



Parameters	Ratings	Units
Blocking Voltage	600	V <sub>P</sub>
Load Current	100	mA
Max On-resistance	50	Ω

### Features

- Small 6-Pin Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 4000V<sub>rms</sub> 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 an enhanced input to output isolation of 4000V<sub>rms</sub>. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS<sup>®</sup> architecture. The optically-coupled output 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

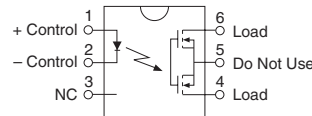
### Ordering Information

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

### Pin Configuration

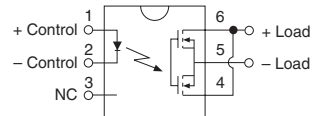
#### PLA143 Pinout

AC/DC Configuration

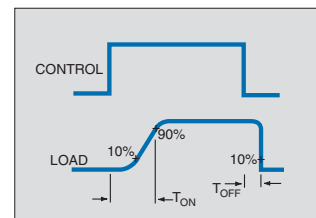


#### PLA143 Pinout

DC Only Configuration



### Switching Characteristics of Normally Open (Form A) Devices



## Absolute Maximum Ratings

Parameter	Ratings	Units
Peak Blocking Voltage	600	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation <sup>1</sup>	100	mW
Total Package Dissipation <sup>2</sup>	800	mW
Isolation Voltage Input to Output	4000	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate Linearly 1.33 mW/°C

<sup>2</sup> Derate Linearly 6.67 mW/°C

Electrical absolute maximum ratings are at 25°C

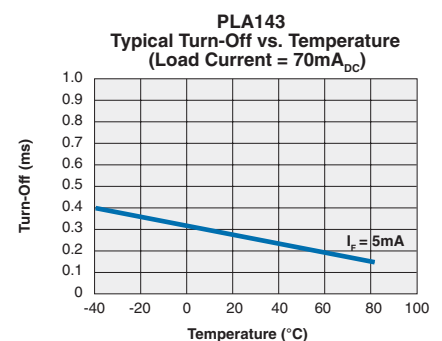
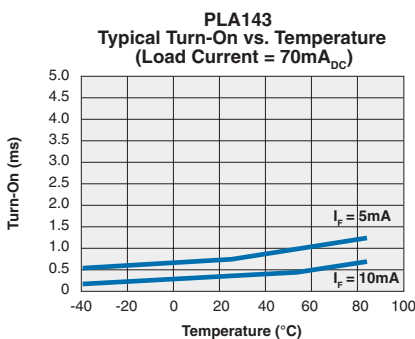
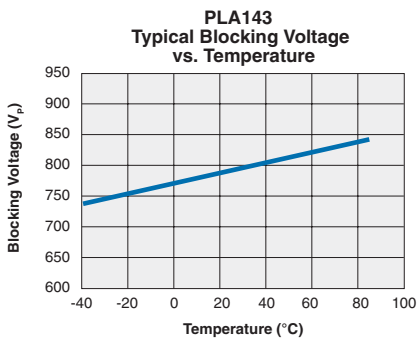
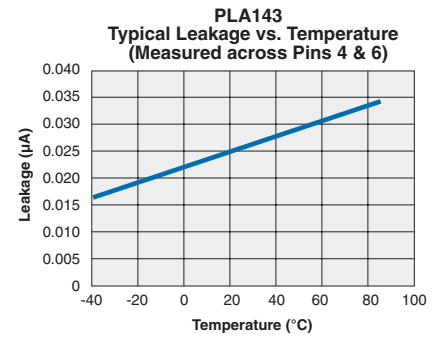
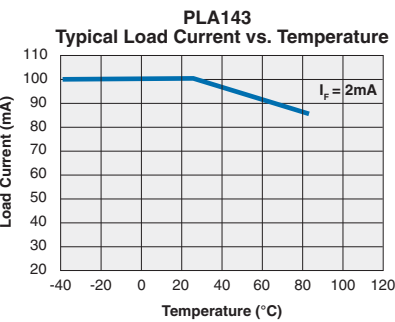
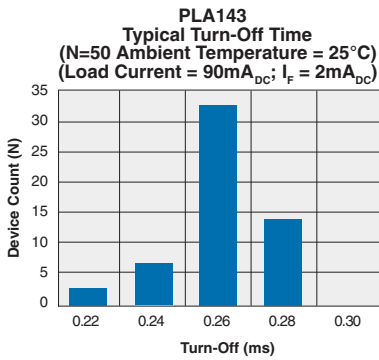
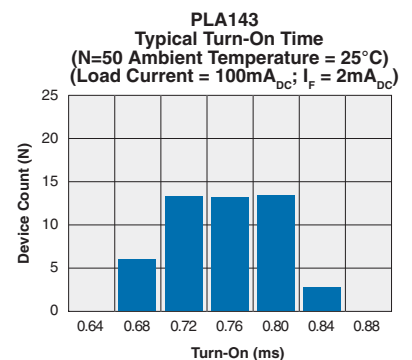
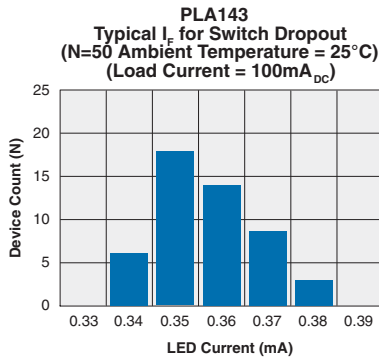
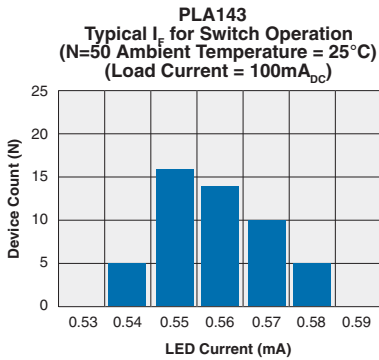
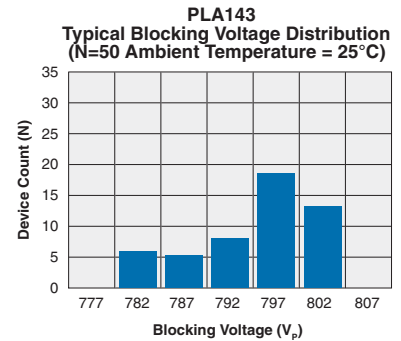
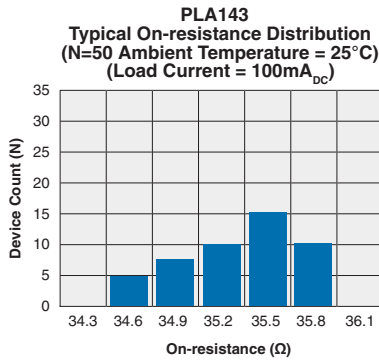
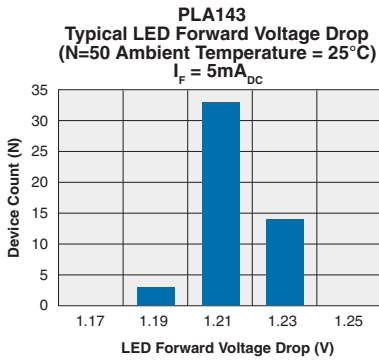
*Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.*

## Electrical Characteristics

Parameters	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Load Current, Continuous						
AC/DC Configuration	-	I <sub>L</sub>	-	-	100	mA
DC Configuration	-	I <sub>L</sub>	-	-	170	mA
Peak Load Current	10ms	I <sub>LPK</sub>	-	-	350	mA
On-resistance <sup>1</sup>						
AC/DC Configuration	I <sub>L</sub> =100mA	R <sub>ON</sub>	-	-	50	Ω
DC Configuration	I <sub>L</sub> =170mA	R <sub>ON</sub>	-	-	14	Ω
Off-State Leakage Current	V <sub>L</sub> =600V	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	T <sub>ON</sub>	-	-	5	ms
Turn-Off	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	T <sub>OFF</sub>	-	-	5	ms
Output Capacitance	50V; f=1MHz	C <sub>OUT</sub>	-	50	-	pF
<b>Input Characteristics @ 25°C</b>						
Input Control Current	I <sub>L</sub> =90mA	I <sub>F</sub>	-	-	2	mA
Input Dropout Current	-	I <sub>F</sub>	0.2	0.35	-	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 @ 25°C</b>						
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

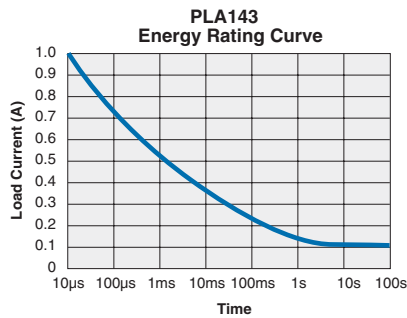
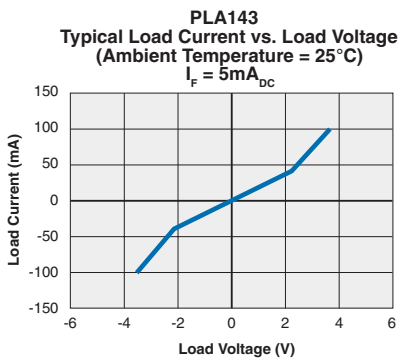
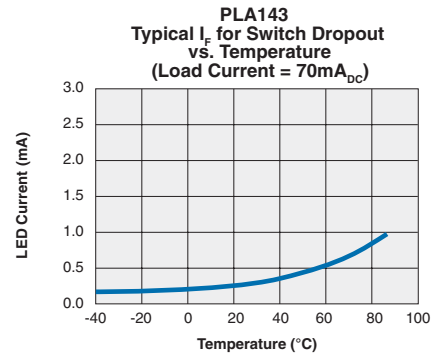
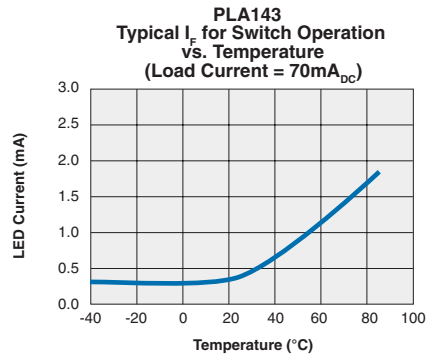
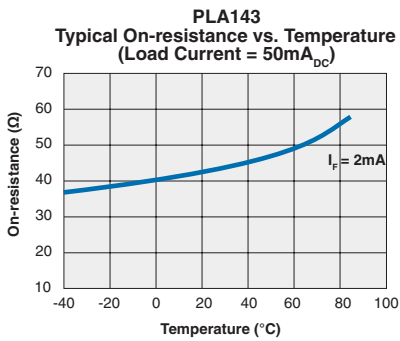
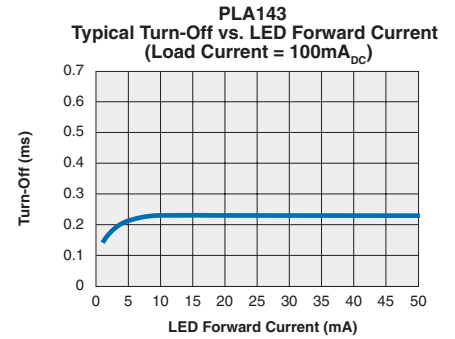
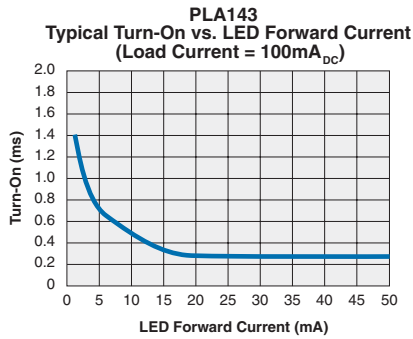
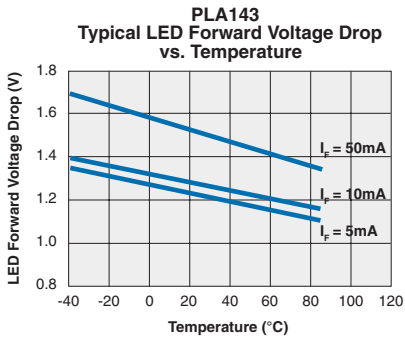
<sup>1</sup> Within 1 second of time.

**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\*



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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.

Recommended soldering processes are limited to 260°C component body temperature for 10 seconds.

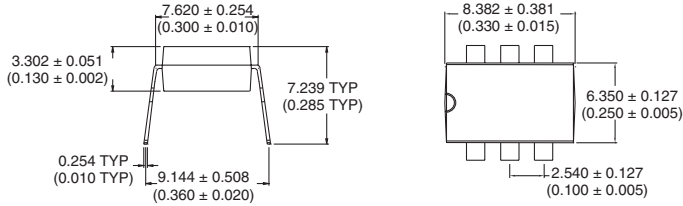
### Washing

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

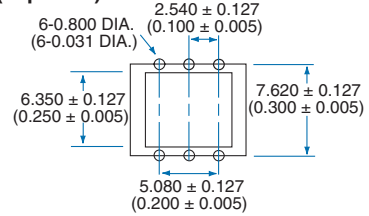


## MECHANICAL DIMENSIONS

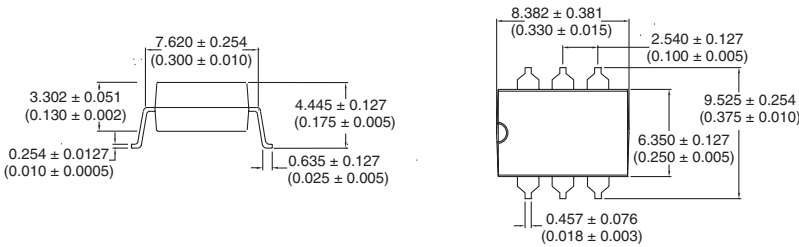
### 6-Pin DIP Through Hole (Standard)



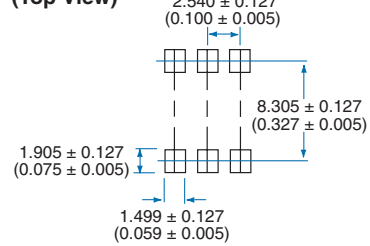
### PC Board Pattern (Top View)



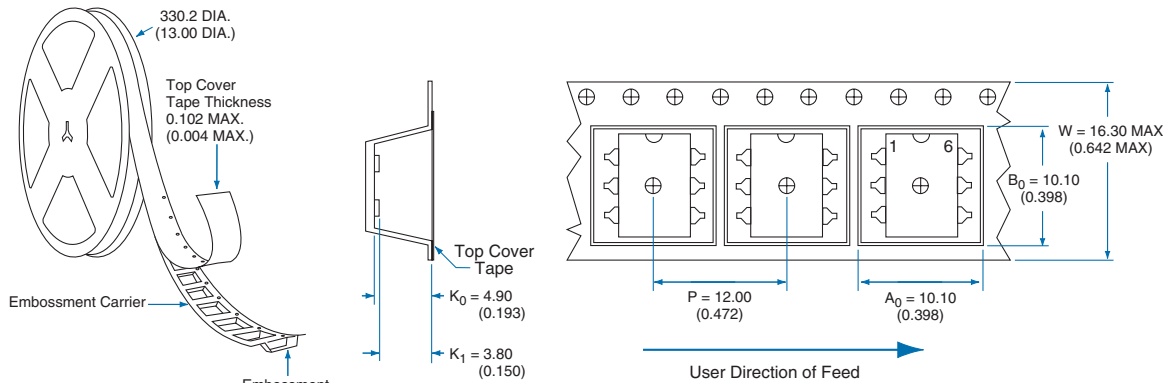
### 6-Pin Surface Mount ("S" Suffix)



### PC Board Pattern (Top View)



### Tape and Reel Packaging for Surface Mount Package



Dimensions:  
inches  
(mm)

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