



Parameter	Rating	Units
Blocking Voltage	400	V _p
Load Current	250	mA
Max On-resistance	8	Ω

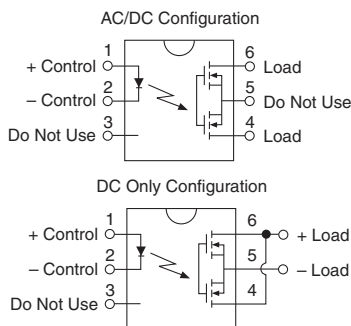
Features

- Low On-Resistance, High Current Handling
- Low Drive Power Requirements (TTL/CMOS Compatible)
- 3750V_{rms} Input/Output Isolation
- High Reliability
- VDE Compatible
- FCC Compatible
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Small 6-Pin Package
- Surface Mount Tape & Reel Version Available

Applications

- Telecommunications
 - Telecomm Switching
 - Hook Switch
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls
- Automotive

Pin Configuration



Description

The PLA140 is a single-pole normally open (1-Form-A) Solid State Relay that uses optically coupled MOSFET technology to provide 3750V_{rms} of input-to-output isolation.

The relay outputs are constructed with efficient MOSFET switches and photovoltaic die that use Clare's patented OptoMOS architecture while the input, a highly efficient GaAlAs infrared LED, provides the optically coupled control.

The PLA140's combination of low on-resistance and high load current handling makes it suitable for a variety of industrial applications.

Because Solid State Relays like the PLA140 have no moving parts, they can offer faster, bounce-free switching in a more compact surface mount or through hole package than traditional electromechanical relays.

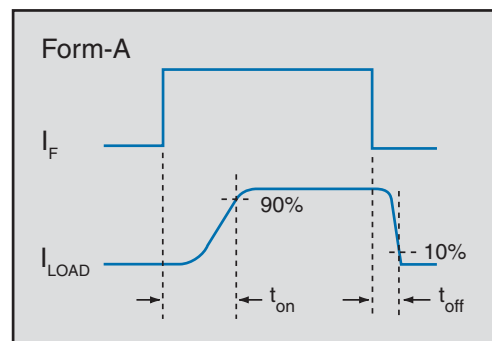
Approvals

- UL Certified Component: File E76270
- CSA Certified Component: Certificate 1172007
- Certified to EN60950
TUV Certificate B 09 07 49410 004

Ordering Information

Part Number	Description
PLA140	6-Pin DIP (50/Tube)
PLA140S	6-Pin Surface Mount (50/Tube)
PLA140STR	6-Pin Surface Mount (1,000/Reel)

Switching Characteristics of Normally Open Devices



Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	400	V _P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation ¹	150	mW
Total Power Dissipation ²	800	mW
Isolation Voltage, Input to Output	3750	V _{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

¹ Derate Linearly 1.33 mW/°C

² Derate Linearly 6.67 mW/°C

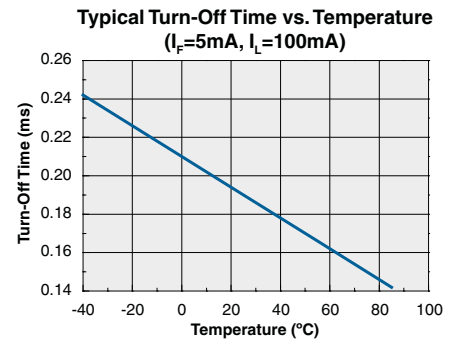
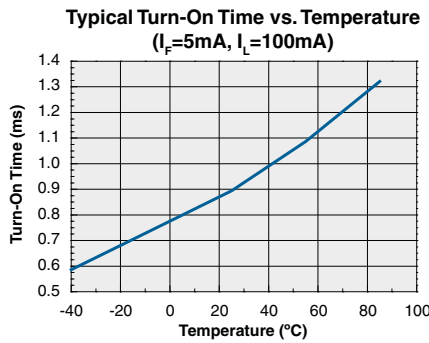
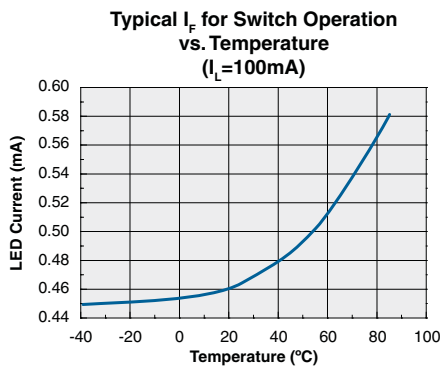
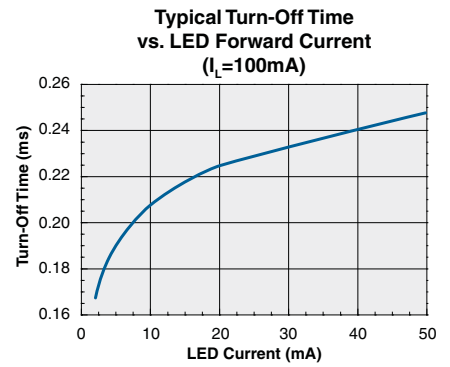
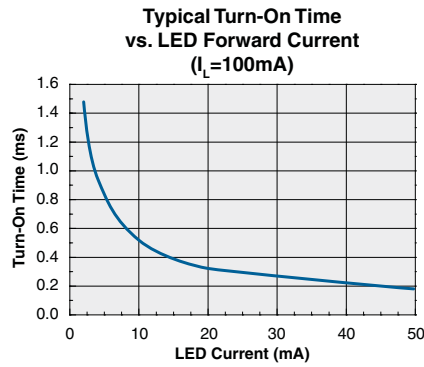
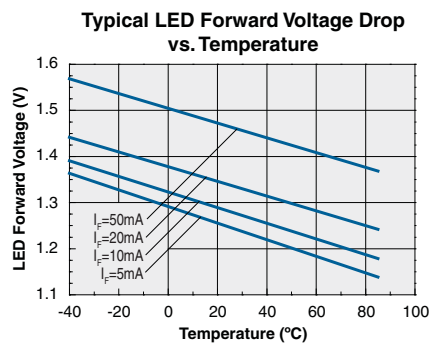
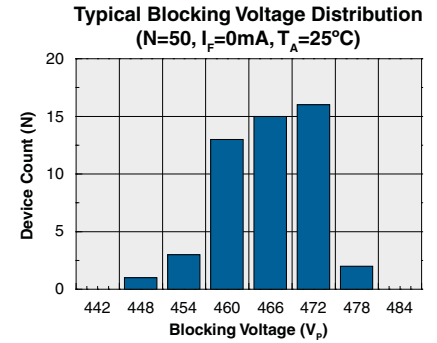
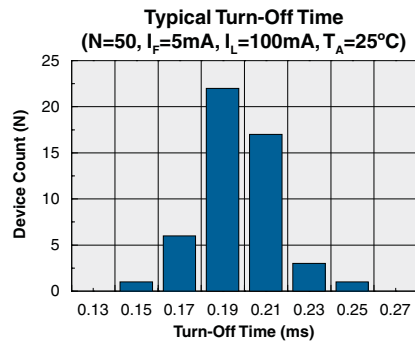
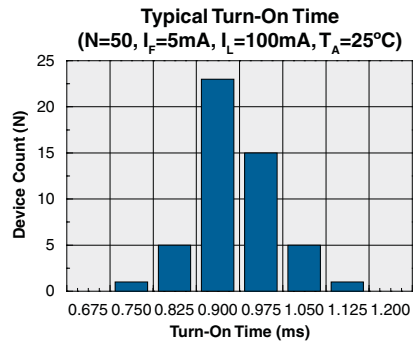
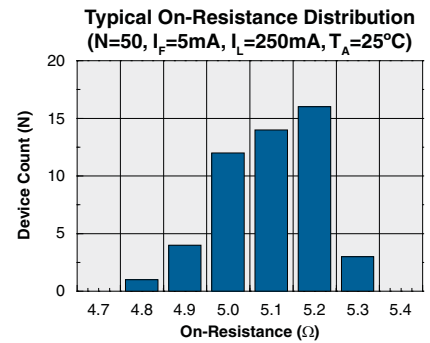
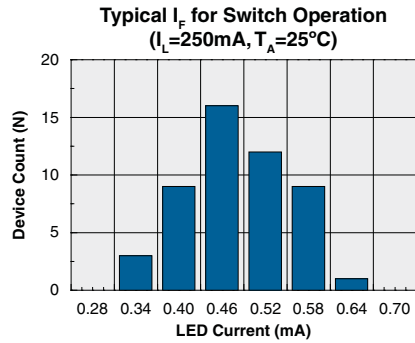
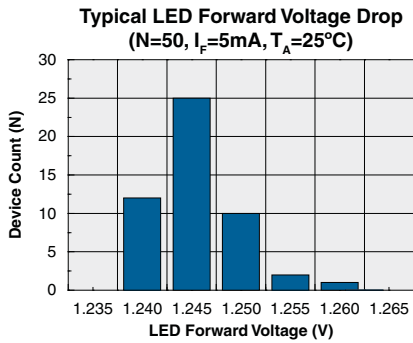
Electrical absolute maximum ratings are at 25°C

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 @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current (Continuous)						
AC/DC Configuration	I _F =5mA	I _L	-	-	250	mA
DC Configuration			-	-	350	
Peak Load Current	I _F =5mA, t=10ms	I _{LPK}	-	-	500	mA
On-Resistance						
AC/DC Configuration	I _F =5mA, I _L =250mA	R _{ON}	-	5.5	8	Ω
DC Configuration			I _F =5mA, I _L =350mA	-	1.5	
Off-State Leakage Current	V _L =400V _P	I _{LEAK}	-	-	1	μA
Switching Speeds						
Turn-On	I _F =5mA, V _L =10V	t _{on}	-	0.4	3	ms
Turn-Off		t _{off}	-	0.19	1	
Output Capacitance	I _F =0mA, V _L =50V, f=1MHz	C _{OUT}	-	18	-	pF
Input Characteristics						
Input Control Current	I _L =250mA	I _F	-	0.46	5	mA
Input Dropout Current	-	I _F	0.2	0.44	-	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						
Input to Output Capacitance	-	C _{IO}	-	3	-	pF

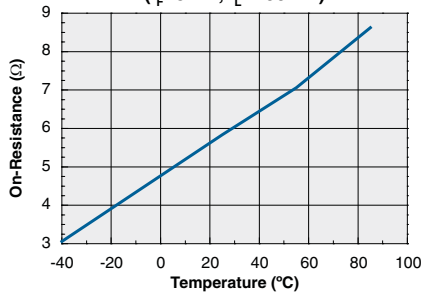
PERFORMANCE DATA*



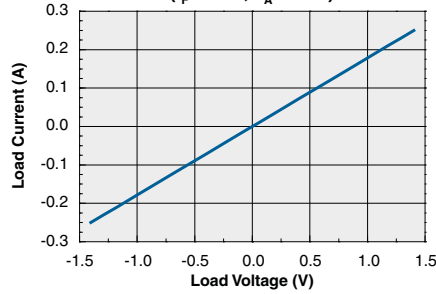
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

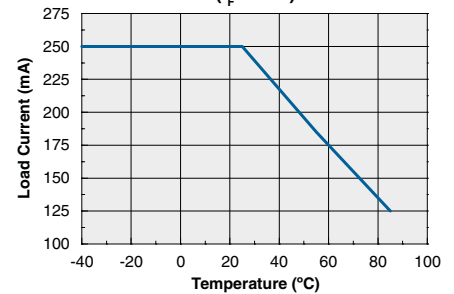
Typical On-Resistance vs. Temperature
AC/DC Configuration
($I_F=5\text{mA}$, $I_L=100\text{mA}$)



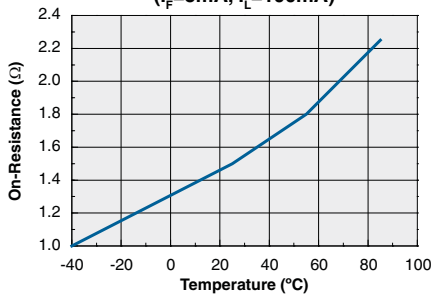
Typical Load Current vs. Load Voltage
AC/DC Configuration
($I_F=5\text{mA}$, $T_A=25^\circ\text{C}$)



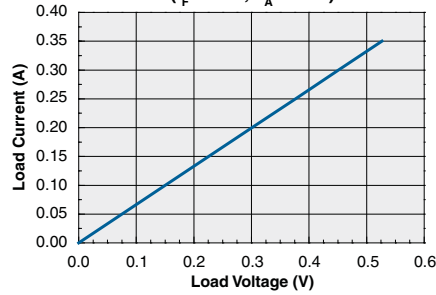
Maximum Load Current vs. Temperature - AC/DC Configuration
($I_F=5\text{mA}$)



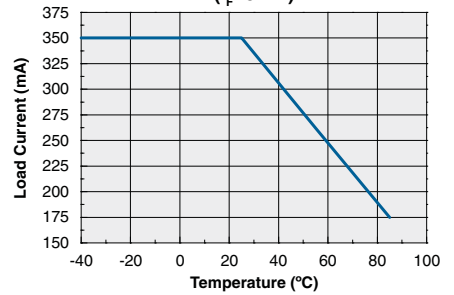
Typical On-Resistance vs. Temperature
DC-Only Configuration
($I_F=5\text{mA}$, $I_L=100\text{mA}$)



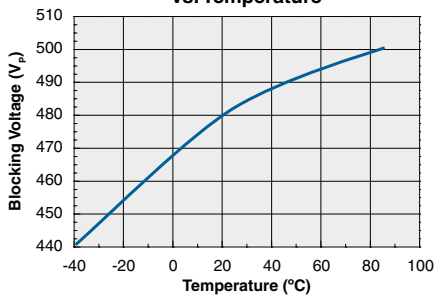
Typical Load Current vs. Load Voltage
DC-Only Configuration
($I_F=5\text{mA}$, $T_A=25^\circ\text{C}$)



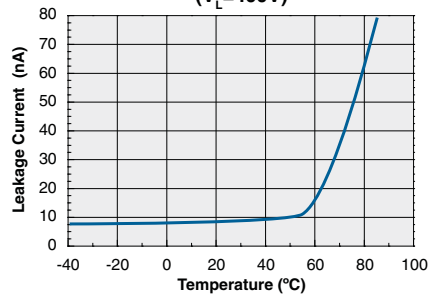
Maximum Load Current vs. Temperature - DC-Only Configuration
($I_F=5\text{mA}$)



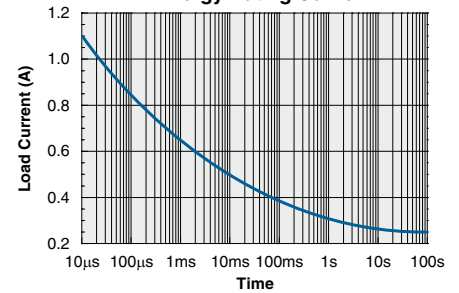
Typical Blocking Voltage vs. Temperature



Typical Leakage vs. Temperature
Measured Across Pins 4&6
($V_L=400\text{V}$)



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

All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Clare 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.

Moisture Sensitivity

This product is rated **Moisture Sensitivity Level 1 (MSL 1)**, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

ESD Sensitivity

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

Reflow Profile

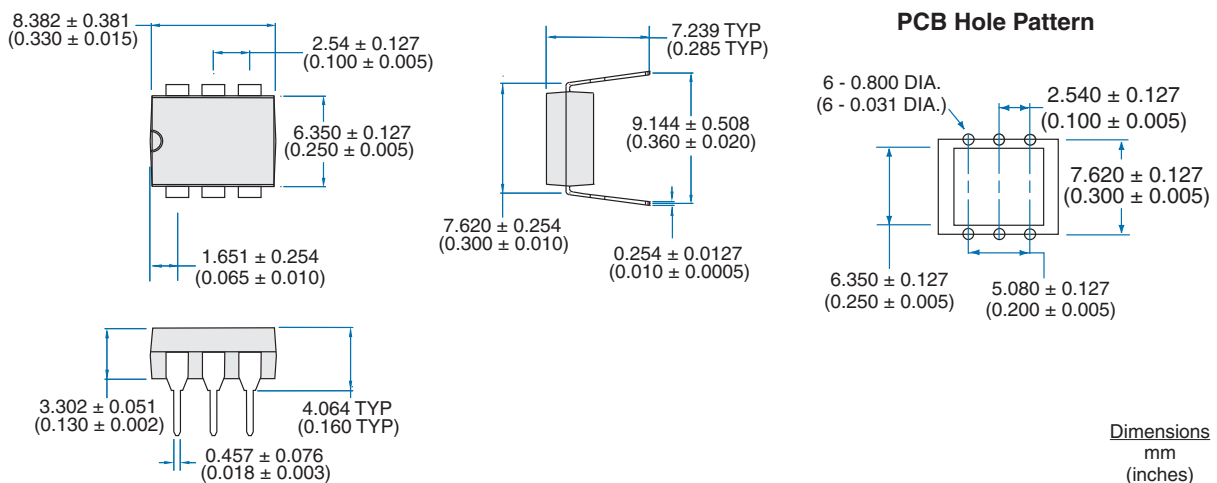
This product has a maximum body temperature rating of **250°C for a maximum of 30 seconds**. All other guidelines of **J-STD-020** must be observed.

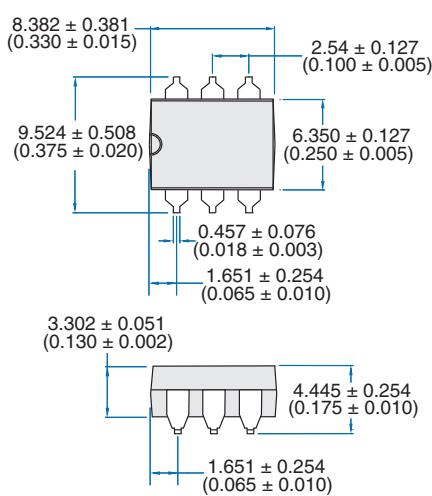
Board Wash

Clare recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since Clare 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.

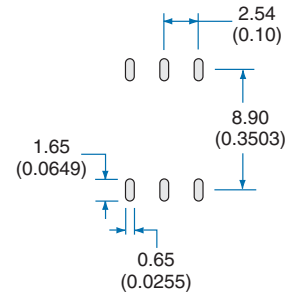


MECHANICAL DIMENSIONS

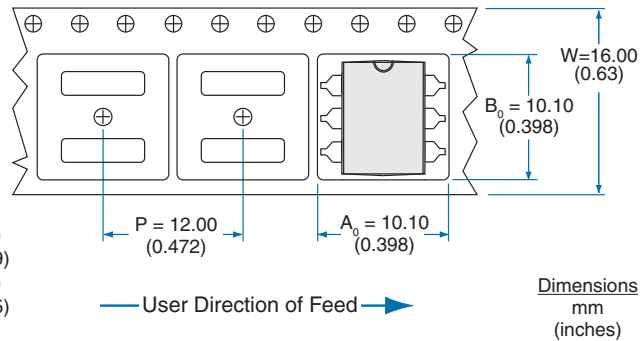
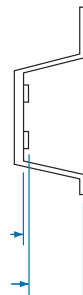
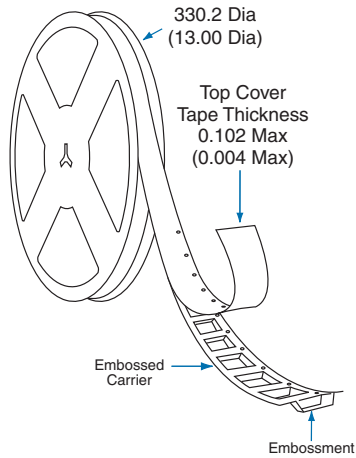




PCB Land Pattern



Dimensions
mm
(inches)



Dimensions
mm
(inches)

NOTES:

1. All dimensions carry tolerances of EIA Standard 481-2
2. The tape complies with all "Notes" for constant dimensions listed on page 5 of EIA-481-2

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