CPC1217
4-Pin SIP OptoMOS® Relay

Parameter	Rating	Units
Blocking Voltage	60	V_P
Load Current	200	mA
Max R_{ON}	16	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
- 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 CPC1217 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). Clare'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 effective GaAlAs infrared LED at the input while the internal resistor in series with the LED enables the input 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

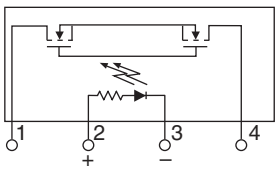
- UL Recognized Component: File # E76270
- EN/IEC 60950 Compliant
- CSA Certified Component: Certificate # 1172007

Ordering Information

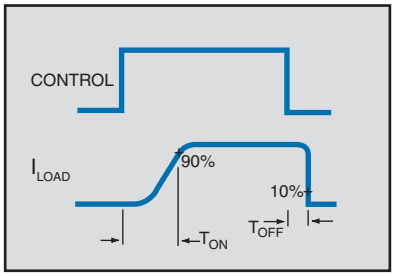
Part #	Description
CPC1217Y	4-Pin SIP (25/tube)

Pin Configuration

CPC1217 Pinout



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings

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

Electrical absolute maximum ratings are at 25°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.

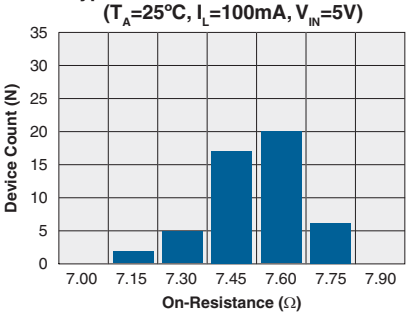
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current						
Continuous	V_{IN}=5V	I_L	-	-	200	mA
Peak	t≤10ms	I_{LPK}	-	-	400	
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 @ 25°C						
Input Control Voltage						
Output Closed	I_L=200mA	V_{IN}	-	-	3.75	V
Recommended Operating Range			5	-	12	
Output Open			1	-	-	
Reverse Input Current	V_{IN}=-5V	I_R	-	-	10	µA
Input Resistor	-	-	900	1000	1100	Ω
Common Characteristics @ 25°C						
Capacitance, Input to Output	-	-	-	1	-	pF

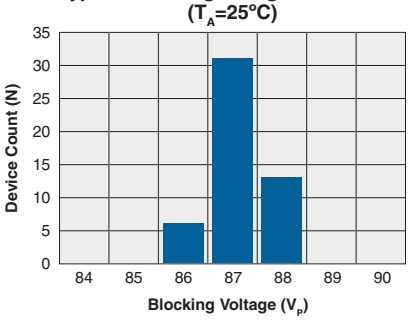
[1] Measurement taken within 1 second of on time.

PERFORMANCE DATA*

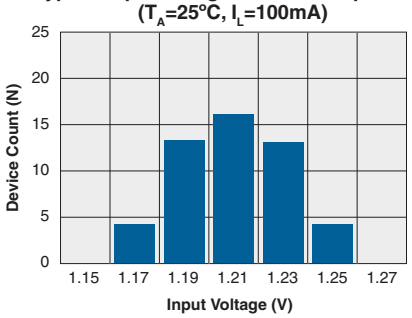
CPC1217
Typical On-Resistance Distribution
(T_A=25°C, I_L=100mA, V_{IN}=5V)



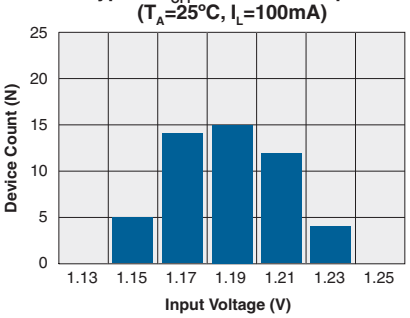
CPC1217
Typical Blocking Voltage Distribution
(T_A=25°C)



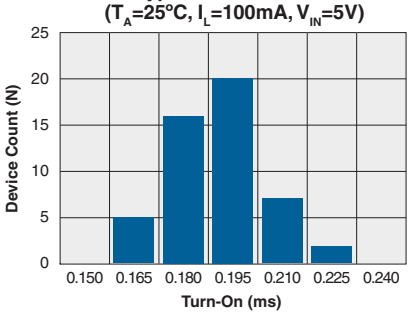
CPC1217
Typical Input Voltage for Switch Operation
(T_A=25°C, I_L=100mA)



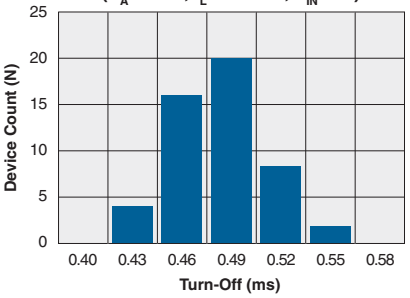
CPC1217
Typical V_{OFF} for Switch Dropout
(T_A=25°C, I_L=100mA)



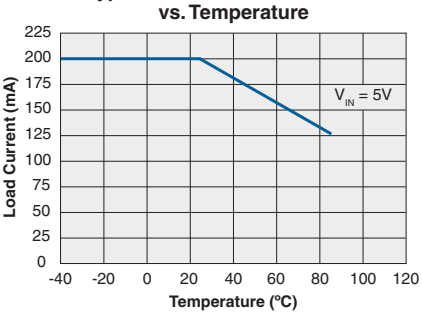
CPC1217
Typical Turn-On Time
(T_A=25°C, I_L=100mA, V_{IN}=5V)



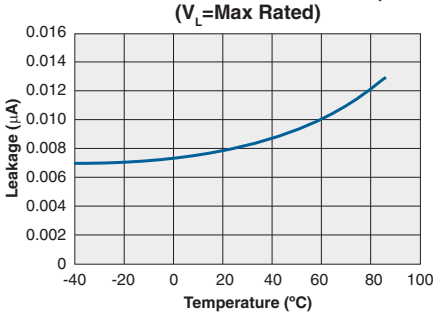
CPC1217
Typical Turn-Off Time
(T_A=25°C, I_L=100mA, V_{IN}=5V)



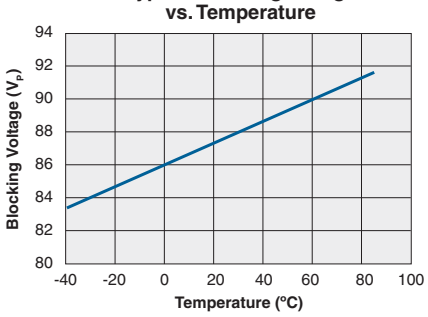
CPC1217
Typical Maximum Load Current
vs. Temperature



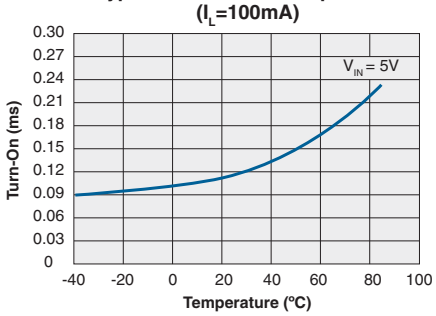
CPC1217
Typical Leakage vs. Temperature
Measured Across Pins 1 & 4)
(V_L=Max Rated)



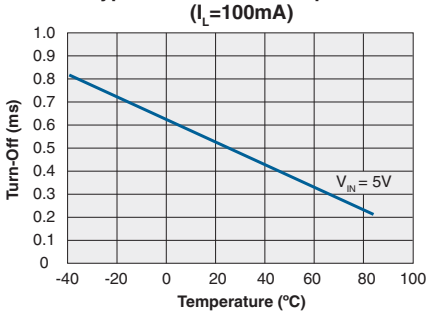
CPC1217
Typical Blocking Voltage
vs. Temperature



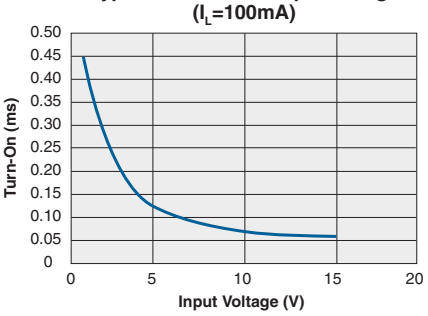
CPC1217
Typical Turn-On vs. Temperature
(I_L=100mA)



CPC1217
Typical Turn-Off vs. Temperature
(I_L=100mA)



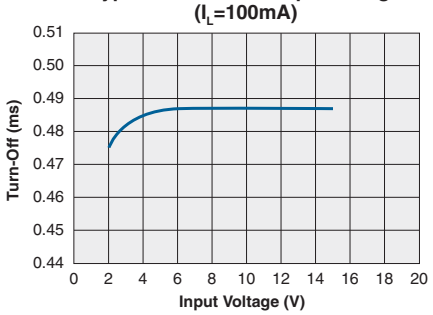
CPC1217
Typical Turn-On vs. Input Voltage
(I_L=100mA)



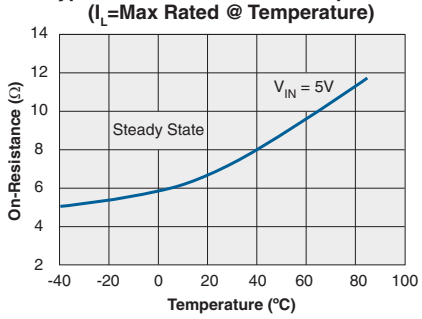
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

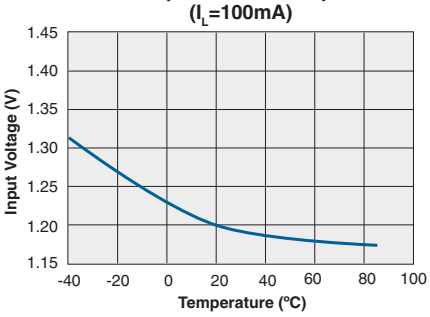
CPC1217
Typical Turn-Off vs. Input Voltage
(I_L=100mA)



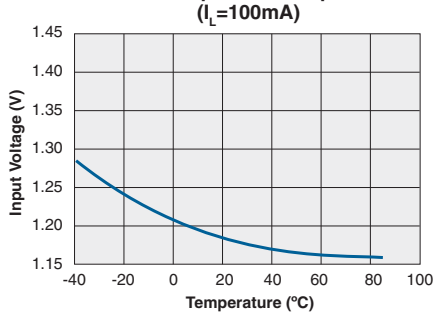
CPC1217
Typical On-Resistance vs. Temperature
(I_L=Max Rated @ Temperature)



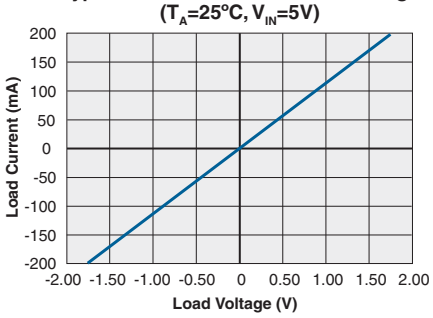
CPC1217
Typical Input Voltage for
Switch Operation vs. Temperature
(I_L=100mA)



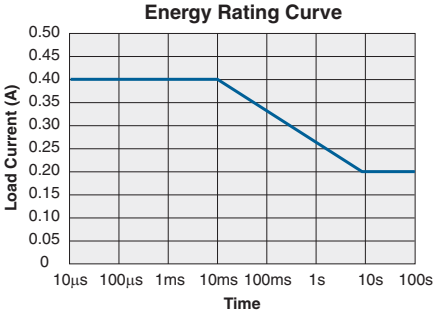
CPC1217
Typical Input Voltage for
Switch Dropout vs. Temperature
(I_L=100mA)



CPC1217
Typical Load Current vs. Load Voltage
(T_A=25°C, V_{IN}=5V)



CPC1217
Energy Rating Curve



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MANUFACTURING INFORMATION

Soldering

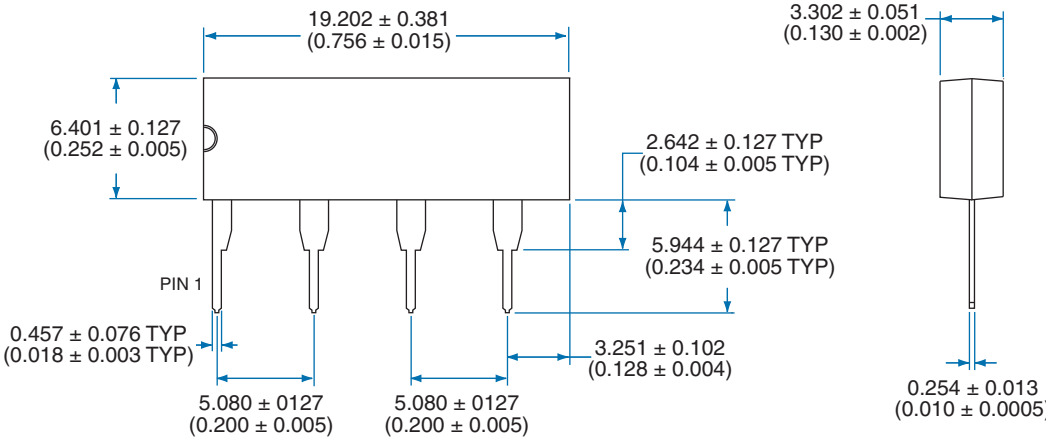
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

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

MECHANICAL DIMENSIONS

4-Pin SIP



Dimensions:
mm
(inches)

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

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

Specification: DS-CPC1217-R03