



| | PLA143 | Units |
|---------------------|--------|-------|
| Load Voltage | 600 | V |
| Load Current | 100 | mA |
| Max R _{ON} | 50 | Ω |

Features

- Small 6 Pin DIP Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 4000V_{RMS} Input/Output Isolation
- FCC Compatible
- VDE Compatible
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- 600 volt blocking

Applications

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

Description

The PLA143 is a 1-Form-A solid state relay which uses optically coupled MOSFET technology to provide enhanced input to output isolation of 4000V. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS[®] architecture. The optically-coupled input is controlled by a highly efficient GaAlAs infrared LED. The PLA143 can be used to replace mechanical relays and offers the superior reliability associated with semiconductor devices. Because they have no moving parts, they can offer faster, bounce-free switching in a more compact surface mount or through hole package.

Approvals

- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- BSI Certified to:
 - BS EN 60950:1992 (BS7002:1992)
Certificate #: 7344 (to 3750 volts)
 - BS EN 41003:1993
Certificate #: 7344

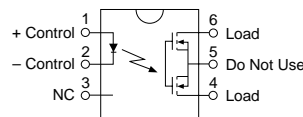
Ordering Information

| Part # | Description |
|-----------|---------------------------------|
| PLA143 | 6 Pin Dip (50/Tube) |
| PLA143S | 6 Pin Surface Mount (50/Tube) |
| PLA143STR | 6 Pin Surface Mount (1000/Reel) |

Pin Configuration

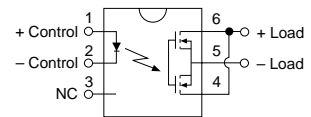
PLA143 Pinout

AC/DC Configuration

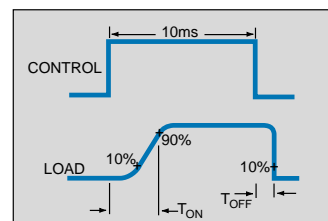


PLA143 Pinout

DC Only Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings (@ 25° C)

| Parameter | Min | Typ | Max | Units |
|--|------|-----|------------------|------------------|
| Input Power Dissipation | - | - | 150 ¹ | mW |
| Input Control Current | - | - | 50 | mA |
| Peak (10ms) | - | - | 1 | A |
| Reverse Input Voltage | - | - | 5 | V |
| Total Power Dissipation | - | - | 800 ² | mW |
| Isolation Voltage Input to Output | 4000 | - | - | V _{RMS} |
| Operational Temperature | -40 | - | +85 | °C |
| Storage Temperature | -40 | - | +125 | °C |
| Soldering Temperature | | | | |
| DIP Package | - | - | +260 | °C |
| Surface Mount Package (10 Seconds Max.) | - | - | +220 | °C |

¹ Derate Linearly 1.33 mw/°C

² 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 these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.

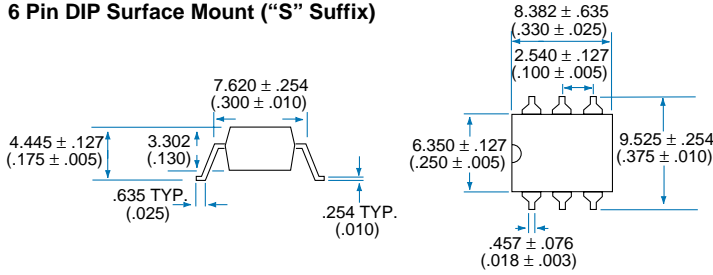
Electrical Characteristics

| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|--------------------------------------|--|-------------------|------|-----|-----|------------------|
| Output Characteristics @ 25°C | | | | | | |
| Load Voltage (Peak) | - | V _L | - | - | 600 | V |
| Load Current (Continuous) | | | | | | |
| AC/DC Configuration | - | I _L | - | - | 100 | mA |
| DC Configuration | - | I _L | - | - | 170 | mA |
| Peak Load Current | 10ms | I _{LPK} | - | - | 350 | mA |
| On-Resistance | | | | | | |
| AC/DC Configuration | I _L =Load Current | R _{ON} | - | - | 50 | Ω |
| DC Configuration | I _L =Load Current | | - | - | 14 | Ω |
| Off-State Leakage Current | V _L =600V | I _{LEAK} | - | - | 1 | μA |
| Switching Speeds | | | | | | |
| Turn-On | I _F =5mA, V _L =10V | T _{ON} | - | - | 5 | ms |
| Turn-Off | I _F =5mA, V _L =10V | T _{OFF} | - | - | 5 | ms |
| Output Capacitance | 50V; f=1MHz | C _{OUT} | - | 50 | - | pF |
| Input Characteristics @ 25°C | | | | | | |
| Input Control Current | I _L =Load Current | I _F | 5 | - | 50 | mA |
| Input Dropout Current | - | I _F | 0.4 | 0.7 | - | mA |
| Input Voltage Drop | I _F =5mA | V _F | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Voltage | - | V _R | - | - | 5 | V |
| Reverse Input Current | V _R =5V | I _R | - | - | 10 | μA |
| Common Characteristics @ 25°C | | | | | | |
| Input to Output Capacitance | - | C _{I/O} | - | 3 | - | pF |
| Input to Output Isolation* | (60 seconds) | V _{I/O} | 4000 | - | - | V _{RMS} |

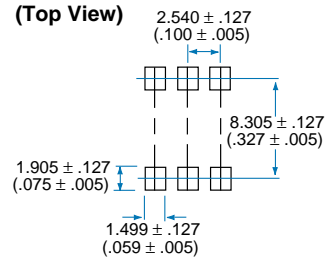
* 4000 volt isolation is guaranteed by 100% screening with a low leakage, 5000 volt test for a two second duration.

Mechanical Dimensions

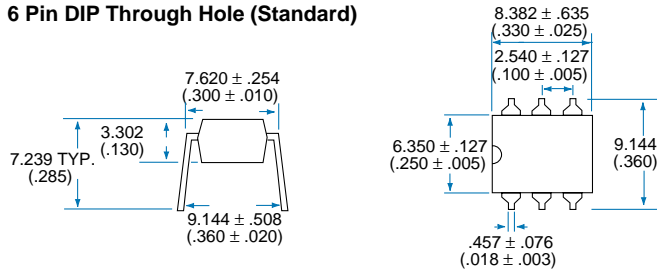
6 Pin DIP Surface Mount ("S" Suffix)



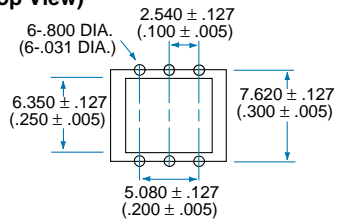
PC Board Pattern (Top View)



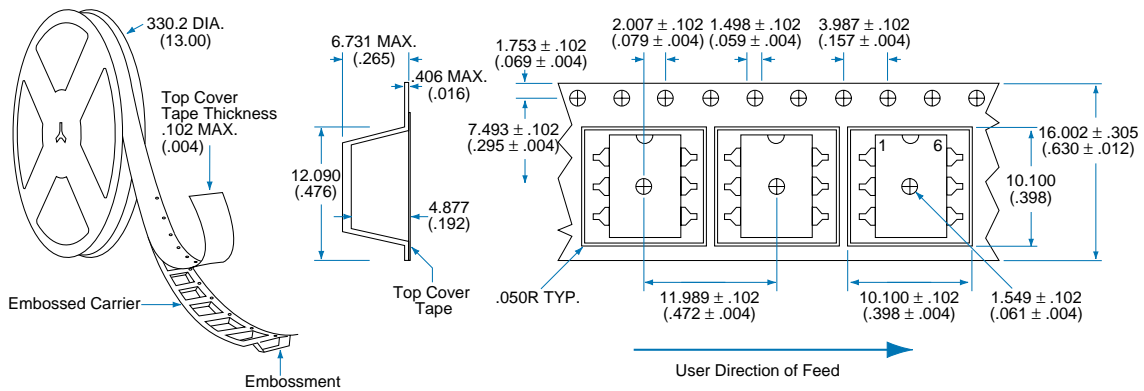
6 Pin DIP Through Hole (Standard)



PC Board Pattern (Top View)



Tape and Reel Packaging for 6 Pin Surface Mount Package



Dimensions
mm
(inches)



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