



Parameter	Rating	Units
Load Voltage	800	V _P
Load Current	100	mA _{rms} / mA _{DC}
On-Resistance (max)	50	Ω
Input Control Current	2	mA

Features

- 7mm Separation of Output Pins
- 800V_P Blocking Voltage
- 5000V_{rms} Input/Output Isolation
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Small Surface Mount Package
- 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, IXYS Integrated Circuits Division's PLA171 is a single-pole, normally open (1-Form-A) Solid State Relay that uses optically coupled MOSFET technology to provide an enhanced input-to-output isolation of 5000V_{rms}.

Its optically coupled outputs, which use the patented OptoMOS architecture, are controlled by a highly efficient 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.

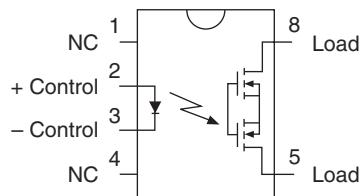
Approvals

- UL Certified Component: File E76270
- EN/IEC 60950 Certified Component: TUV Certificate B 12 11 82667 001

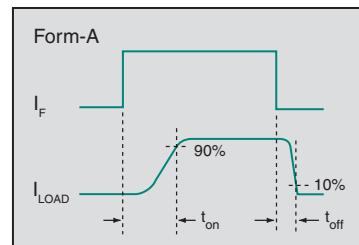
Ordering Information

Part #	Description
PLA171P	6-Pin (8-Pin Body) Flatpack (50/Tube)
PLA171PTR	6-Pin (8-Pin Body) Flatpack, Tape & Reel (1000/Reel)

Pin Configuration



Switching Characteristics of Normally Open Devices



Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	800	V _P
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation ¹	150	mW
Total Power Dissipation ²	800	mW
ESD, Human Body Model	8	kV
Isolation Voltage, Input to Output (60 Seconds)	5000	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

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.

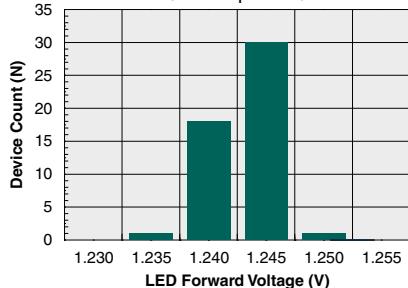
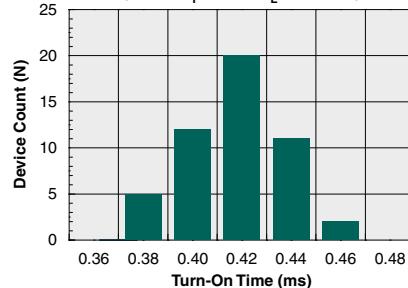
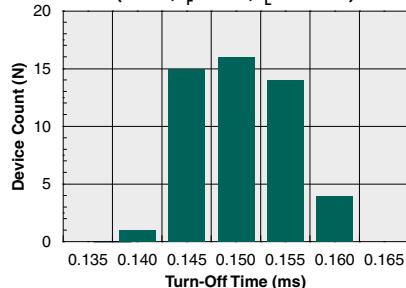
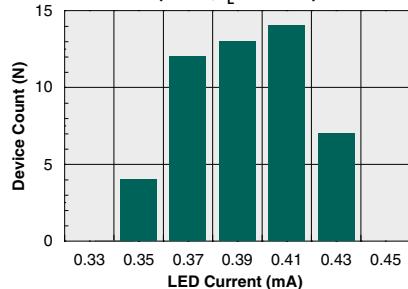
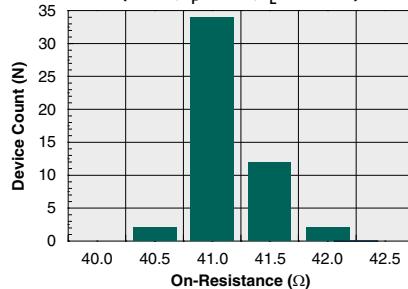
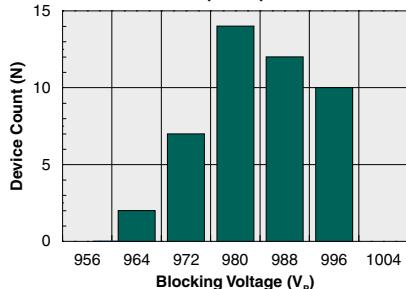
Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current Continuous ¹	I _F =2mA	I _L	-	-	100	mA _{rms} / mA _{DC}
Peak	I _F =2mA, t=10ms	I _{LPK}	-	-	±350	mA _P
On-Resistance ²	I _F =2mA, I _L =100mA	R _{ON}	-	40	50	Ω
	I _F =5mA, I _L =1mA		-	70	85	
Off-State Leakage Current	I _F =0mA, V _L =800V _P	I _{LEAK}	-	-	1	μA
Switching Speeds						
Turn-On	I _F =5mA, V _L =10V	t _{on}	-	0.42	5	ms
Turn-Off		t _{off}	-	0.15	5	
Output Capacitance	I _F =0mA, V _L =50V, f=1MHz	C _{OUT}	-	11	-	pF
Input Characteristics						
Input Control Current to Activate ³	I _L =100mA	I _F	-	0.39	2	mA
Input Control Current to Deactivate	-	I _F	0.1	-	-	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 _{I/O}	-	3	-	pF

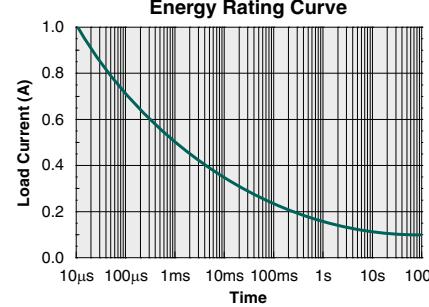
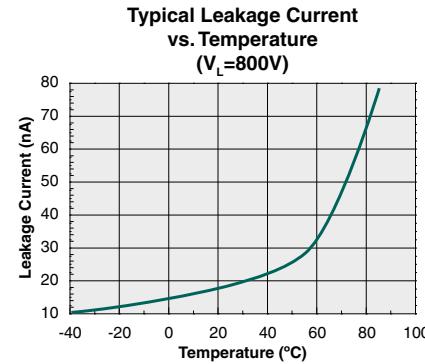
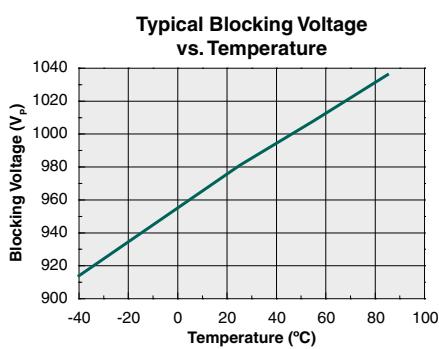
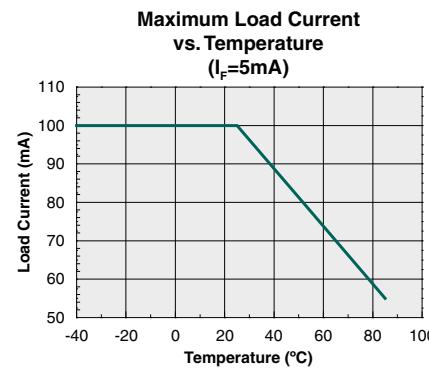
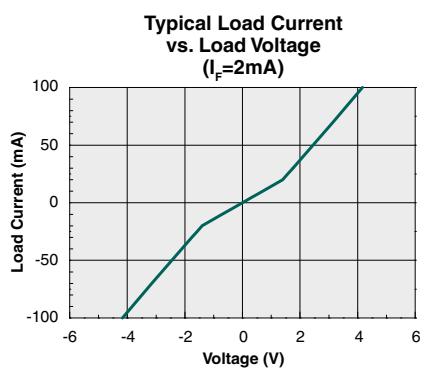
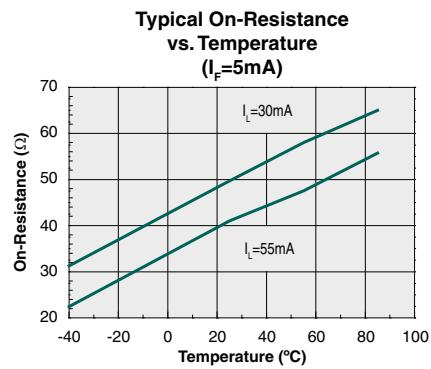
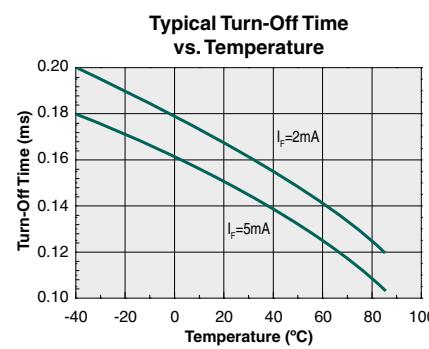
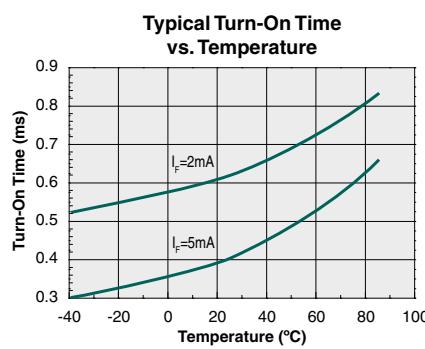
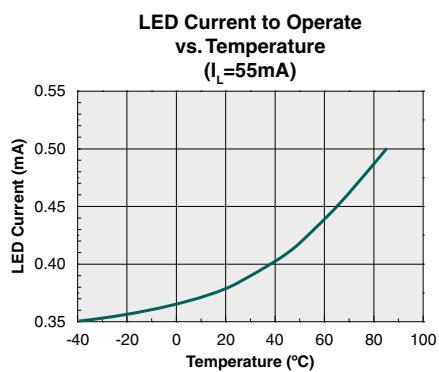
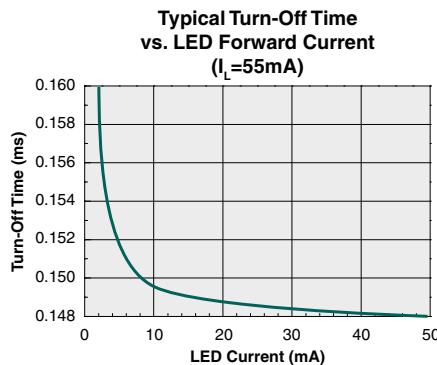
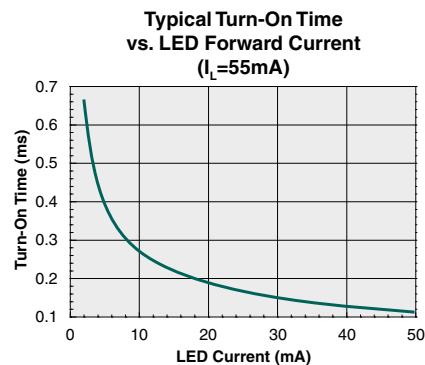
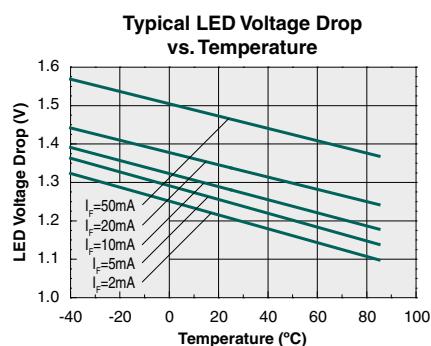
¹ Load derates linearly from 100mA @ 25°C to 55mA @ 85°C.

² Measurement taken within 1 second of on-time.

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

PERFORMANCE DATA @ 25°C (Unless Otherwise Noted) *
**Typical LED Forward Voltage Drop
(N=50, $I_F=5\text{mA}$)**

**Typical Turn-On Time
(N=50, $I_F=5\text{mA}$, $I_L=100\text{mA}$)**

**Typical Turn-Off Time
(N=50, $I_F=5\text{mA}$, $I_L=100\text{mA}$)**

**Typical I_F for Switch Operation
(N=50, $I_L=100\text{mA}$)**

**Typical On-Resistance Distribution
(N=50, $I_F=2\text{mA}$, $I_L=100\text{mA}$)**

**Typical Blocking Voltage Distribution
(N=50)**


*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 @ 25°C (Unless Otherwise Noted) *


*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

Moisture Sensitivity

 All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division 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

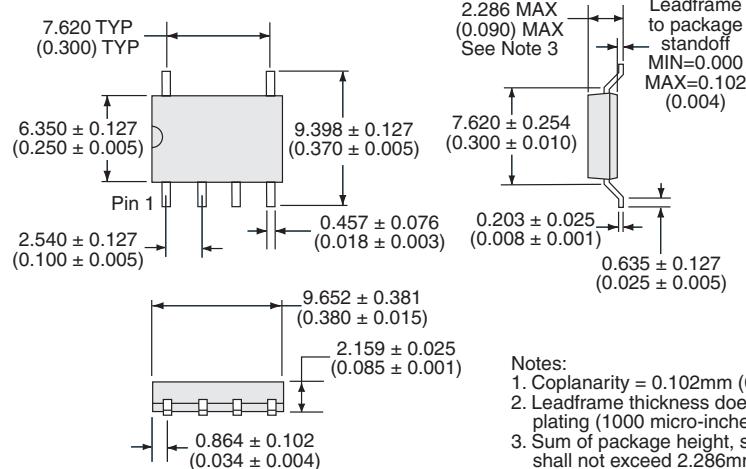
Board Wash

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

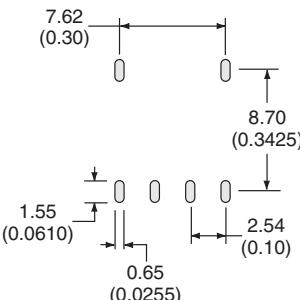
PLA171P



Notes:

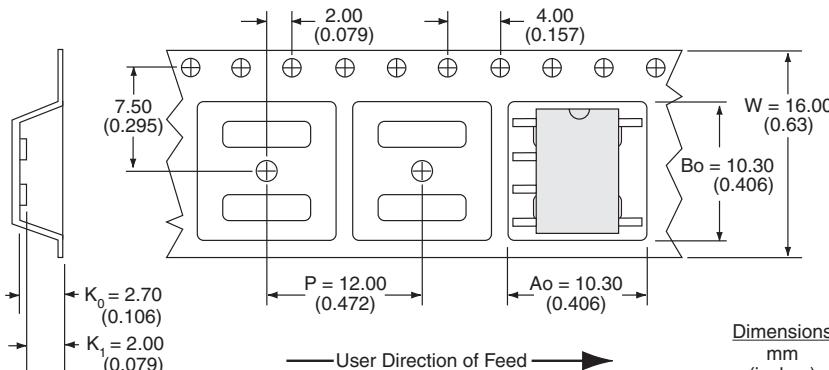
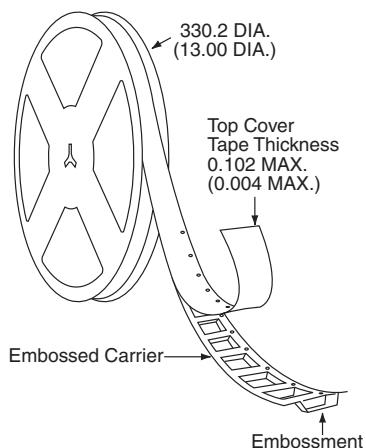
1. Coplanarity = 0.102mm (0.004") MAX
2. Leadframe thickness does not include solder plating (1000 micro-inches MAX)
3. Sum of package height, standoff, and coplanarity shall not exceed 2.286mm (0.090")

Recommended PCB Land Pattern



Dimensions
mm
(inches)

PLA171PTR Tape & Reel



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

For additional information please visit our website at: www.ixysic.com

IXYS Integrated Circuits Division makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in IXYS Integrated Circuits Division's Standard Terms and Conditions of Sale, IXYS Integrated Circuits Division assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of IXYS Integrated Circuits Division's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. IXYS Integrated Circuits Division reserves the right to discontinue or make changes to its products at any time without notice.