



Parameter	Rating	Units
Load Voltage	800	V <sub>p</sub>
Load Current	100	mA
Maximum On-Resistance	50	Ω
Input Control Current	2	mA

## Features

- 7mm Output Pin Separation
- 800V<sub>p</sub> Blocking Voltage
- 5000V<sub>rms</sub> Input/Output Isolation
- Small Surface Mount Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Flammability Rating UL 94 V-0

## Applications

- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Automotive High-Voltage Circuitry
- Aerospace
- Industrial Controls

## Description

Specially designed to provide 7mm of separation between the two output pins, Clare's PLA171 is a single-pole, normally open (1-Form-A) Solid State Relay. It uses optically coupled MOSFET technology to provide an enhanced input-to-output isolation of 5000V<sub>rms</sub>. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS<sup>®</sup> architecture.

Control of the optically-coupled output is by the input GaAlAs infrared LED. The PLA171 is designed to replace, and offers superior reliability over, electromechanical relays. This device provides bounce-free switching in a compact surface mount package.

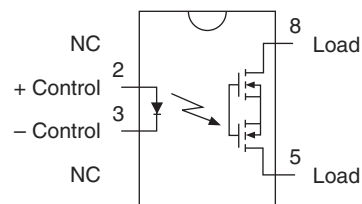
## Approvals

- UL Certified Component: File E76270
- EN/IEC 60950 Certified Component:  
TUV Certificate B 09 07 49410 004

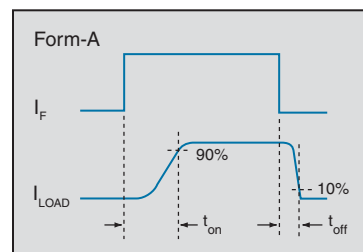
## Ordering Information

Part #	Description
PLA171P	6-Pin (8-Pin Body) Flatpack
PLA171PTR	6-Pin (8-Pin Body) Flatpack, Tape & Reel

## Pin Configuration



## Switching Characteristics of Normally Open Devices



## Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	800	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation <sup>1</sup>	150	mW
Total Power Dissipation <sup>2</sup>	800	mW
ESD, Human Body Model	8	kV
Isolation Voltage, Input to Output (60 Seconds)	5000	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate linearly 3.33 mW / °C

<sup>2</sup> 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 @ 25°C

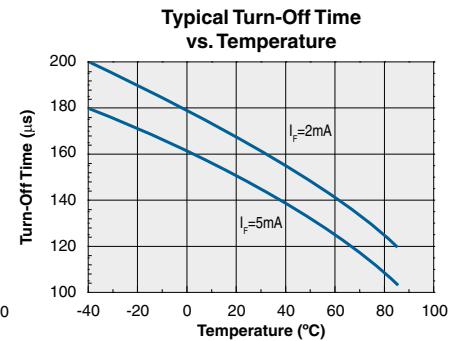
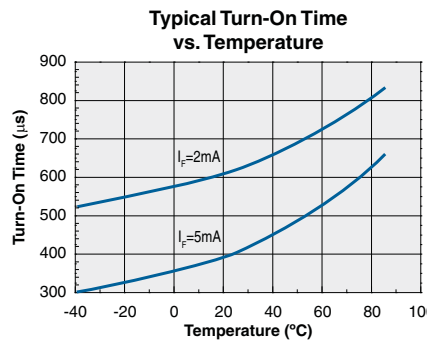
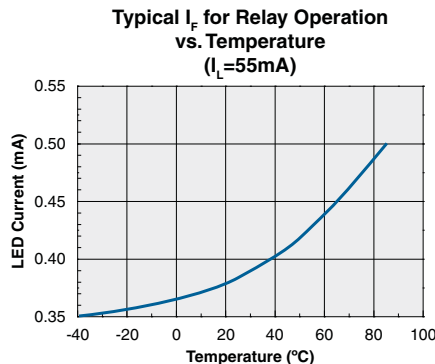
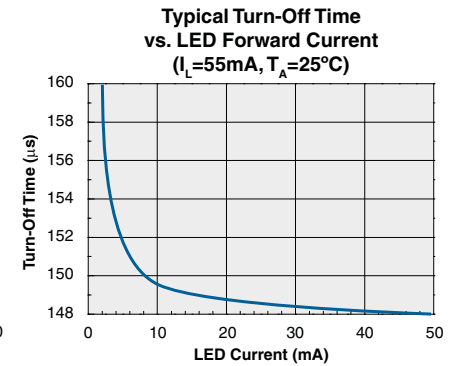
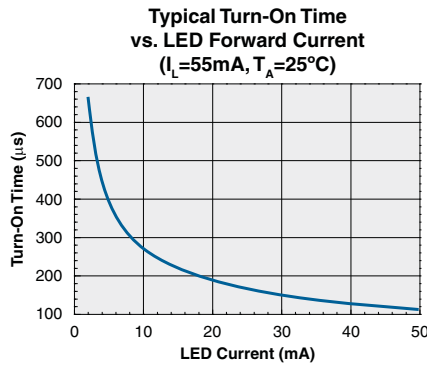
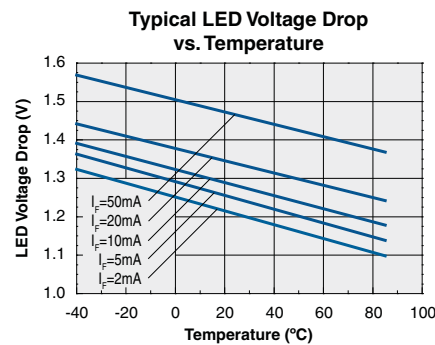
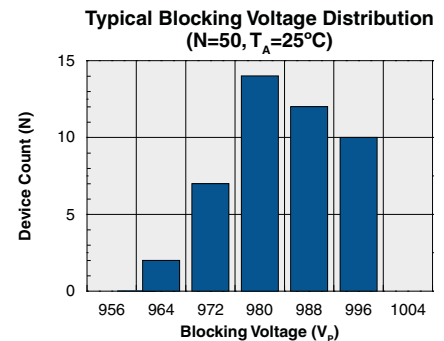
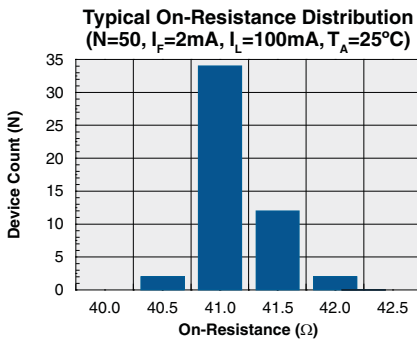
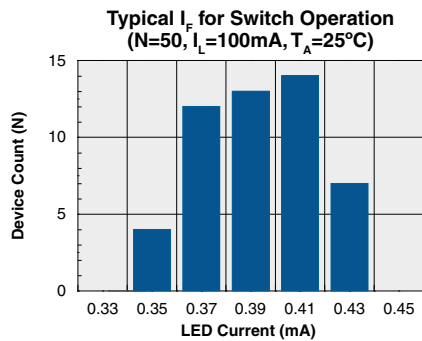
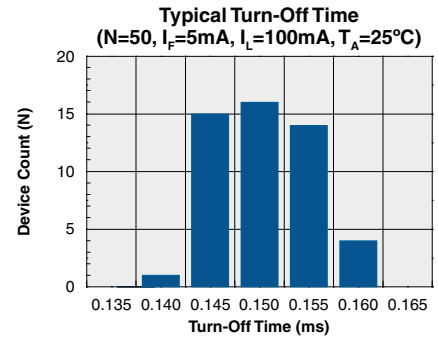
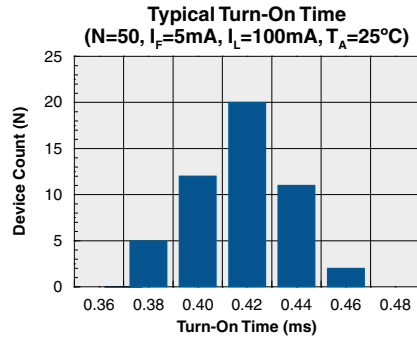
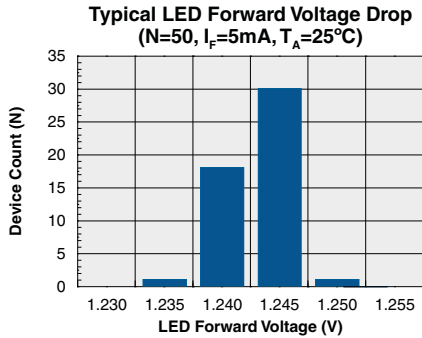
Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics</b>						
Load Current						
Continuous <sup>1</sup>	I <sub>F</sub> =2mA	I <sub>L</sub>	-	-	±100	mA
Peak	I <sub>F</sub> =2mA, t=10ms	I <sub>LPK</sub>	-	-	±350	
On-Resistance <sup>2</sup>	I <sub>F</sub> =2mA, I <sub>L</sub> =100mA	R <sub>ON</sub>	-	40	50	Ω
	I <sub>F</sub> =5mA, I <sub>L</sub> =1mA		-	70	85	
Off-State Leakage Current	I <sub>F</sub> =0mA, V <sub>L</sub> =800V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	t <sub>on</sub>	-	0.42	5	ms
Turn-Off		t <sub>off</sub>	-	0.15	5	
Output Capacitance	I <sub>F</sub> =0mA, V <sub>L</sub> =50V, f=1MHz	C <sub>OUT</sub>	-	11	-	pF
<b>Input Characteristics</b>						
Input Control Current <sup>3</sup>	I <sub>L</sub> =100mA	I <sub>F</sub>	-	0.39	2	mA
Input Dropout Current	-	I <sub>F</sub>	0.1	-	-	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA
<b>Common Characteristics</b>						
Input to Output Capacitance	-	C <sub>IO</sub>	-	3	-	pF

<sup>1</sup> Load derates linearly from 100mA @ 25°C to 55mA @ 85°C.

<sup>2</sup> Measurement taken within 1 second of on-time.

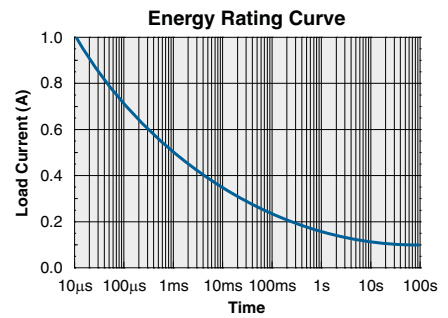
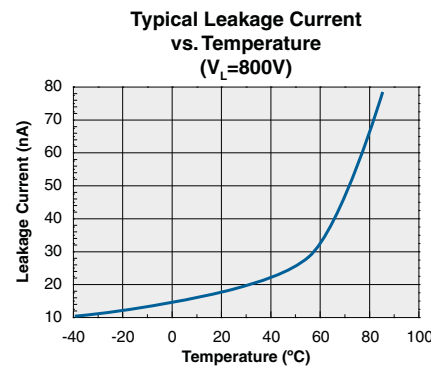
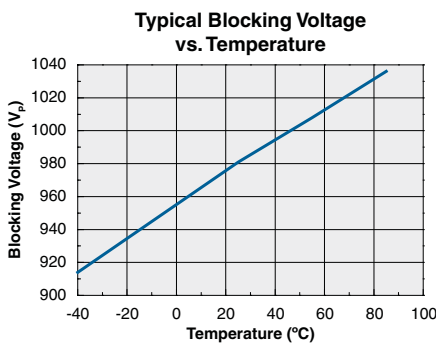
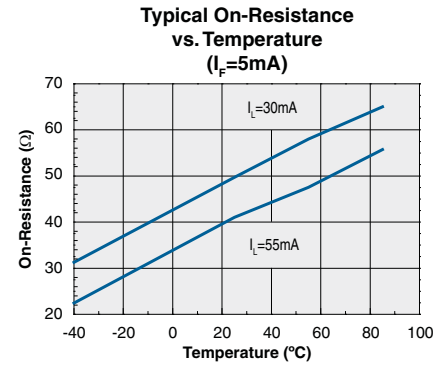
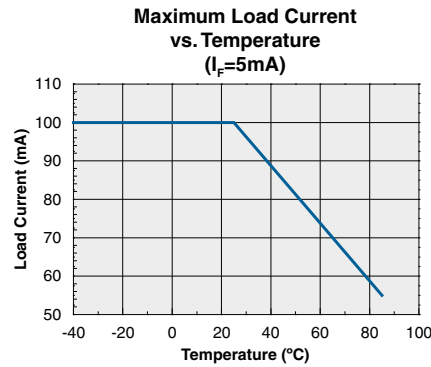
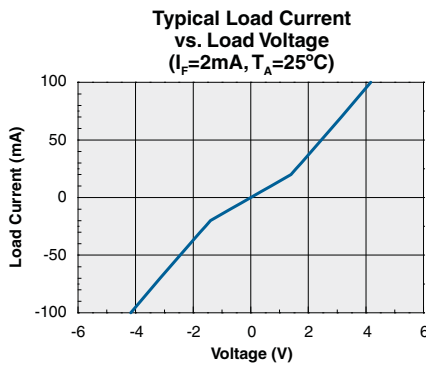
<sup>3</sup> For applications requiring high temperature operation (greater than 60°C) a LED drive current of 5mA is recommended.

**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.

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## Manufacturing Information

### Moisture Sensitivity



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.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Rating
PLA171P	MSL 1

### 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 and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
PLA171P	260°C for 30 seconds

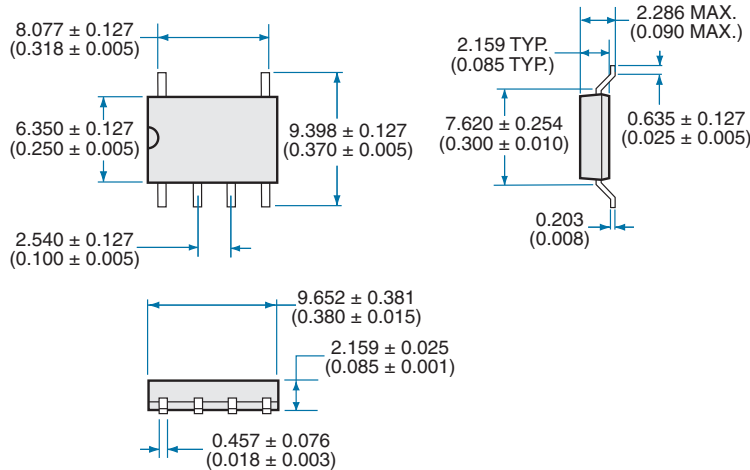
### Board Wash

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.

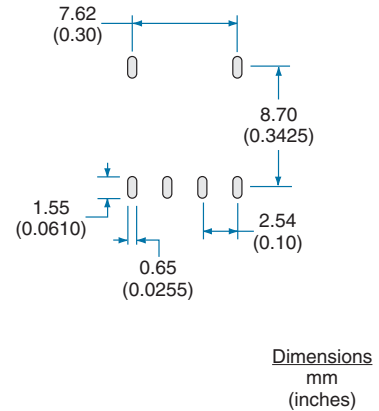


**MECHANICAL DIMENSIONS**

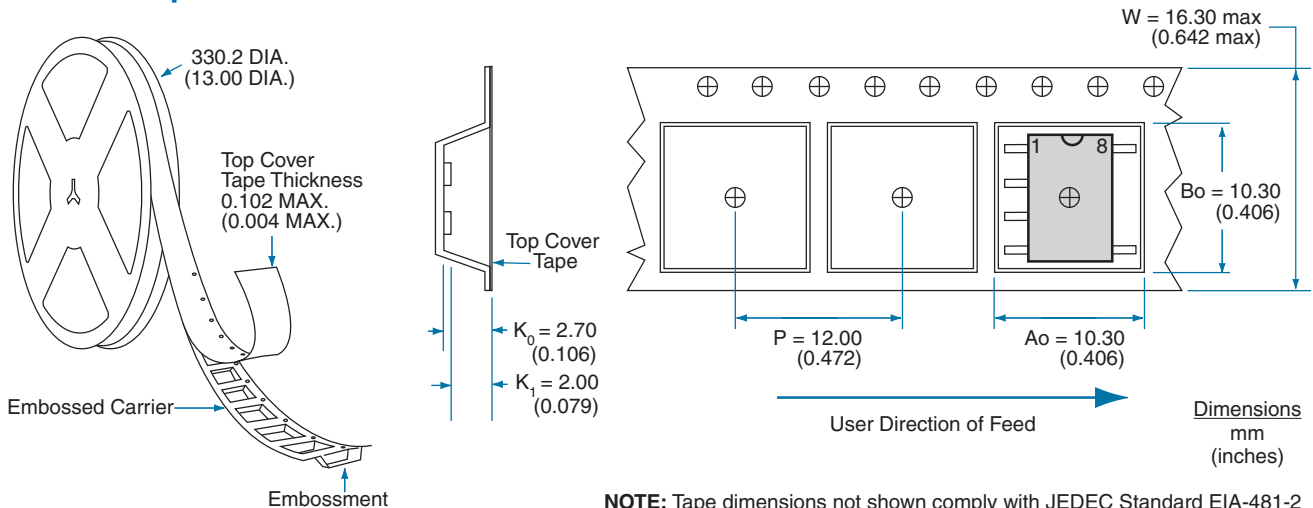
**PLA171P**



**Recommended PCB Land Pattern**



**PLA171P Tape & Reel**



**NOTE:** Tape dimensions not shown comply with JEDEC Standard EIA-481-2

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