CPC1916

Power SIP Relay



Parameter	Rating	Units
Blocking Voltage	100	V_P
Load Current	2.5	A_{DC}/A_{rms}
On-Resistance	0.34	Ω

Features

- Power SIP Package
- Handle Load Currents Up to $2.5A_{DC}/A_{rms}$
- High Reliability
- No Moving Parts
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Arc-Free With No Snubbing Circuits
- $2500V_{rms}$ Input/Output Isolation
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable

Applications

- Industrial Controls
- Motor Control
- Robotics
- Medical Equipment—Patient/Equipment Isolation
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- IC Equipment
- Home Appliances

Description

Clare and IXYS have combined to bring OptoMOS® technology, reliability, and compact size to a new family of high-power, solid state relays. As part of that family, the CPC1916 is a 1-Form-A solid state relay. The CPC1916 employs optically coupled MOSFET technology to provide $2500V_{rms}$ of input to output isolation. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS architecture, while the output is controlled by a highly efficient GaAlAs infrared LED. The combination of low on-resistance and high load-current handling capabilities makes the relay suitable for a variety of high-performance switching applications.

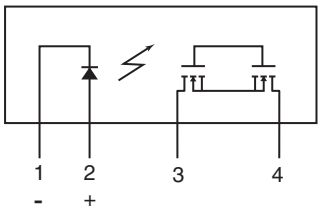
Approvals

- UL Recognized Component: File # E69938
- Certified to: UL 508

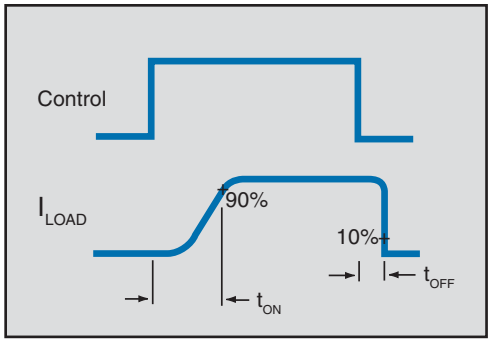
Ordering Information

Part #	Description
CPC1916Y	Power SIP Package (25 per tube)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings (@ 25˚ C)

Parameter	Ratings	Units
Blocking Voltage	100	V_P
Reverse Input Voltage	5	V
Input control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation [1]	150	mW
Isolation voltage Input to Output	2500	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate Linearly 3.33 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	Free air	I_L	-	-	2.5	A_{DC}/A_{rms}
Peak Load Current	t ≤ 10ms	I_{LPK}	-	-	6	A_P
On-Resistance [1]	I_L=1A	R_{ON}	-	-	0.34	Ω
Off-State Leakage Current	V_L=100V	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	I_F=10mA, V_L=10V	t_{ON}	-	-	5	ms
Turn-Off		t_{OFF}	-	-	3	
Input Characteristics @ 25°C						
Input Control Current	I_L=1A	I_F	-	3.3	10	mA
Input Dropout Current	-	I_F	0.3	-	-	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.2	1.4	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics @ 25°C						
Capacitance Input/Output	-	-	-	2	-	pF

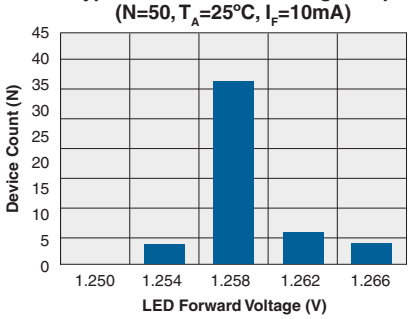
[1] Measurement taken within 1 second of on time.

Thermal Characteristics

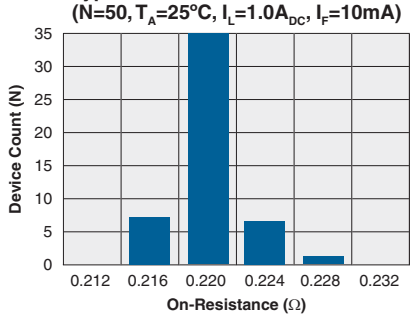
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Thermal Resistance (junction to case)	-	$R_{\theta JC}$	-	1.5	-	°C/W

PERFORMANCE DATA*

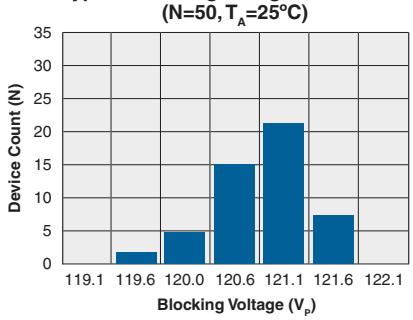
Typical LED Forward Voltage Drop (N=50, T_A=25°C, I_F=10mA)



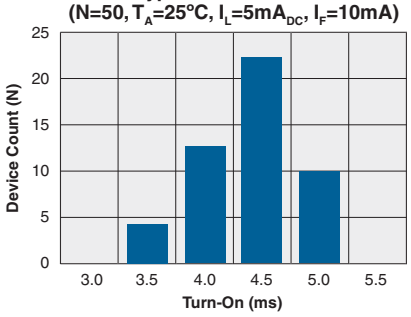
Typical On-Resistance Distribution (N=50, T_A=25°C, I_L=1.0A_{DC}, I_F=10mA)



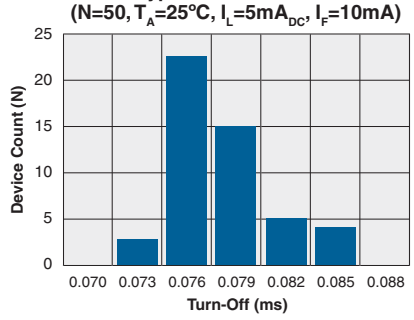
Typical Blocking Voltage Distribution (N=50, T_A=25°C)



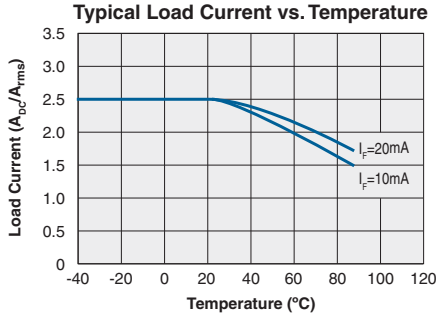
Typical Turn-On Time (N=50, T_A=25°C, I_L=5mA_{DC}, I_F=10mA)



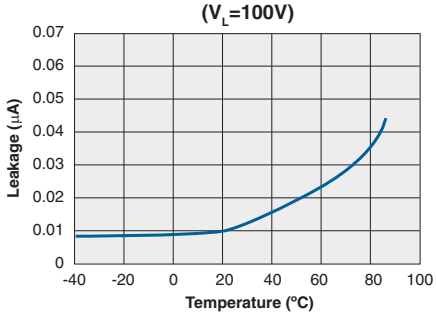
Typical Turn-Off Time (N=50, T_A=25°C, I_L=5mA_{DC}, I_F=10mA)



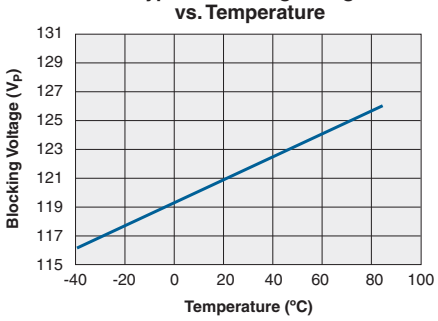
Typical Load Current vs. Temperature



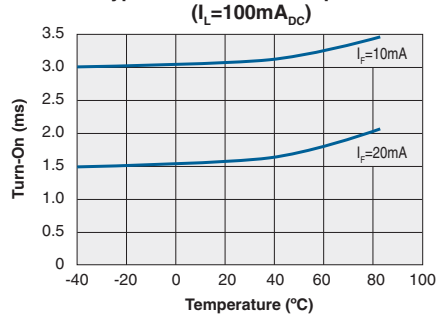
Typical Leakage vs. Temperature at Measured across Pins 3 & 4 (V_L=100V)



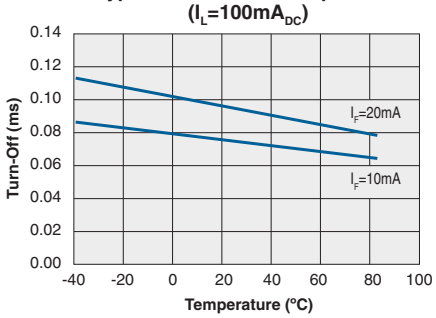
Typical Blocking Voltage vs. Temperature



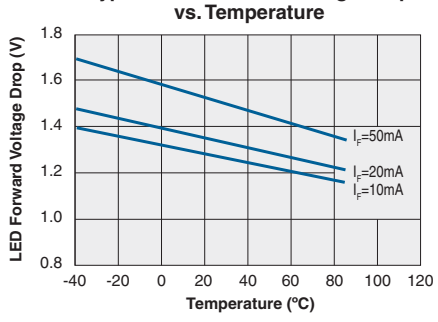
Typical Turn-On vs. Temperature (I_L=100mA_{DC})



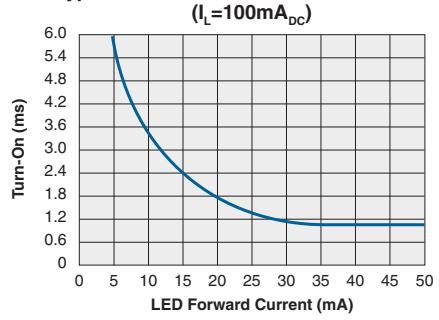
Typical Turn-Off vs. Temperature (I_L=100mA_{DC})



Typical LED Forward Voltage Drop vs. Temperature



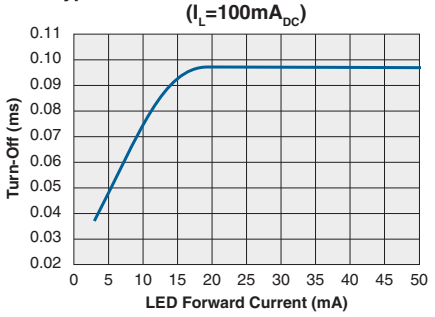
Typical Turn-On vs. LED Forward Current (I_L=100mA_{DC})



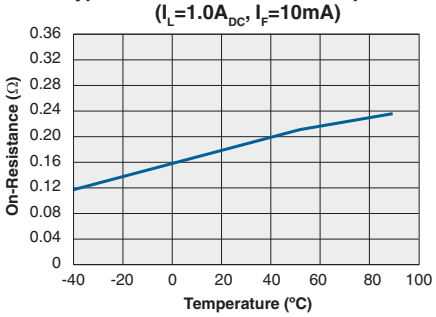
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

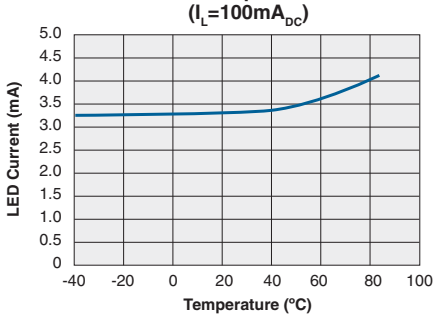
Typical Turn-Off vs. LED Forward Current (I_L=100mA$_{DC}$)



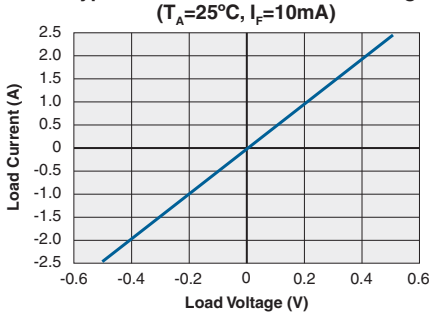
Typical On-Resistance vs. Temperature (I_L=1.0A$_{DC}$, I_F=10mA)



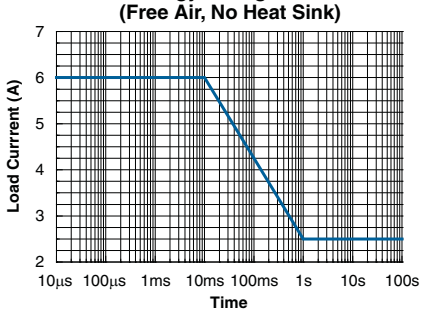
Typical I_F for Switch Operation vs. Temperature (I_L=100mA$_{DC}$)



Typical Load Current vs. Load Voltage (T_A=25°C, I_F=10mA)



Energy Rating Curve (Free Air, No Heat Sink)



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Manufacturing Information

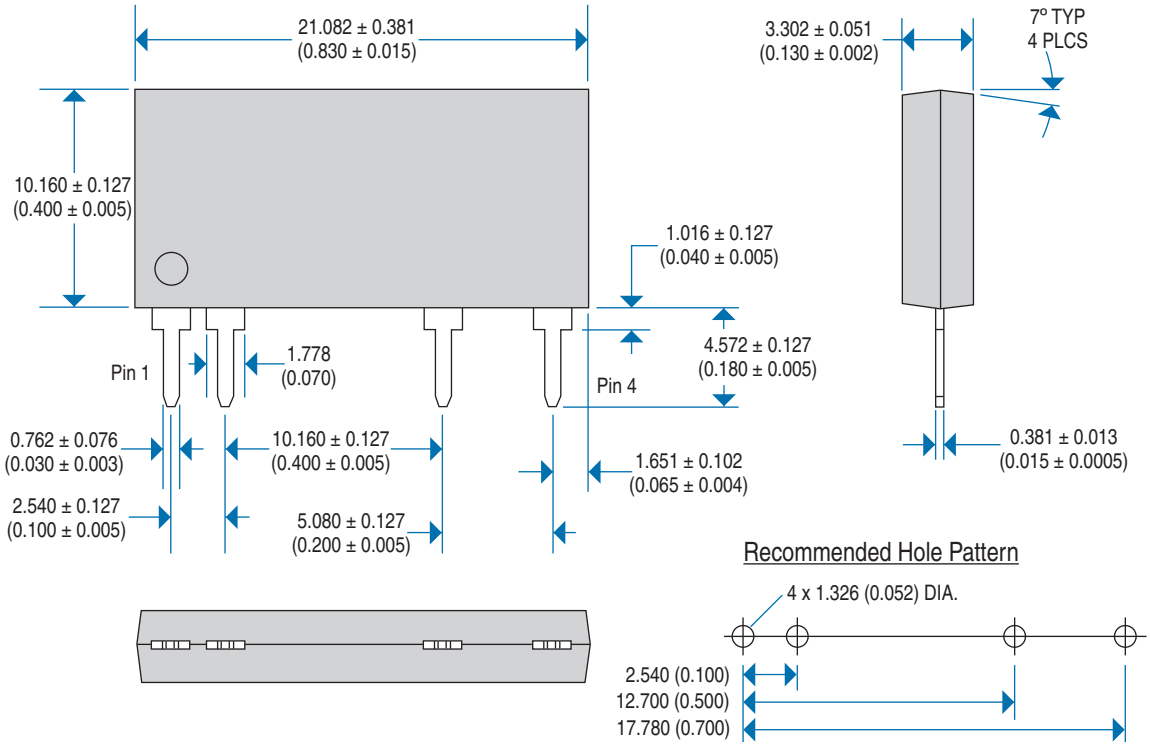
Soldering

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



Recommended Hole Pattern

Dimensions
mm
(inches)

Note: Recommended hole size is based on the maximum cross-section diagonal measure of the pin plus 0.4mm (0.016).

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