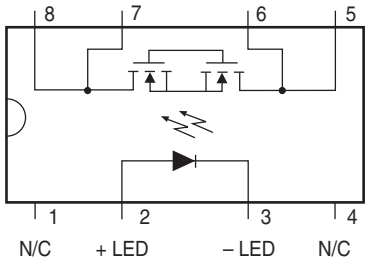
Approvals

- UL Recognized Component: File E69938
- CSA Industrial Control Switches Approval: Pending

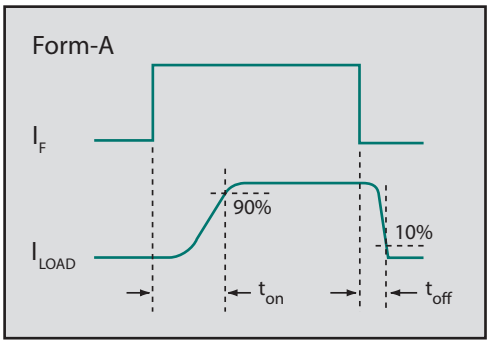
Ordering Information

Part #	Description
CPC1907B	8-Pin Power SOIC Package (25 per tube)

Pin Configuration



Switching Characteristics of Normally Open Devices



Absolute Maximum Ratings @ 25°C (Unless Otherwise Noted)

Parameter	Ratings	Units
Blocking Voltage	60	V
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 (60 Seconds Maximum)	5000	V_{rms}
ESD, Human Body Model	8	kV
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate linearly 1.33mW / °C

[2] Derate linearly 20mW / °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.

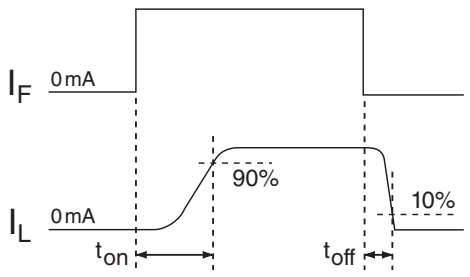
Electrical Characteristics @ 25°C (Unless Otherwise Noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current, Continuous	free air	I_L	-	-	6	$\pm A_{DC}$, A_{rms}
Peak Load Current	t = 10ms	I_{LPK}	-	-	20	$\pm A_P$
On-Resistance[1]	I_L=1A	R_{ON}	-	-	0.06	Ω
Off-State Leakage Current	V_L=60V_P	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	I_F=5mA, I_L=100mA (See Timing Diagram)	t_{on}	-	2.7	5	ms
Turn-Off		t_{off}	-	0.14	1	
Output Capacitance	I_F=0mA, V_L=50V, f=1MHz	C_{OUT}	-	340	-	pF
Input Characteristics						
LED Current to Activate [2]	I_L=1A	I_F	-	1.5	5	mA
LED Current to Deactivate	-	I_F	0.6	-	-	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.2	1.5	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Input/Output Characteristics						
Capacitance, Input/Output	V_{IO}=0V, f=1MHz	C_{IO}	-	2	-	pF

[1] Measurement taken within one second of on-time.

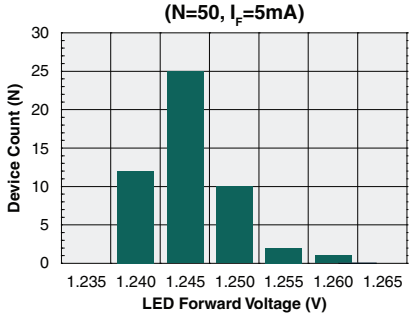
[2] For high temperature operation (T_A>60°C), a minimum LED drive current of 10mA is recommended.

Timing Diagram

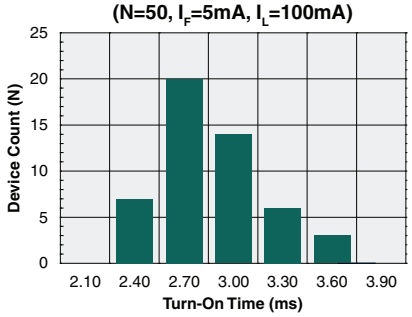


PERFORMANCE DATA*

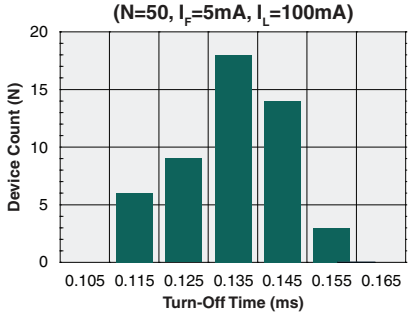
Typical LED Forward Voltage Drop
(N=50, I_F=5mA)



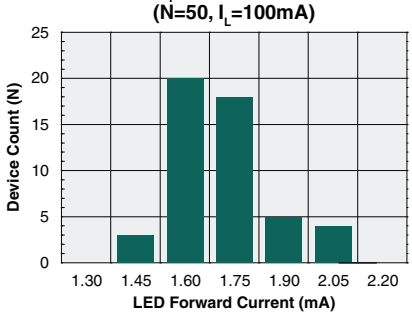
Typical Turn-On Time
(N=50, I_F=5mA, I_L=100mA)



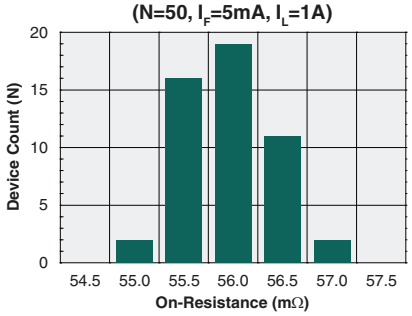
Typical Turn-Off Time
(N=50, I_F=5mA, I_L=100mA)



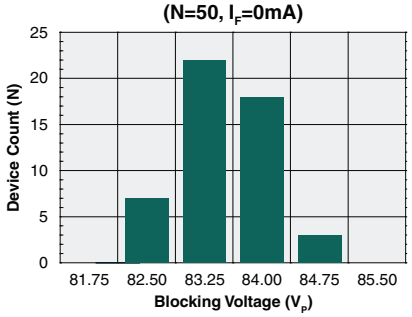
Typical I_F for Switch Operation
(N=50, I_L=100mA)



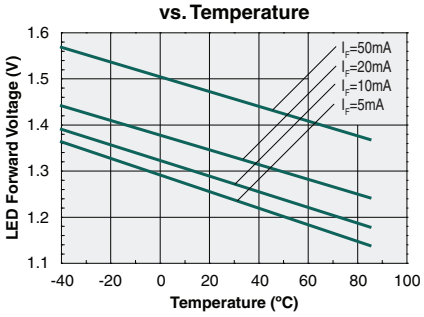
Typical On-Resistance Distribution
(N=50, I_F=5mA, I_L=1A)



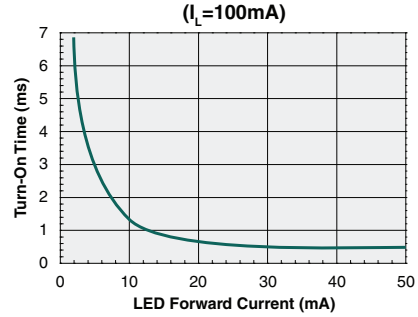
Typical Blocking Voltage Distribution
(N=50, I_F=0mA)



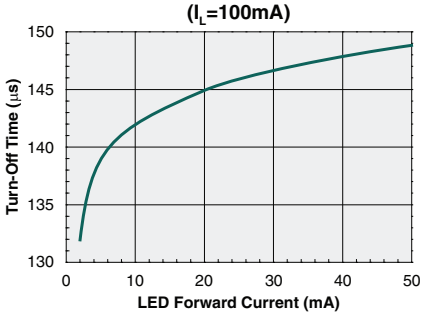
Typical LED Forward Voltage Drop
vs. Temperature



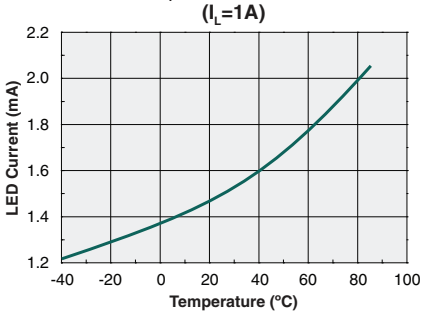
Typical Turn-On Time
vs. LED Forward Current
(I_L=100mA)



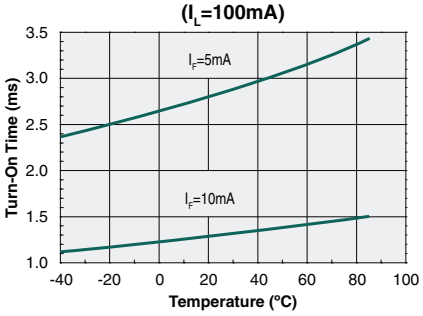
Typical Turn-Off Time
vs. LED Forward Current
(I_L=100mA)



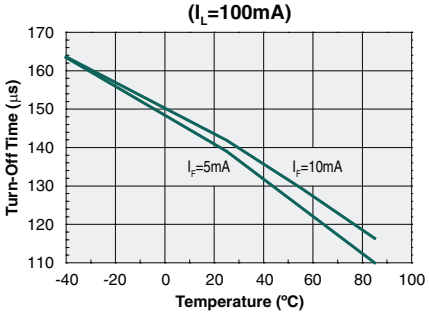
Typical I_F for Switch Operation
(I_L=1A)



Typical Turn-On Time
vs. Temperature
(I_L=100mA)



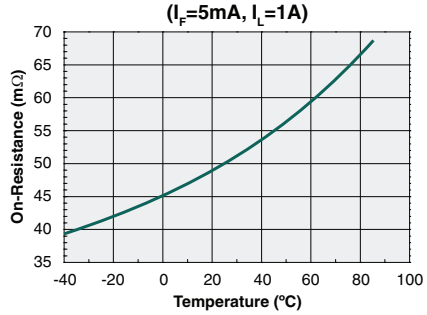
Typical Turn-Off Time
vs. Temperature
(I_L=100mA)



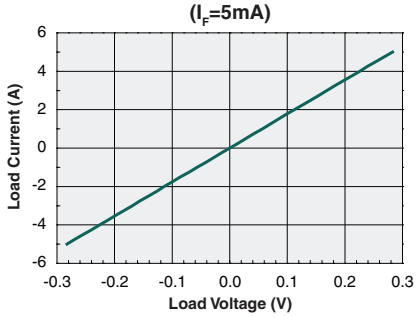
*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.
For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

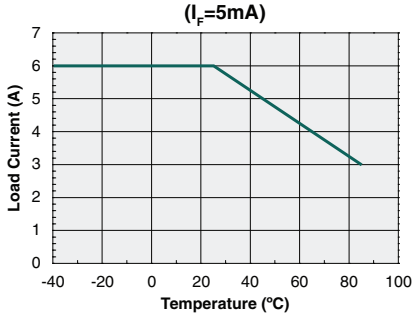
Typical On-Resistance vs. Temperature (I_F=5mA, I_L=1A)



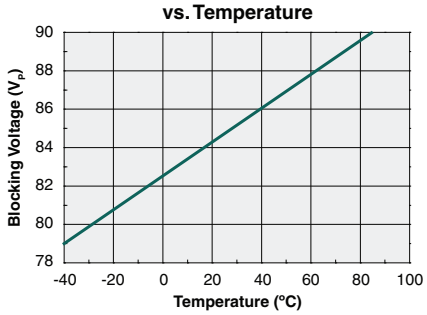
Typical Load Current vs. Load Voltage (I_F=5mA)



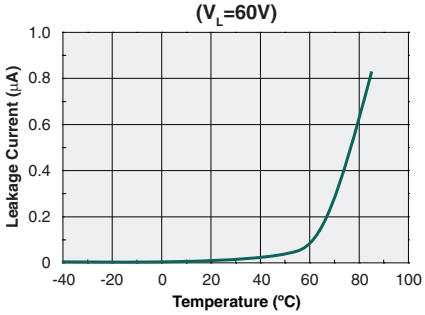
Maximum Load Current vs. Temperature (I_F=5mA)



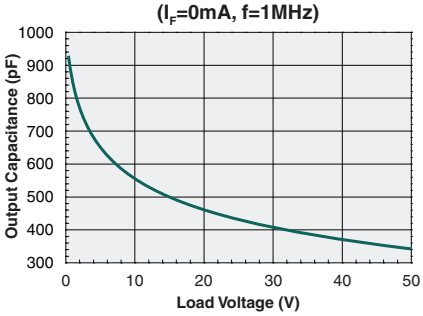
Typical Blocking Voltage vs. Temperature



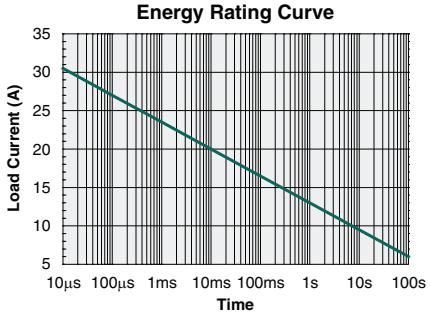
Leakage Current vs. Temperature Across Pins 5&6, 7&8 (V_L=60V)



Output Capacitance vs. Load Voltage (I_F=0mA, f=1MHz)



Energy Rating Curve



*Unless otherwise noted, data presented in these graphs is typical of device operation at 25ºC.
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 ingression. IXYS Integrated Circuits 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
CPC1907B	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)ºC 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.

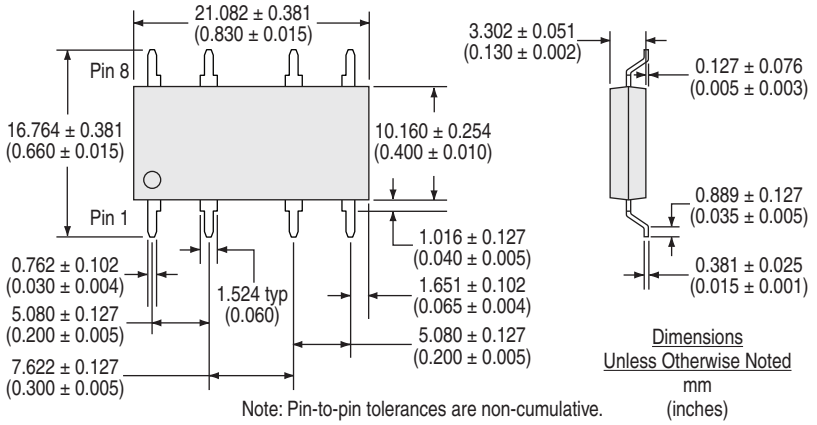
Device	Classification Temperature (T_c)	Dwell Time (t_p)	Max Reflow Cycles
CPC1907B	245ºC	30 seconds	3

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 flux or solvents that are Chlorine- or Fluorine-based.

MECHANICAL DIMENSIONS

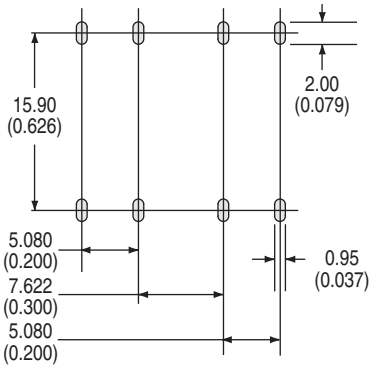
CPC1907B



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

Dimensions
Unless Otherwise Noted
mm
(inches)

Recommended PCB Pattern



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

Specification: DS-CPC1907B-R04

11/18/2025