CPC1218Y
4-Pin SIP OptoMOS® Relay

	CPC1218Y	Units
Blocking Voltage	60	V_P
Load Current	600	mA
Max R_{ON}	0.8	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 CPC1218Y 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 CPC1218Y 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

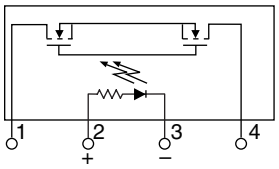
- UL recognized file #E76270
- Certified to EN60950

Ordering Information

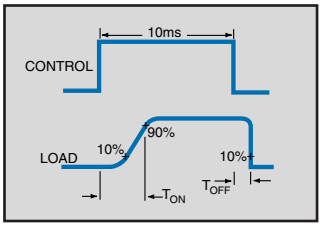
Part #	Description
CPC1218Y	4-Pin SIP (25/tube)

Pin Configuration

CPC1218Y 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	300	mW
Total Power Dissipation [1]	800	mW
Isolation Voltage Input to Output	1500	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[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.

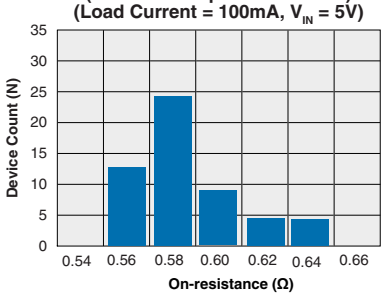
Electrical Characteristics

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=100mA	R_{ON}	-	-	0.8	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	-	-	950	1K	1050	Ω
Common Characteristics @ 25°C						
Capacitance Input to Output	-	-	-	1	-	pF

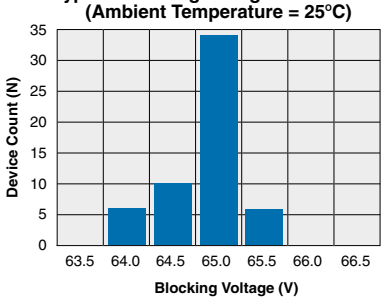
[1] Load current derates linearly from 600mA @ 25ºC to 480mA @80ºC.
[2] Measurement taken within 1 second of on time.

PERFORMANCE DATA*

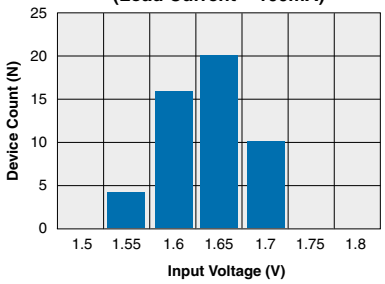
CPC1218Y
Typical On-Resistance Distribution
(Ambient Temperature = 25°C)
(Load Current = 100mA, V_{IN} = 5V)



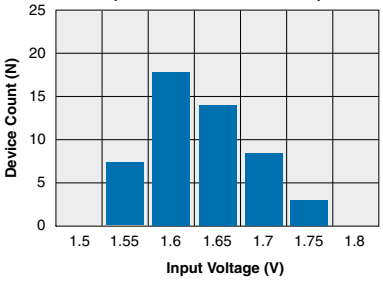
CPC1218Y
Typical Blocking Voltage Distribution
(Ambient Temperature = 25°C)



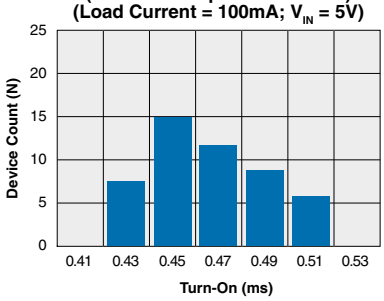
CPC1218Y
Typical Input Voltage for Switch Operation
(Ambient Temperature = 25°C)
(Load Current = 100mA)



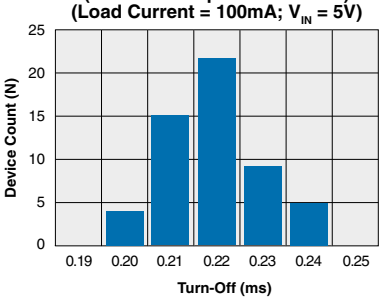
CPC1218Y
Typical V_{OFF} for Switch Dropout
(Ambient Temperature = 25°C)
(Load Current = 100mA)



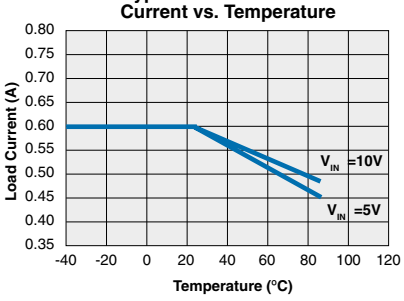
CPC1218Y
Typical Turn-On Time
(Ambient Temperature = 25°C)
(Load Current = 100mA; V_{IN} = 5V)



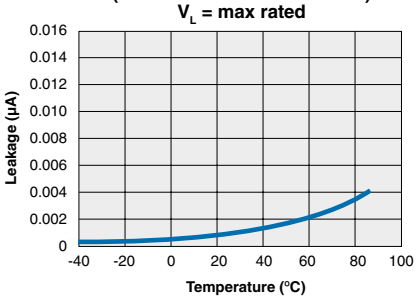
CPC1218Y
Typical Turn-Off Time
(Ambient Temperature = 25°C)
(Load Current = 100mA; V_{IN} = 5V)



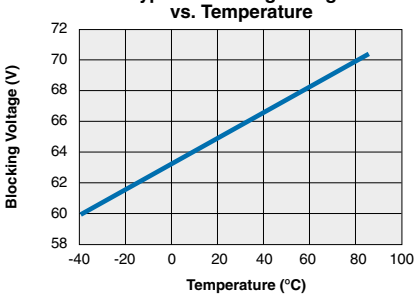
CPC1218Y
Typical Maximum Load
Current vs. Temperature



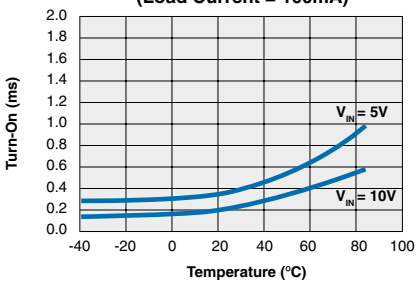
CPC1218Y
Typical Leakage vs. Temperature
(Measured across Pins 3 & 4)
V_L = max rated



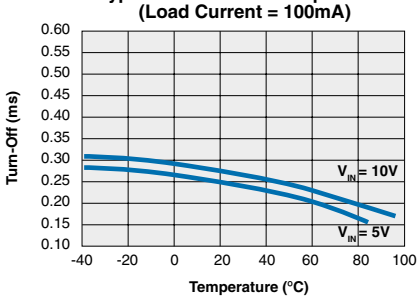
CPC1218Y
Typical Blocking Voltage
vs. Temperature



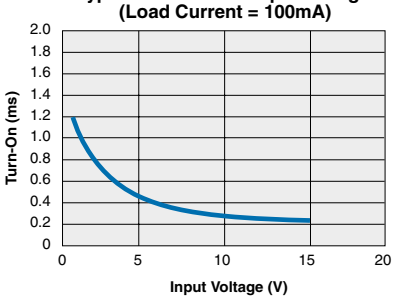
CPC1218Y
Typical Turn-On vs. Temperature
(Load Current = 100mA)



CPC1218Y
Typical Turn-Off vs. Temperature
(Load Current = 100mA)



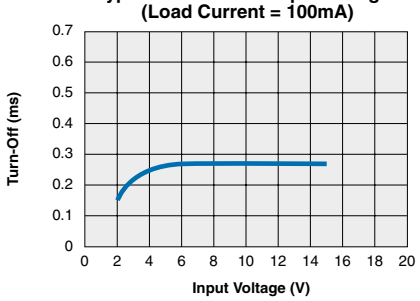
CPC1218Y
Typical Turn-On vs. Input Voltage
(Load Current = 100mA)



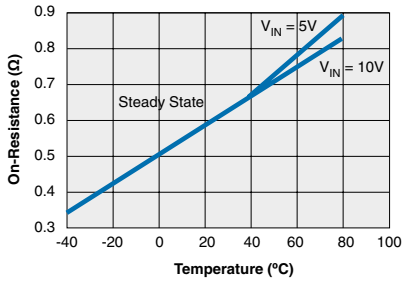
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

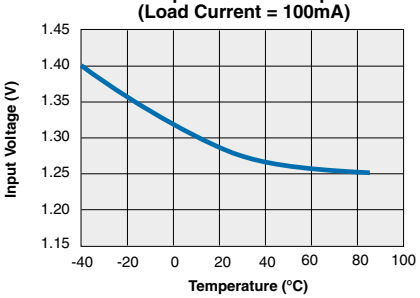
CPC1218Y
Typical Turn-Off vs. Input Voltage
(Load Current = 100mA)



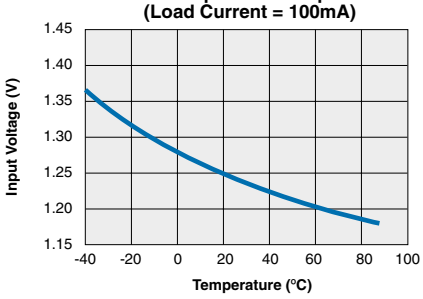
CPC1218Y
Typical On-Resistance vs. Temperature
(Load Current = max rated @ temperature)



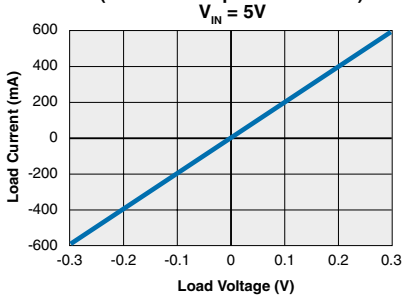
CPC1218Y
Typical Input Voltage for
Switch Operation vs. Temperature
(Load Current = 100mA)



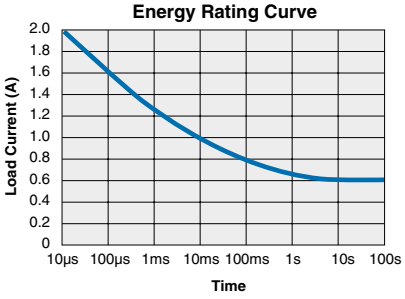
CPC1218Y
Typical Input Voltage for
Switch Dropout vs. Temperature
(Load Current = 100mA)



CPC1218Y
Typical Load Current vs. Load Voltage
(Ambient Temperature = 25°C)
V_{IN} = 5V



CPC1218Y
Energy Rating Curve



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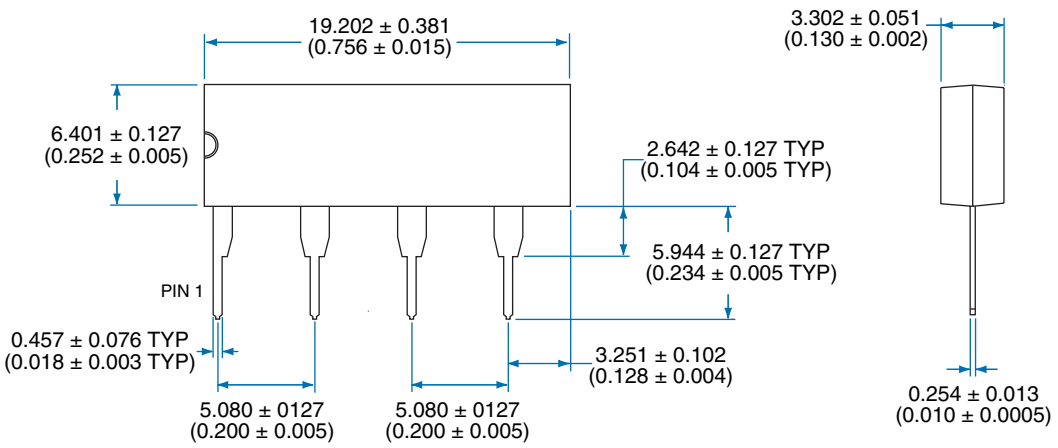
Manufacturing Information

Soldering
Recommended soldering processes are limited to 245ºC component body temperature for 10 seconds.

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-CPC1218Y-R01