



| 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 GaAIAs 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.

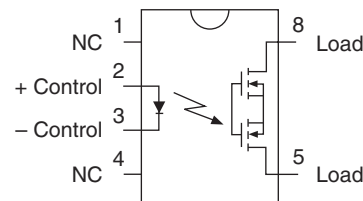
Approvals

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

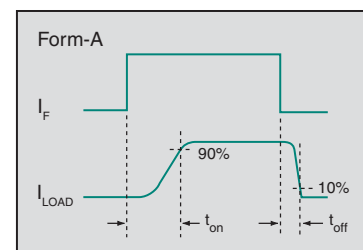
Ordering Information

| 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 | 50 | mA |
| Peak (10ms) | 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

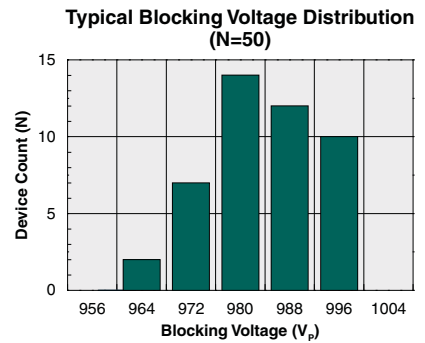
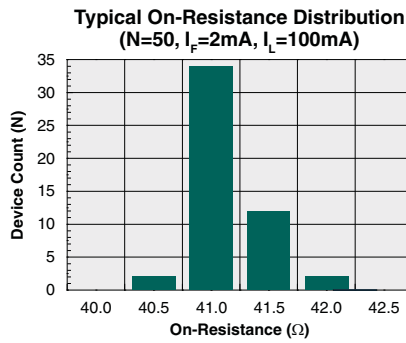
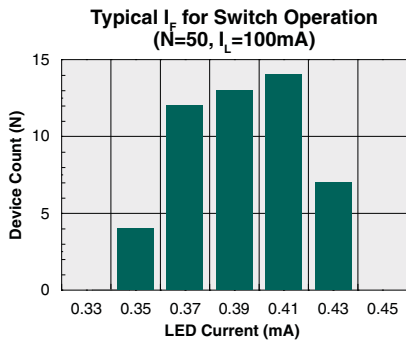
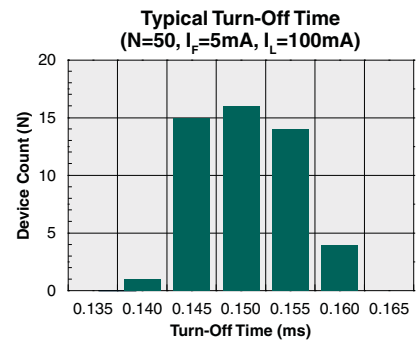
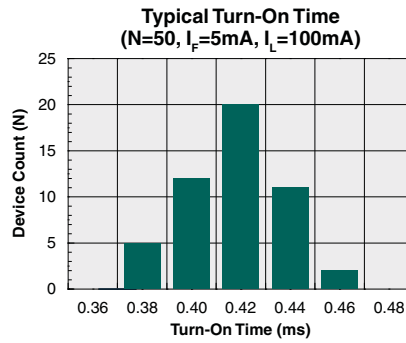
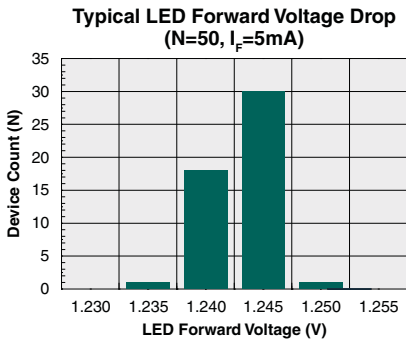
| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|--|--|-------------------|-----|------|------|--------------------------------------|
| Output Characteristics | | | | | | |
| Load Current | | | | | | |
| Continuous ¹ | I _F =2mA | I _L | - | - | 100 | mA _{rms} / mA _{DC} |
| Peak | I _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 _{IO} | - | 3 | - | pF |

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

² Measurement taken within 1 second of on-time.

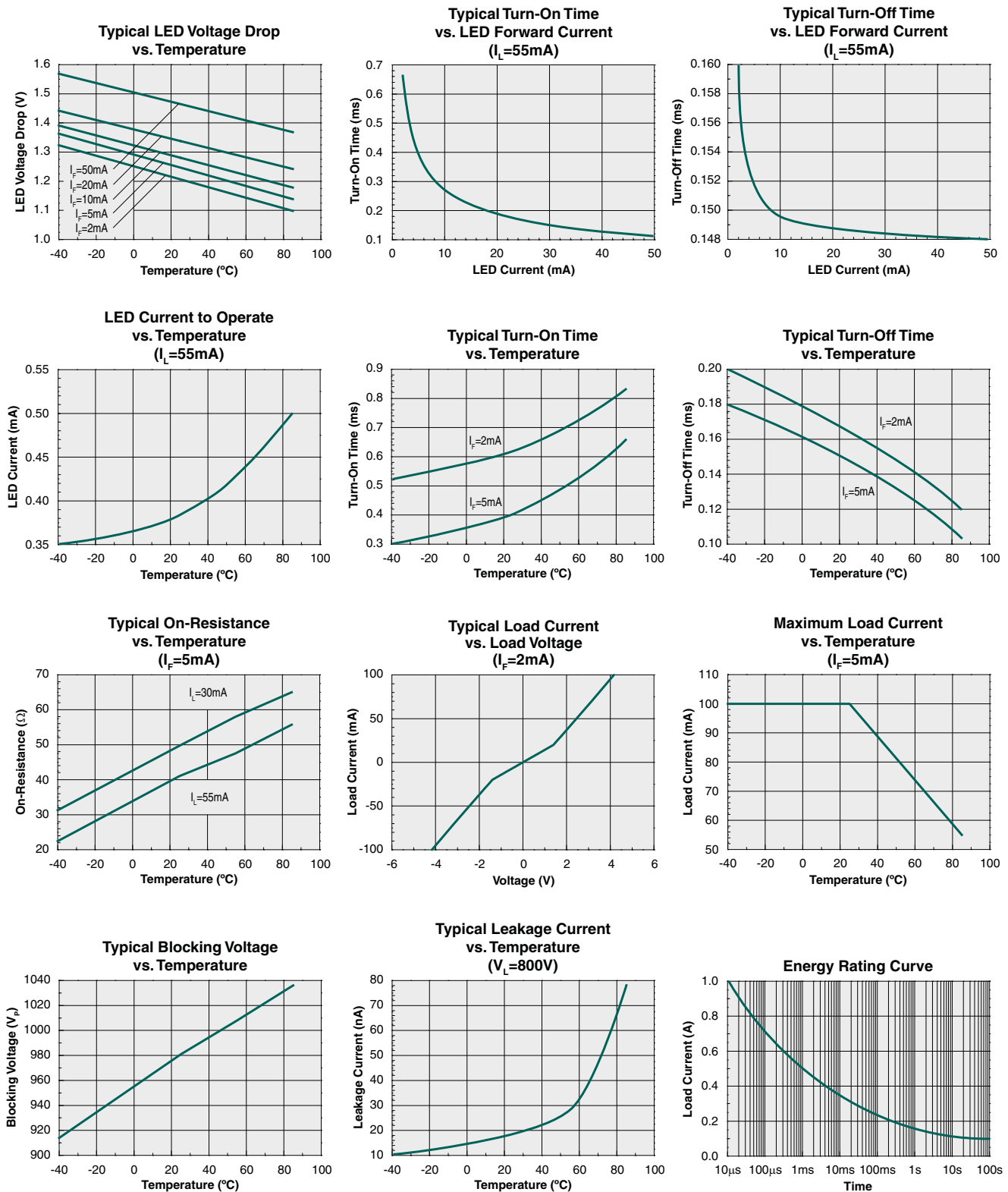
³ For applications requiring high temperature operation (greater than 60°C) a LED drive current of 5mA is recommended.

PERFORMANCE DATA @ 25°C (Unless Otherwise Noted) *



*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. 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 |

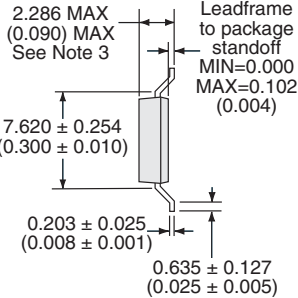
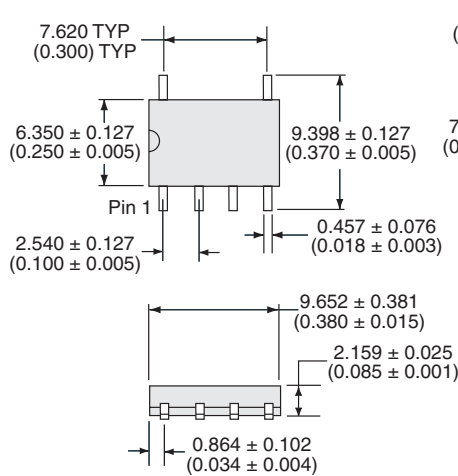
Board Wash

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.

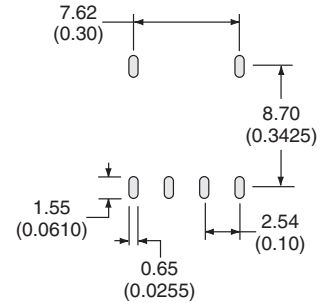


Mechanical Dimensions

PLA171P



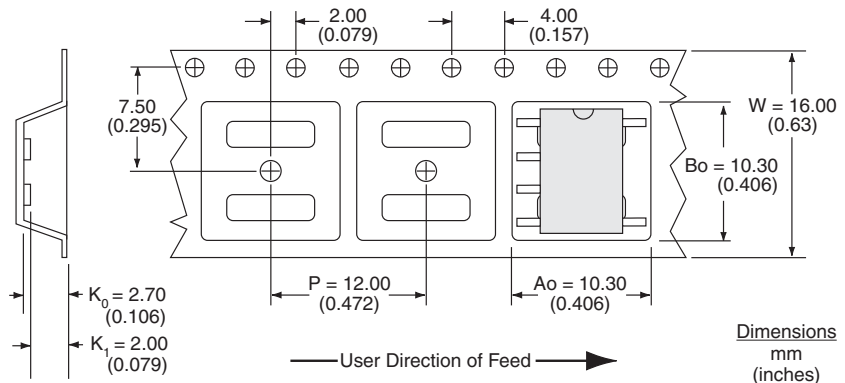
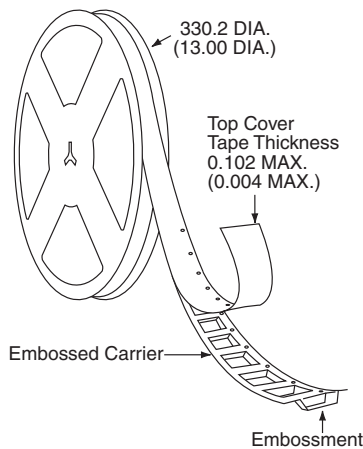
Recommended PCB Land Pattern



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

Dimensions
mm
(inches)

PLA171PTR Tape & Reel



Dimensions
mm
(inches)

- NOTES:
- All dimensions carry tolerances of EIA Standard 481-2
 - 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

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