IXYS
INTEGRATED CIRCUITS DIVISION

CPC1218

Voltage-Controlled, Single-Pole, Normally Open, 4-Pin SIP OptoMOS® Relay

	CPC1218	Units
Blocking Voltage	60	V_P
Load Current	600	mA_{rms} / mA_{DC}
On-Resistance (max)	1.1	Ω
Input Voltage to operate	5-12	V

Features

- Voltage-Controlled Operation
- Designed for use in Security Systems Complying with EN50130-4
- $2500V_{rms}$ Input/Output Isolation
- 100% Solid State
- Matches Popular Reed Relay Pin-Out
- TTL/CMOS Compatible Input
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Immune to Radiated EM Fields
- Small 4-Pin SIP Package
- Auto Pick & Place, Wave Solderable

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
- Aerospace
- Industrial Controls

Description

The CPC1218 is a miniature voltage-controlled, single-pole, normally open (1-Form-A) Solid State Relay in a 4-pin Single In-line Package (SIP) that employs optically coupled MOSFET technology to provide $2500V_{rms}$ of input to output isolation. The super efficient MOSFET switches and photovoltaic die use IXYS Integrated Circuits Division's patented OptoMOS architecture. The optically-coupled output is controlled by the input's highly efficient GaAlAs infrared LED with a built-in series resistor to provide input voltage-controlled operation.

Featuring a pin-out that matches many popular reed relays, CPC1218 is a "drop-in" solid state replacement. Because the input is solid state there is no need for snubbers or "catch" diodes to suppress the inductive fly-back transient voltage normally associated with EMR coils.

Approvals

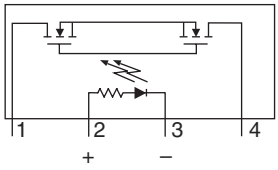
- UL 508 Approved Component: File E69938
- CSA Certified Component: Certificate 1172007

Ordering Information

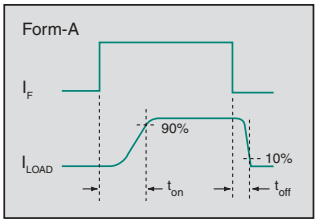
Part #	Description
CPC1218Y	4-Pin SIP (8-Pin Body) (25/tube)

Pin Configuration

CPC1218 Pinout



Switching Characteristics of Normally Open Devices



Absolute Maximum Ratings @ 25ºC

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	-40 to +85	ºC
Storage Temperature	-40 to +125	ºC

[1] Derate linearly 6.67 mW / ºC

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.

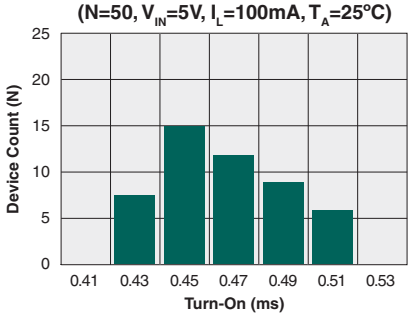
Electrical Characteristics @ 25ºC

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current						
Continuous [1]	V_{IN}=5V	I_L	-	-	600	mA_{rms} / mA_{DC}
Peak	t=10ms	I_{LPK}	-	-	±1	A_P
On-Resistance [2]	I_L=600mA	R_{ON}	-	-	1.1	Ω
Off-State Leakage Current	V_L=60V_P	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	V_{IN}=5V, V_L=10V	t_{on}	-	-	5	ms
Turn-Off		t_{off}	-	-	5	
Output Capacitance	V_L=50V, f=1MHz	C_{OUT}	-	25	-	pF
Input Characteristics						
Input Control Voltage (must operate)	I_L=600mA	V_{OP}	-	-	3.75	V
Off Voltage (must be off)	-	V_{OFF}	1	-	-	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Input Resistor	-	-	900	1000	1100	Ω
Common Characteristics						
Capacitance, Input to Output	-	-	-	1	-	pF

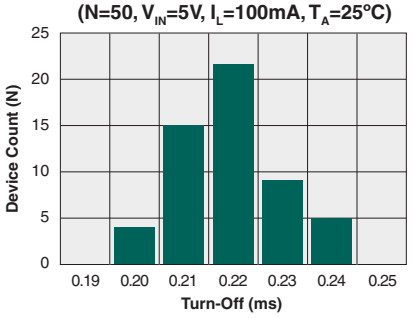
[1] Load current derates linearly from 600mA @ 25ºC to 480mA @80ºC.
[2] Measurement taken within 1 second of on-time.

PERFORMANCE DATA*

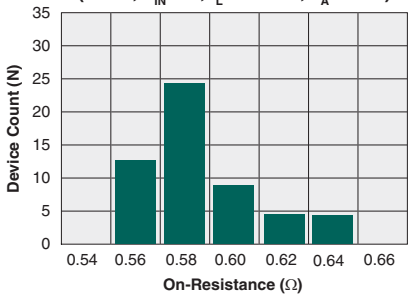
Typical Turn-On Time
(N=50, V_{IN}=5V, I_L=100mA, T_A=25°C)



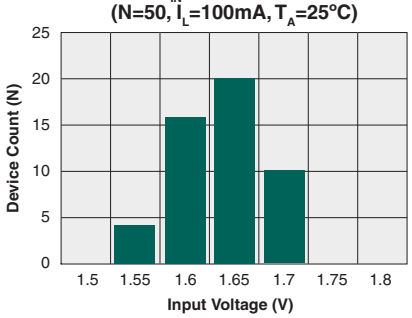
Typical Turn-Off Time
(N=50, V_{IN}=5V, I_L=100mA, T_A=25°C)



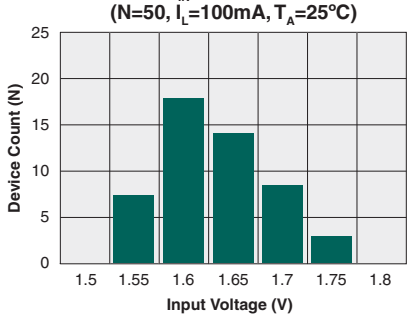
Typical On-Resistance Distribution
(N=50, V_{IN}=5V, I_L=100mA, T_A=25°C)



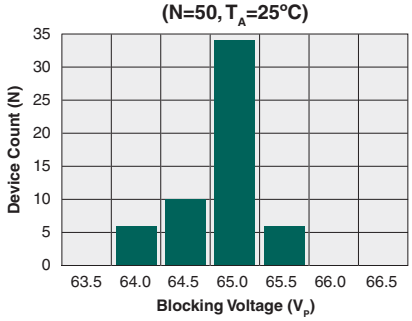
Typical V_{IN} for Switch Operation
(N=50, I_L=100mA, T_A=25°C)



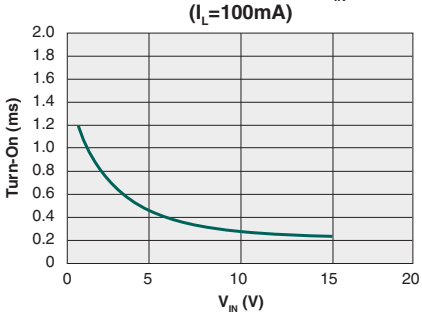
Typical V_{IN} for Switch Dropout
(N=50, I_L=100mA, T_A=25°C)



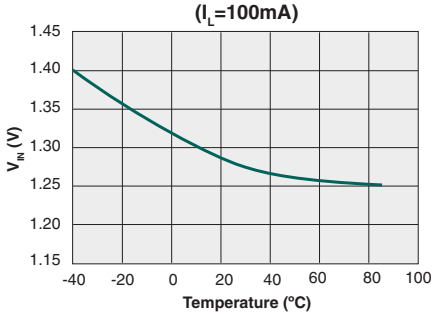
Typical Blocking Voltage Distribution
(N=50, T_A=25°C)



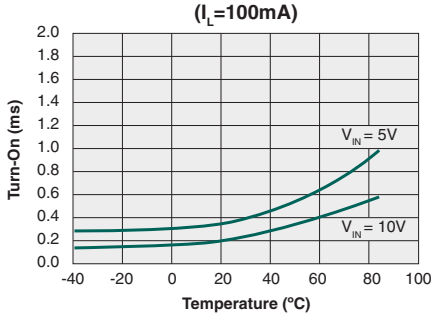
Typical Turn-On vs. V_{IN}
(I_L=100mA)



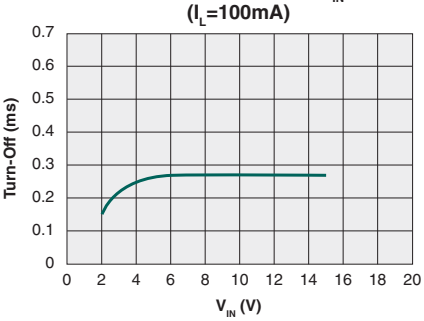
Typical V_{IN} for Switch Operation
vs. Temperature
(I_L=100mA)



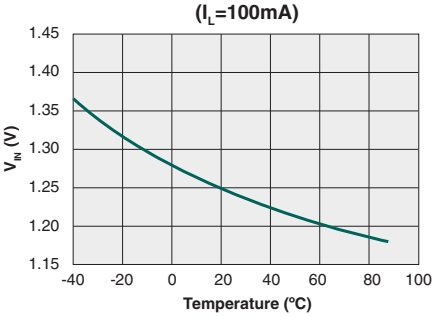
Typical Turn-On vs. Temperature
(I_L=100mA)



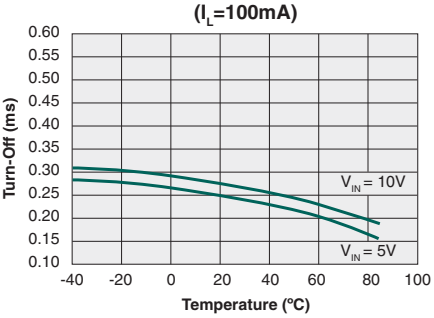
Typical Turn-Off vs. V_{IN}
(I_L=100mA)



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



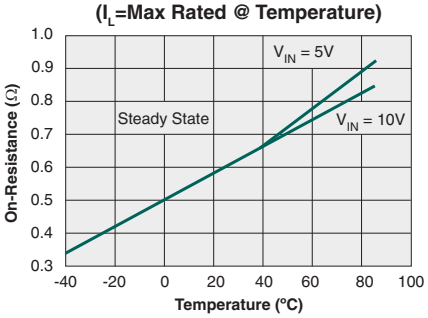
Typical Turn-Off vs. Temperature
(I_L=100mA)



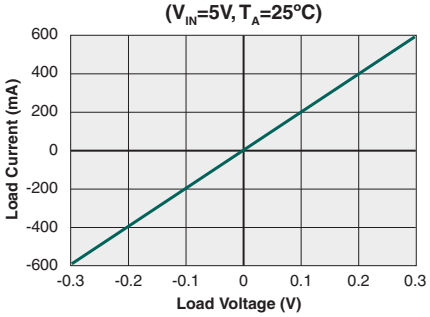
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

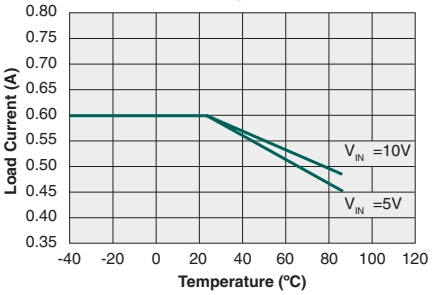
Typical On-Resistance vs. Temperature (I_L=Max Rated @ Temperature)



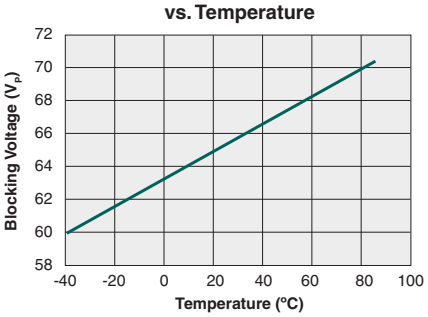
Typical Load Current vs. Load Voltage (V_{IN}=5V, T_A=25°C)



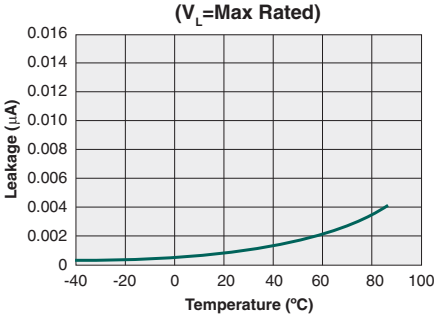
Typical Maximum Load Current vs. Temperature



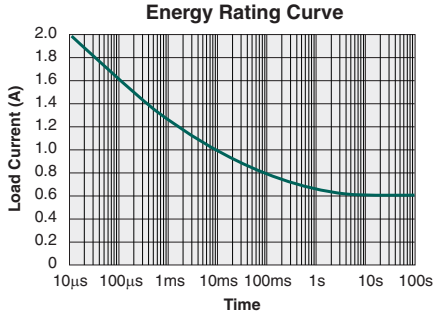
Typical Blocking Voltage vs. Temperature



Typical Leakage vs. Temperature Measured Across Pins 1&4 (V_L=Max Rated)



Energy Rating Curve



*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.

Manufacturing Information

Moisture Sensitivity

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. IXYS Integrated Circuits Division classified all of 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) rating** 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) Rating
CPC1218Y	MSL 1

ESD Sensitivity

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

Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

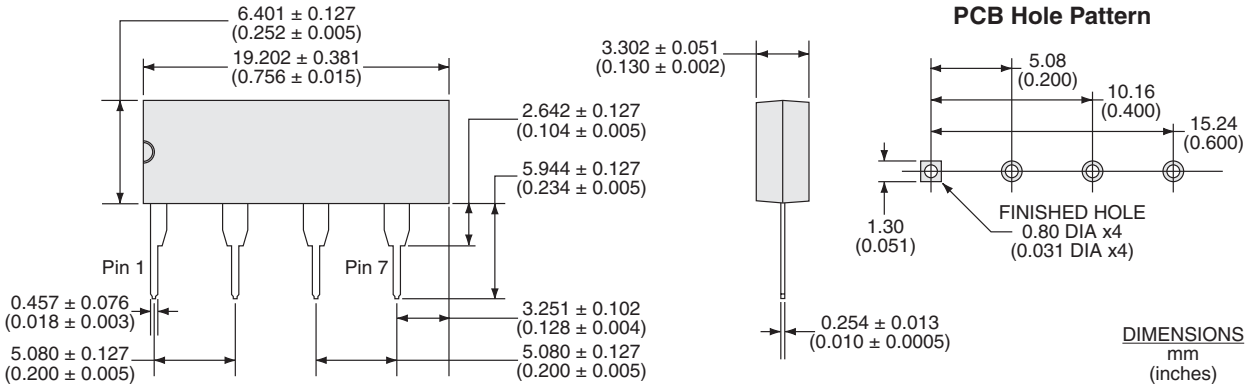
Device	Maximum Temperature x Time
CPC1218Y	245°C for 30 seconds

Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

MECHANICAL DIMENSIONS

CPC1218Y



Specification: DS-CPC1218-R06

12/14/2012

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