CPC1218
4-Pin SIP OptoMOS® Relay

	CPC1218	Units
Blocking Voltage	60	V_P
Load Current	600	mA
Max R_{ON}	1.1	Ω
Input Voltage to operate	5-12	V

Features

- 100% Solid State
- Voltage-controlled operation
- Matches popular reed relay pin-out
- Designed for use in security systems complying with EN50130-4
- Small 4-Pin SIP Package
- TTL/CMOS Compatible input
- Arc-Free With No Snubbing Circuits
- 2500V_{rms} Input/Output Isolation
- No EMI/RFI Generation
- Immune to radiated EM fields
- 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 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 Clare's patented OptoMOS® architecture. The optically-coupled output is controlled by the input's highly efficient GaAlAs infrared LED and a built-in series resistor to provide input voltage-controlled operation.

The CPC1218 features a pin-out that matches many popular reed relays and is thus 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

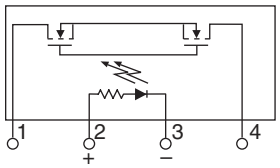
- UL Recognized Component: File # E76270
- EN/IEC 60950 Compliant
- CSA Certified Component: Certificate # 1172007

Ordering Information

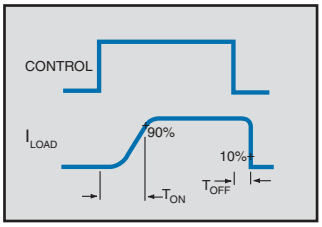
Part #	Description
CPC1218Y	4-Pin SIP (25/tube)

Pin Configuration

CPC1218 Pinout



Switching Characteristics of Normally Open (Form A) 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	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate 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.

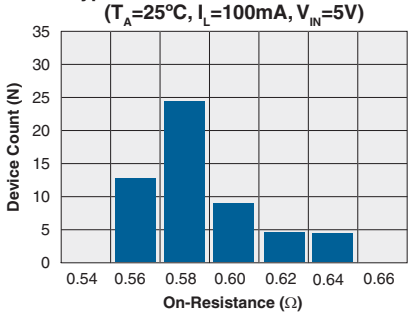
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current, Continuous [1]	V_{IN}=5V	I_L	-	-	600	mA
Peak Load Current	t=10ms	I_{LPK}	-	-	1	A
On-Resistance [2]	I_L=600mA	R_{ON}	-	-	1.1	Ω
Off-State Leakage Current	V_L=60V	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	V_{IN}=5V, V_L=10V	T_{ON}	-	-	5	ms
Turn-Off	V_{IN}=5V, V_L=10V	T_{OFF}	-	-	5	ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	25	-	pF
Input Characteristics @ 25°C						
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 @ 25°C						
Capacitance Input to Output	-	-	-	1	-	pF

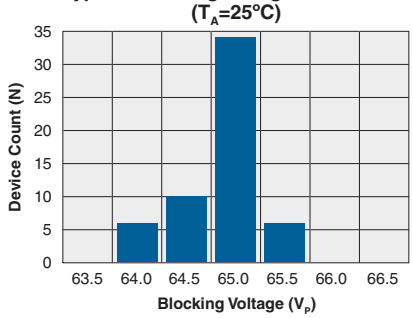
[1] Load current derates linearly from 600mA @ 25ºC to 480mA @80ºC.
[2] Measurement taken within 1 second of on time.

PERFORMANCE DATA*

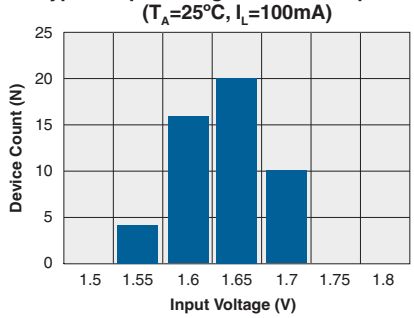
CPC1218
Typical On-Resistance Distribution
(T_A=25°C, I_L=100mA, V_{IN}=5V)



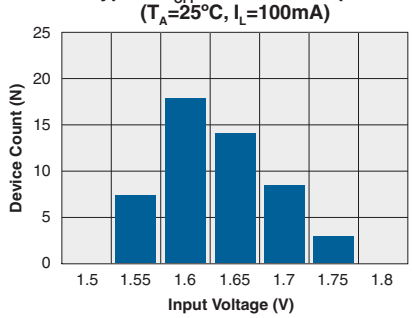
CPC1218
Typical Blocking Voltage Distribution
(T_A=25°C)



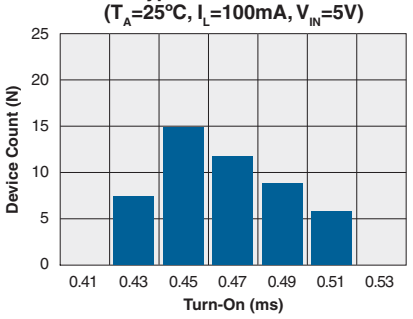
CPC1218
Typical Input Voltage for Switch Operation
(T_A=25°C, I_L=100mA)



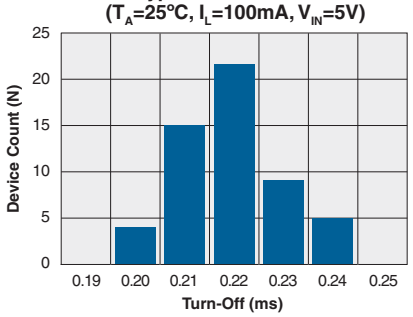
CPC1218
Typical V_{OFF} for Switch Dropout
(T_A=25°C, I_L=100mA)



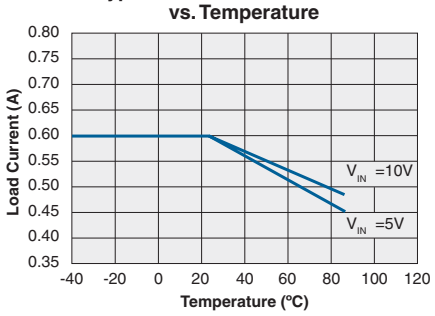
CPC1218
Typical Turn-On Time
(T_A=25°C, I_L=100mA, V_{IN}=5V)



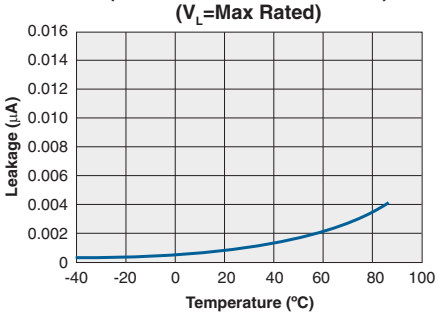
CPC1218
Typical Turn-Off Time
(T_A=25°C, I_L=100mA, V_{IN}=5V)



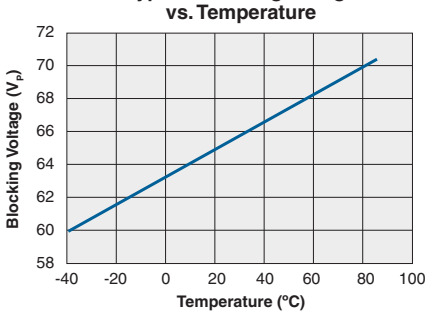
CPC1218
Typical Maximum Load Current
vs. Temperature



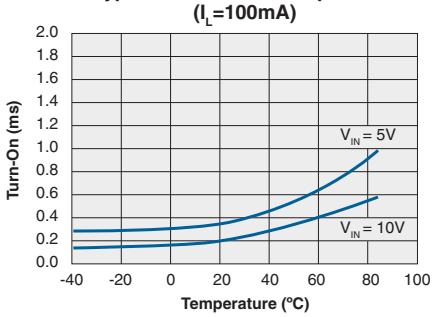
CPC1218
Typical Leakage vs. Temperature
(Measured Across Pins 1 & 4)
(V_L=Max Rated)



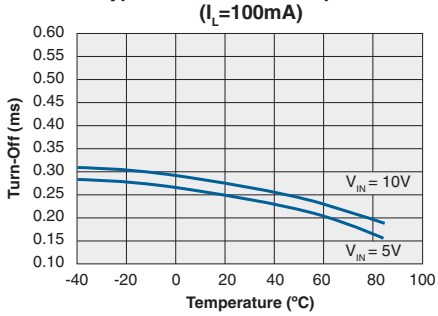
CPC1218
Typical Blocking Voltage
vs. Temperature



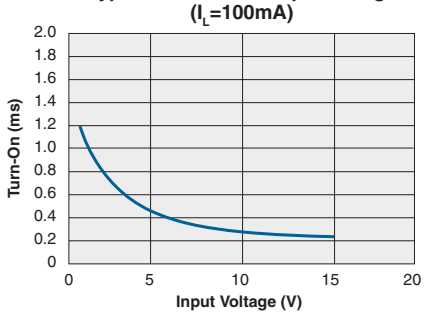
CPC1218
Typical Turn-On vs. Temperature
(I_L=100mA)



CPC1218
Typical Turn-Off vs. Temperature
(I_L=100mA)



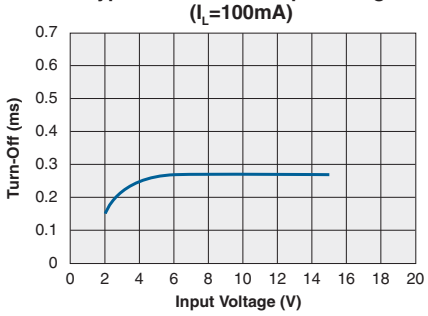
CPC1218
Typical Turn-On vs. Input Voltage
(I_L=100mA)



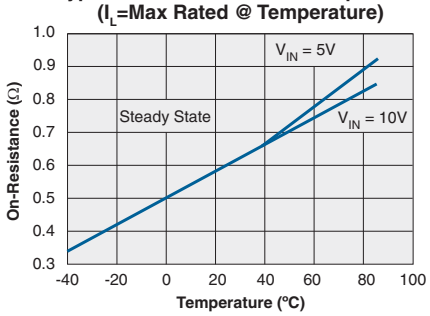
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

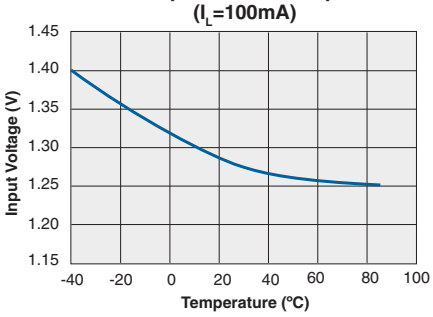
CPC1218
Typical Turn-Off vs. Input Voltage
(I_L=100mA)



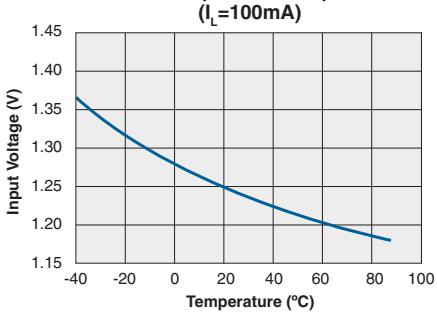
CPC1218
Typical On-Resistance vs. Temperature
(I_L=Max Rated @ Temperature)



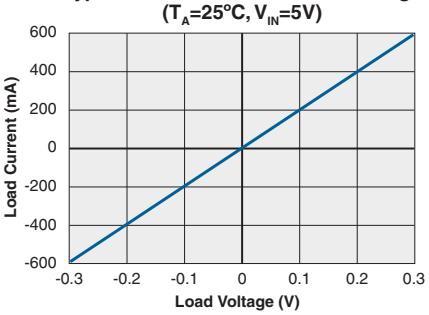
CPC1218
Typical Input Voltage for
Switch Operation vs. Temperature
(I_L=100mA)



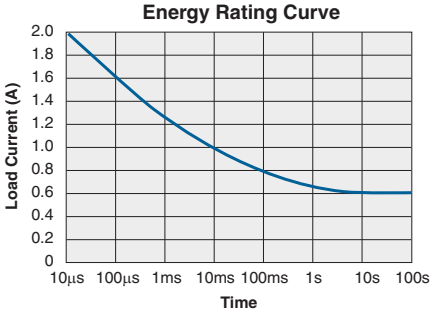
CPC1218
Typical Input Voltage for
Switch Dropout vs. Temperature
(I_L=100mA)



CPC1218
Typical Load Current vs. Load Voltage
(T_A=25°C, V_{IN}=5V)



CPC1218
Energy Rating Curve



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Manufacturing Information

Soldering

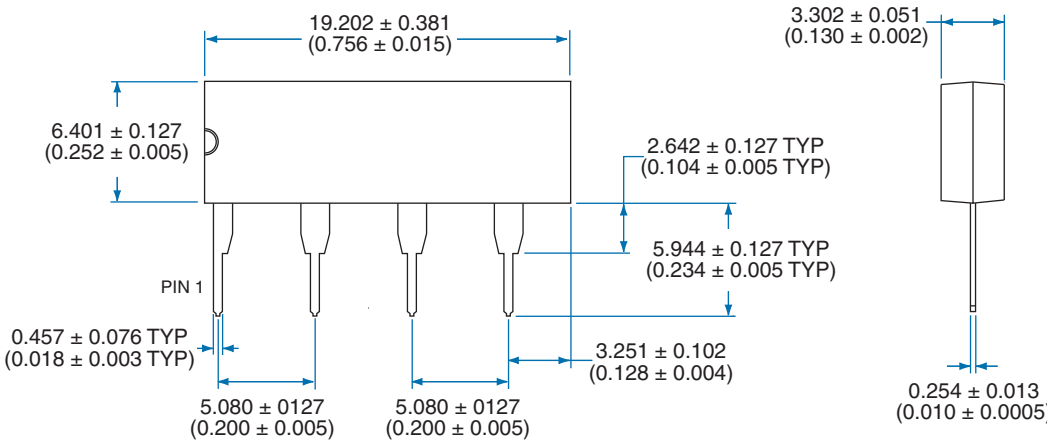
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

4-Pin SIP



NOTES:
1. Leadframe thickness does not include plating. (1000 microinches maximum)
2. Pin location tolerances are non-accumulative.

Dimensions:
mm
(inches)

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

Specification: DS-CPC1218-R04