

| Parameter | Rating | Units |
|--------------------------|--------|--------------------------------------|
| Blocking Voltage | 60 | V _P |
| Load Current | 200 | mA _{rms} / mA _{DC} |
| On-Resistance (max) | 16 | Ω |
| Input Voltage to operate | 5-12 | V |

Features

- Designed for use in Security Systems Complying with EN50130-4
- Voltage-Controlled Operation
- 2500V_{rms} Input/Output Isolation
- 100% Solid State
- Matches Popular Reed Relay Pin-Out
- No EMI/RFI Generation
- Immune to Radiated EM Fields
- Small 4-Pin SIP Package
- Flammability Rating UL 94-V0

Applications

- Security
 - Passive Infrared Detectors (PIR)
 - Data Signalling
 - Sensor Circuitry
- Instrumentation
- Multiplexers
- Data Acquisition
- Electronic Switching
- I/O Subsystems
- Energy Meters
- Medical Equipment—Patient/Equipment Isolation
- Industrial Controls

Description

The CPC1217Y is a voltage-controlled, single-pole, normally open (1-Form-A), optically coupled solid state relay configuration in a 4-pin Single In-line Package (SIP). IXYS Integrated Circuits Division's patented OptoMOS architecture makes available the optically coupled technology necessary to activate the output's efficient MOSFET switches while providing a 2500V_{rms} input-to-output isolation barrier. Control of the isolated output is accomplished by means of a highly efficient infrared LED at the input while the internal resistor in series with the LED enables the input's voltage-controlled operation.

Because the input is solid state there is no need for snubbers or "catch" diodes to suppress the inductive flyback transient voltage normally associated with EMR coils.

Approvals

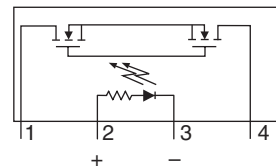
- TUV EN 62368-1: Certificate # B 082667 0008

Ordering Information

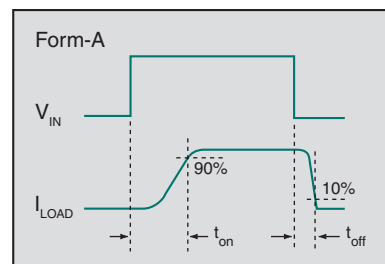
| Part # | Description |
|----------|----------------------------------|
| CPC1217Y | 4-Pin SIP (8-Pin Body) (25/tube) |

Pin Configuration

CPC1217Y Pinout



Switching Characteristics of Normally Open Devices



Absolute Maximum Ratings @ 25°C

| Parameter | Ratings | Units |
|--------------------------------------|-------------|------------------|
| Blocking Voltage | 60 | V _P |
| Reverse Input Voltage | 5 | V |
| Input Control Voltage | 15 | V |
| Input Power Dissipation | 225 | mW |
| Total Power Dissipation ¹ | 800 | mW |
| Isolation Voltage, Input to Output | 2500 | V _{rms} |
| Operational Temperature, Ambient | -40 to +85 | °C |
| Storage Temperature | -40 to +125 | °C |

¹ Derate output power linearly 6.67 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.

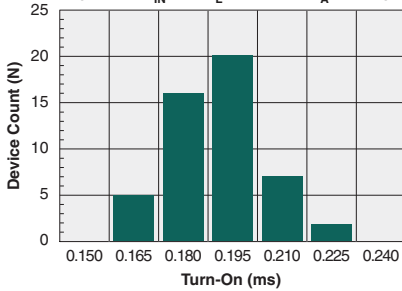
Electrical Characteristics @ 25°C

| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|-------------------------------|--|-------------------|-----|------|------|-------------------------------------|
| Output Characteristics | | | | | | |
| Blocking Voltage | I _L =1μA, | V _{DRM} | 60 | - | - | V |
| Load Current | | | | | | |
| Continuous | V _{IN} =5V | I _L | - | - | 200 | mA _{rms} / mA _P |
| Peak | t≤10ms | I _{LPK} | - | - | ±400 | mA _P |
| On-Resistance ¹ | I _L =200mA | R _{ON} | - | - | 16 | Ω |
| Off-State Leakage Current | V _L =60V _P | I _{LEAK} | - | - | 1 | μA |
| Switching Speeds | | | | | | |
| Turn-On (Output Closed) | V _{IN} =5V, V _L =10V | t _{on} | - | - | 5 | ms |
| Turn-Off (Output Open) | | t _{off} | - | - | 5 | |
| Output Capacitance | V _{IN} =0V, V _L =50V, f=1MHz | C _{OUT} | - | 25 | - | pF |
| Input Characteristics | | | | | | |
| Input Control Voltage | | | | | | |
| Recommended Operating Range | I _L =200mA | V _{IN} | 5 | - | 12 | V |
| Output Closed | | | - | - | 3.75 | |
| Output Open | | | 1 | - | - | |
| Reverse Input Current | V _{IN} =-5V | I _R | - | - | 10 | μA |
| Input Resistor | - | - | 900 | 1000 | 1100 | Ω |
| Common Characteristics | | | | | | |
| Capacitance, Input to Output | V _{IO} =0V, f=1MHz | C _{IO} | - | 1 | - | pF |

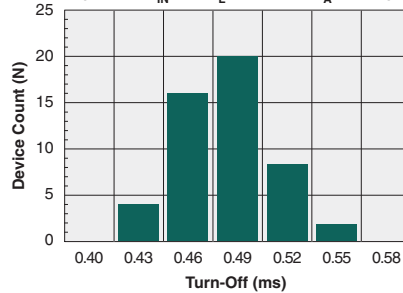
¹ Measurement taken within 1 second of on-time.

PERFORMANCE DATA*

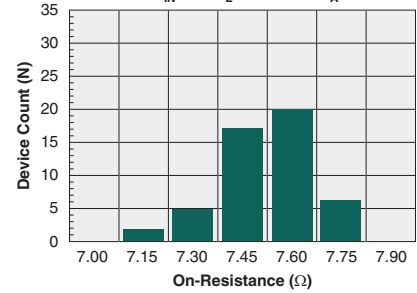
Typical Turn-On Time
(N=50, $V_{IN}=5V$, $I_L=100mA$, $T_A=25^\circ C$)



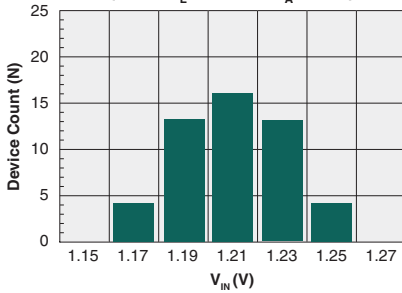
Typical Turn-Off Time
(N=50, $V_{IN}=5V$, $I_L=100mA$, $T_A=25^\circ C$)



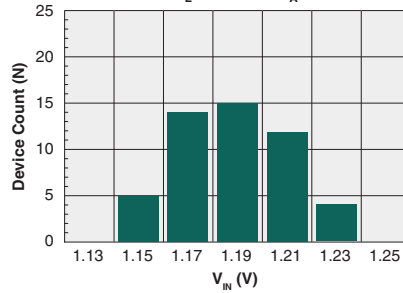
Typical On-Resistance Distribution
(N=50, $V_{IN}=5V$, $I_L=100mA$, $T_A=25^\circ C$)



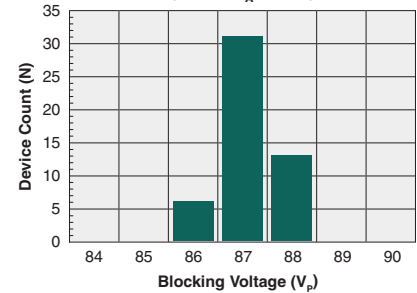
Typical V_{IN} for Switch Operation
(N=50, $I_L=100mA$, $T_A=25^\circ C$)



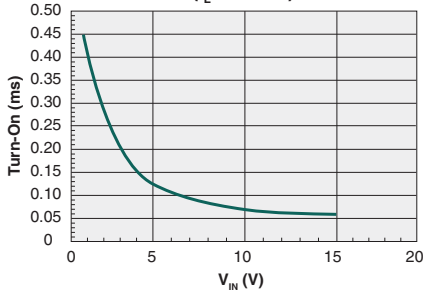
Typical V_{IN} for Switch Dropout
(N=50, $I_L=100mA$, $T_A=25^\circ C$)



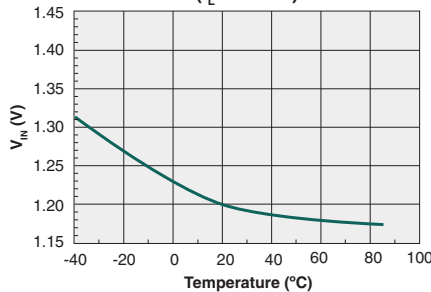
Typical Blocking Voltage Distribution
(N=50, $T_A=25^\circ C$)



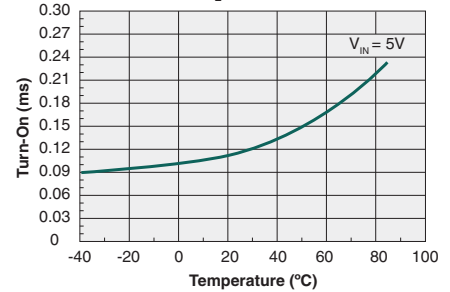
Typical Turn-On vs. V_{IN}
($I_L=100mA$)



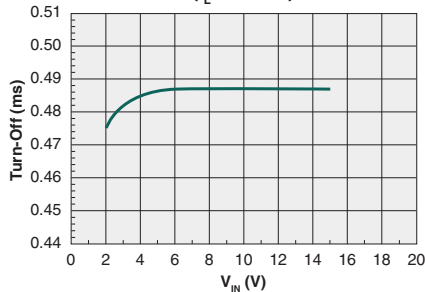
Typical V_{IN} for Switch Operation vs. Temperature
($I_L=100mA$)



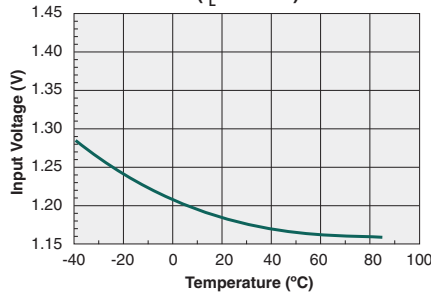
Typical Turn-On vs. Temperature
($I_L=100mA$)



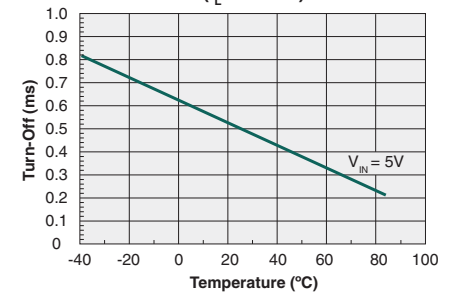
Typical Turn-Off vs. V_{IN}
($I_L=100mA$)



Typical V_{IN} for Switch Dropout vs. Temperature
($I_L=100mA$)



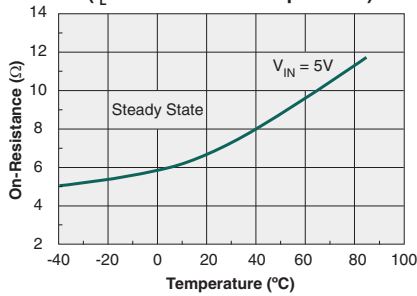
Typical Turn-Off vs. Temperature
($I_L=100mA$)



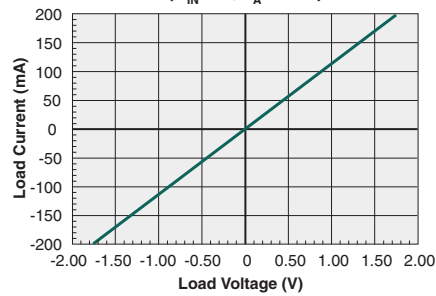
*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.

PERFORMANCE DATA *

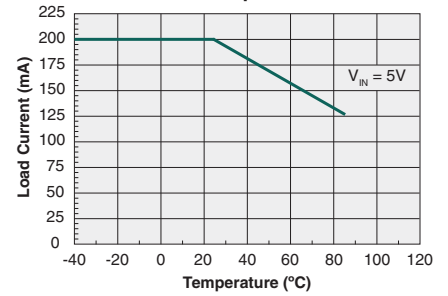
Typical On-Resistance vs. Temperature
($I_L = \text{Max Rated @ Temperature}$)



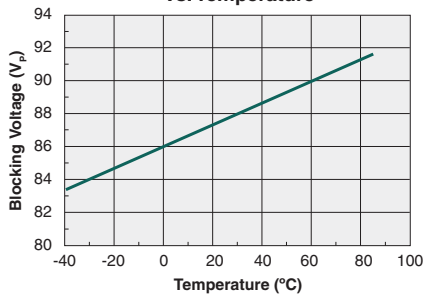
Typical Load Current vs. Load Voltage
($V_{IN} = 5V, T_A = 25^\circ C$)



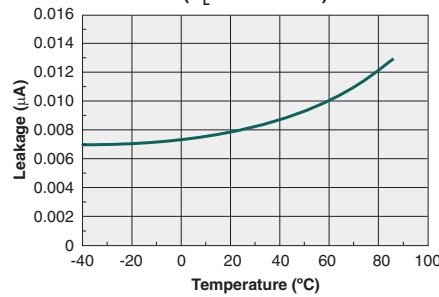
Typical Maximum Load Current vs. Temperature



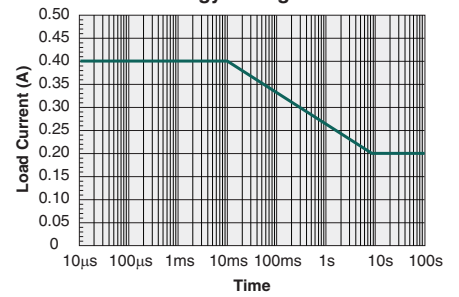
Typical Blocking Voltage vs. Temperature



Typical Leakage vs. Temperature
Measured Across Pins 1&4
($V_L = \text{Max Rated}$)



Energy Rating Curve



*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

For through-hole devices, the maximum pin temperature and maximum dwell time through all solder waves is provided in the table below. Dwell time is the interval beginning when the pins are initially immersed into the solder wave until they exit the solder wave. For multiple waves, the dwell time is from entering the first wave until exiting the last wave. During this time, pin temperatures must not exceed the maximum temperature given in the table below. Body temperature of the device must not exceed the limit shown in the table below at any time during the soldering process.

| Device | Maximum Pin Temperature | Maximum Body Temperature | Maximum Dwell Time | Wave Cycles |
|----------|-------------------------|--------------------------|--------------------|-------------|
| CPC1217Y | 260°C | 245°C | 10 seconds* | 1 |

*Total cumulative duration of all waves.

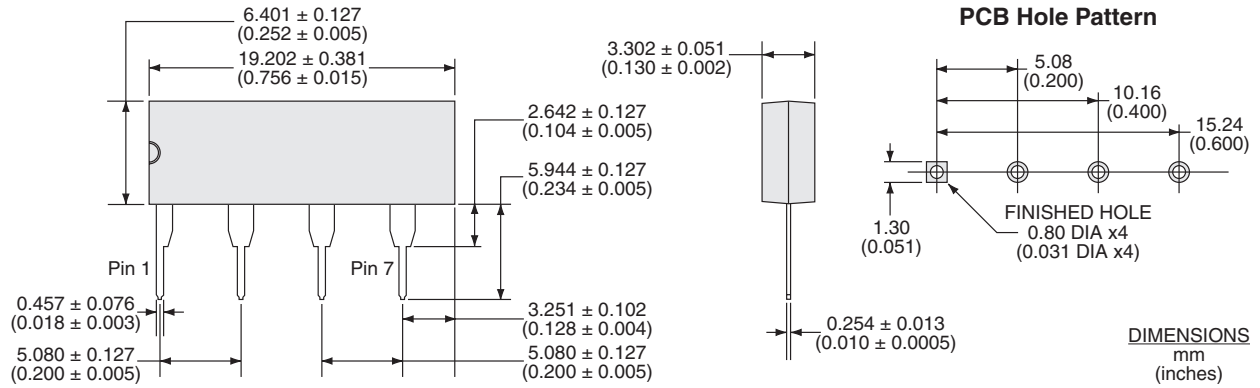
Board Wash

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

CPC1217Y



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