Not For New Designs

IXYS
INTEGRATED CIRCUITS DIVISION




# PLA192
# 600V, 150mA Single-Pole Normally Open Relay

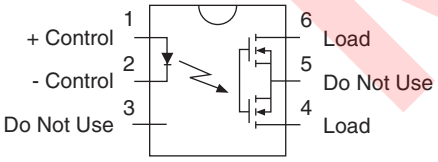
| Parameters | Ratings | Units |
|---|---|---|
| Blocking Voltage | 600 | $V_P$ |
| Load Current | 150 | $mA_{rms}$ / $mA_{DC}$ |
| On-Resistance (max) | 22 | Ω |
| LED Current to Operate | 5 | mA |

## Features
- 5000$V_{rms}$ Input/Output Isolation
- Low Drive Power Requirements
- Greater Reliability than Electromechanical Relays
- No EMI/RFI Generation
- Small 6-Pin Package

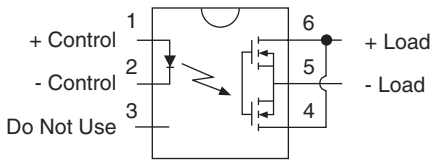
## Applications
- Instrumentation
- Multiplexers
- Data Acquisition
- Electronic Switching
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment: Patient/Equipment Isolation
- Industrial Controls

## Pin Configuration

AC/DC Configuration




DC Only Configuration




## Description
IXYS Integrated Circuits' PLA192 is a single-pole, normally open (1-Form-A) solid state relay that provides 5000$V_{rms}$ of input to output isolation.

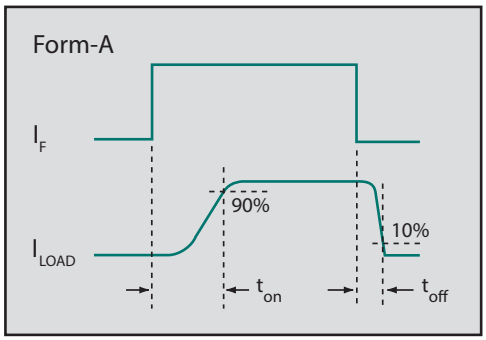
The PLA192 can be used to replace mechanical relays, while offering the superior reliability associated with semiconductor devices. Employing the patented OptoMOS architecture, the highly efficient infrared LED controls the optically coupled outputs. Because they have no moving parts, they offer bounce-free switching in more compact surface mount or thru-hole packages.

## Approvals
- UL Recognized Component: File E76270
- TUV EN 62368-1: Certificate # B 082667 0008

## Ordering Information

| Part # | Description |
|---|---|
| PLA192 | 6-Pin DIP (50/Tube) |
| PLA192S | 6-Pin Surface Mount (50/Tube) |
| PLA192STR | 6-Pin Surface Mount (1000/Reel) |

Switching Characteristics of Normally Open Devices




NFND

## Absolute Maximum Ratings @ 25ºC (Unless Otherwise Noted)

| Parameter | Rating | Units |
|---|---|---|
| Blocking Voltage | 600 | $V_P$ |
| Reverse Input Voltage | 5 | V |
| Input Control Current | 50 | mA |
| Peak (10ms) | 1 | A |
| Input Power Dissipation [1] | 150 | mW |
| Total Package Dissipation [2] | 800 | mW |
| Isolation Voltage, Input to Output (60 Seconds) | 5000 | $V_{rms}$ |
| ESD Rating, Human Body Model | 4 | kV |
| Operational Temperature, Ambient | -40 to +85 | ºC |
| Storage Temperature | -40 to +125 | ºC |

[1] Derate linearly 1.33 mW / ºC

[2] Derate output power linearly 6.67 mW / ºC

*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.*

*Typical values are characteristic of the device at +25°C, and are the result of engineering evaluations. They are provided for information purposes only, and are not part of the manufacturing testing requirements.*

## Electrical Characteristics @ 25ºC (Unless Otherwise Noted)

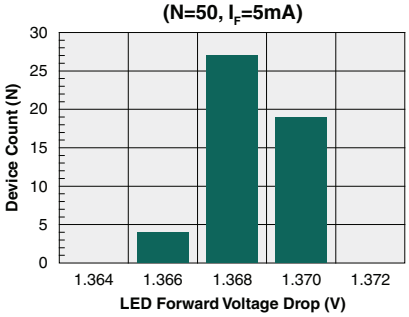
| Parameters | Conditions | Symbol | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Output Characteristics** | | | | | | |
| Blocking Voltage | $I_L$=1µA | $V_{DRM}$ | 600 | - | - | $V_P$ |
| Load Current | | | | | | |
| Continuous, AC/DC Configuration | - | $I_L$ | - | - | 150 | $mA_{rms}$ / $mA_{DC}$ |
| Continuous, DC-Only Configuration | | | - | - | 220 | $mA_{DC}$ |
| Peak | t=10ms | $I_{LPK}$ | - | - | ±400 | mA |
| On-Resistance [1] | | | | | | |
| AC/DC Configuration | $I_L$=150mA | $R_{ON}$ | - | 13.3 | 22 | Ω |
| DC-Only Configuration | $I_L$=220mA | | - | 4.15 | 8 | |
| 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 | | $t_{off}$ | - | - | 5 | |
| Output Capacitance | $I_F$=0mA, $V_L$=50V, f=1MHz | $C_{OUT}$ | - | 10 | - | pF |
| **Input Characteristics** | | | | | | |
| Input Control Current to Activate | $I_L$=100mA | $I_F$ | - | 0.22 | 5 | mA |
| Input Control Current to Deactivate | - | $I_F$ | 0.1 | 0.21 | - | mA |
| Input Voltage Drop | $I_F$=5mA | $V_F$ | 0.9 | 1.36 | 1.5 | V |
| Reverse Input Current | $V_R$=5V | $I_R$ | - | - | 10 | µA |
| **Common Characteristics** | | | | | | |
| Input to Output Capacitance | $V_{IO}$=0V, f=1MHz | $C_{IO}$ | - | 3 | - | pF |

[1] Measurement taken within one second of on-time.

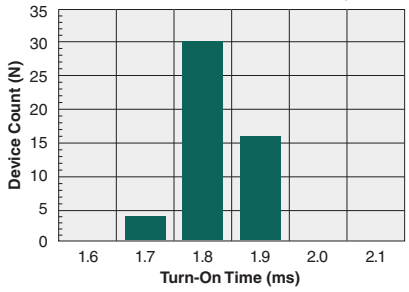
NEND

## PERFORMANCE DATA*

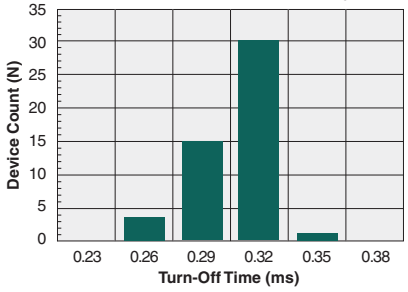
Typical LED Forward Voltage Drop
(N=50, $I_F$=5mA)



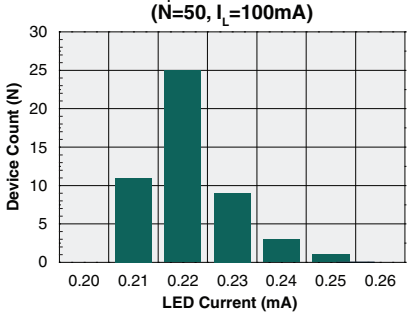

Typical Turn-On Time
(N=50, $I_F$=5mA, $I_L$=100mA$_{DC}$)



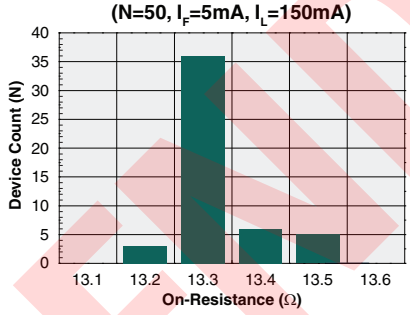

Typical Turn-Off Time
(N=50, $I_F$=5mA, $I_L$=100mA$_{DC}$)



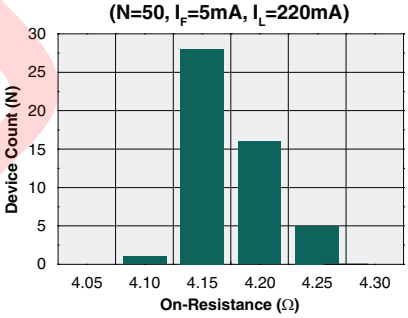

Typical $I_F$ for Switch Operation
(N=50, $I_L$=100mA)



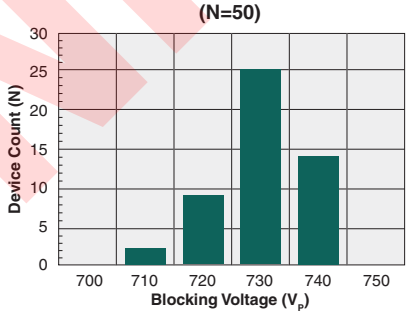

Typical On-Resistance Distribution
(N=50, $I_F$=5mA, $I_L$=150mA)



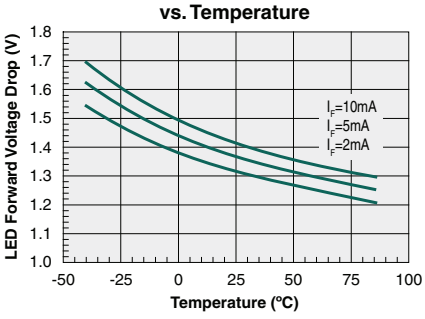

DC-Only On-Resistance Distribution
(N=50, $I_F$=5mA, $I_L$=220mA)



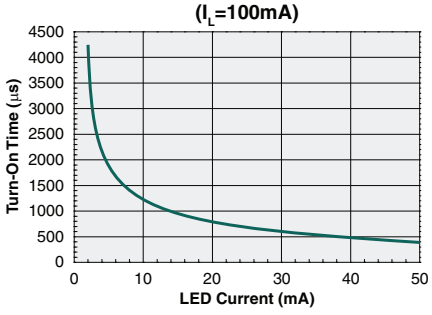

Typical Blocking Voltage Distribution
(N=50)



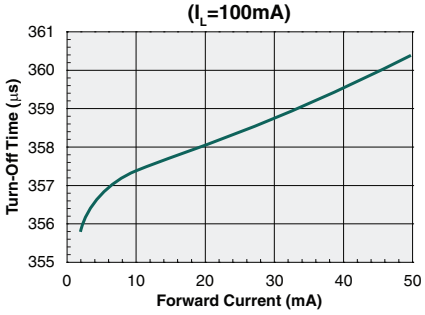

Typical LED Forward Voltage Drop
vs. Temperature




Typical Turn-On Time
vs. LED Forward Current
($I_L$=100mA)



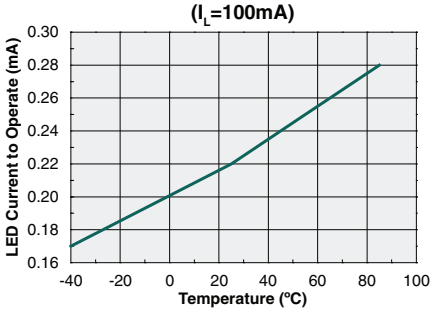

Typical Turn-Off Time
vs. LED Forward Current
($I_L$=100mA)



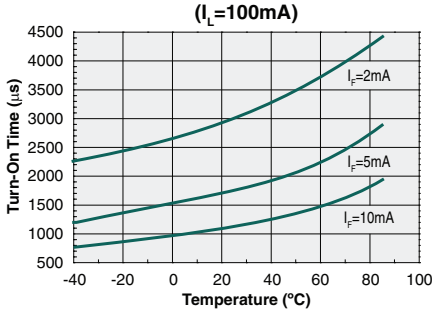

*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.

## PERFORMANCE DATA*

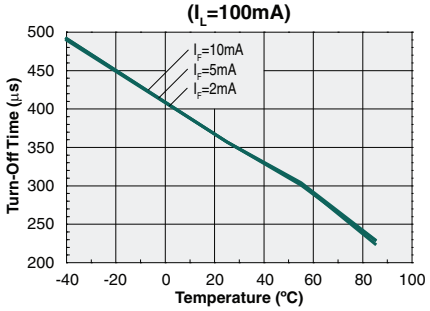
Typical $I_F$ for Switch Operation vs. Temperature ($I_L$=100mA)



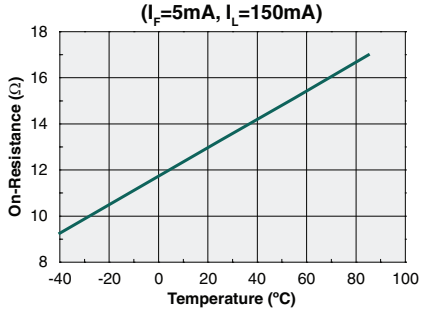

Typical Turn-On Time vs. Temperature ($I_L$=100mA)



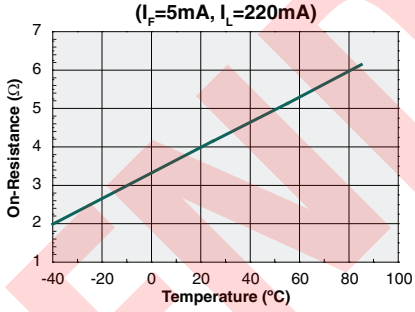

Typical Turn-Off Time vs. Temperature ($I_L$=100mA)



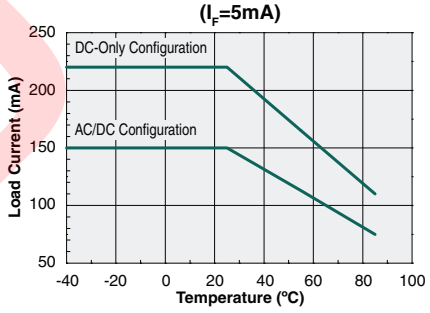

Typical AC/DC On-Resistance vs. Temperature ($I_F$=5mA, $I_L$=150mA)



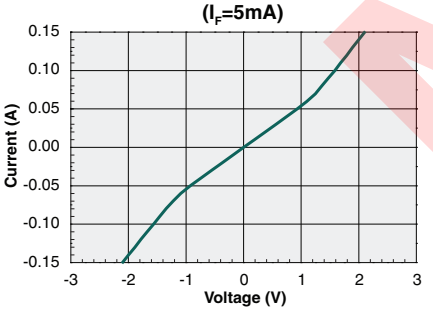

Typical DC-Only On-Resistance vs. Temperature ($I_F$=5mA, $I_L$=220mA)



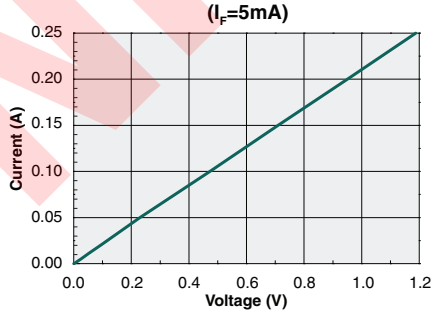

Maximum Load Current vs. Temperature ($I_F$=5mA)



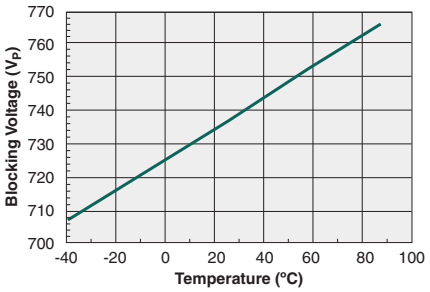

Typical Load Current vs. Load Voltage AC/DC Configuration ($I_F$=5mA)



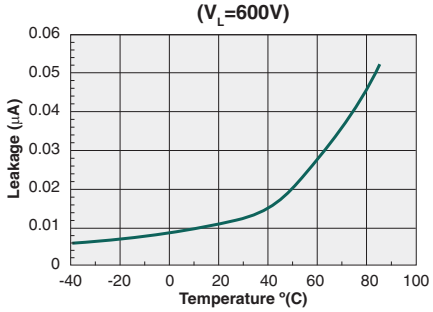

Typical Load Current vs. Load Voltage DC-Only Configuration ($I_F$=5mA)



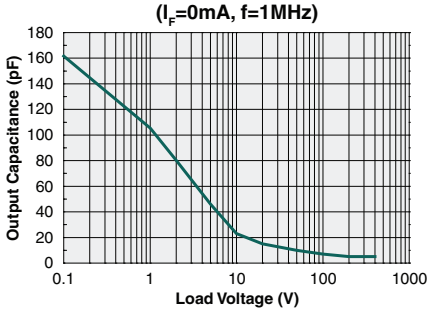

Typical Blocking Voltage vs. Temperature



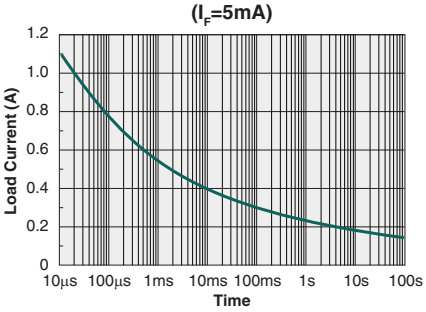

Typical Leakage vs. Temperature Measured across Pins 4&6 ($V_L$=600V)




Output Capacitance vs. Load Voltage ($I_F$=0mA, f=1MHz)




Energy Rating Curve ($I_F$=5mA)




*Unless otherwise noted, data presented in these graphs is typical of device operation at 25ºC.

## Manufacturing Information

### Moisture Sensitivity

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. IXYS Integrated Circuits classifies 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)** classification 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) Classification |
|---|---|
| PLA192S | MSL 1 |

### ESD Sensitivity

This product is ESD Sensitive, and should be handled according to the industry standard **JESD-625**.

### Soldering Profile

Provided in the table below is the **IPC/JEDEC J-STD-020** Classification Temperature ($T_C$) and the maximum total dwell time ($t_P$) in all reflow processes that the body temperature of these surface mount devices may be ($T_C$ - 5)°C or greater. The device's body temperature must not exceed the Classification Temperature at any time during reflow soldering processes.

| Device | Classification Temperature ($T_c$) | Dwell Time ($t_P$) | Max Reflow Cycles |
|---|---|---|---|
| PLA192S | 250°C | 30 seconds | 3 |

For through-hole devices, the maximum pin temperature and maximum dwell time through all solder waves is provided in the table below. Dwell time is the interval beginning when the pins are initially immersed into the solder wave until they exit the solder wave. For multiple waves, the dwell time is from entering the first wave until exiting the last wave. During this time, pin temperatures must not exceed the maximum temperature given in the table below. Body temperature of the device must not exceed the limit shown in the table below at any time during the soldering process.

| Device | Maximum Pin Temperature | Maximum Body Temperature | Maximum Dwell Time | Wave Cycles |
|---|---|---|---|---|
| PLA192 | 260°C | 250°C | 10 seconds* | 1 |

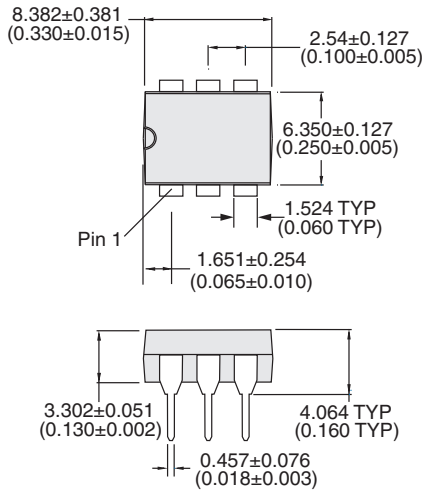
*Total cumulative duration of all waves.

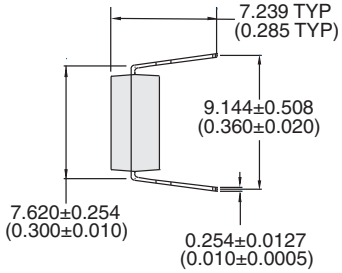
### Board Wash

IXYS Integrated Circuits recommends the use of no-clean flux formulations. Board washing to reduce or remove flux residue following the solder reflow process is acceptable provided proper precautions are taken to prevent damage to the device. These precautions include but are not limited to: using a low pressure wash and providing a follow up bake cycle sufficient to remove any moisture trapped within the device due to the washing process. Due to the variability of the wash parameters used to clean the board, determination of the bake temperature and duration necessary to remove the moisture trapped within the package is the responsibility of the user (assembler). Cleaning or drying methods that employ ultrasonic energy may damage the device and should not be used. Additionally, the device must not be exposed to halide flux or solvents.

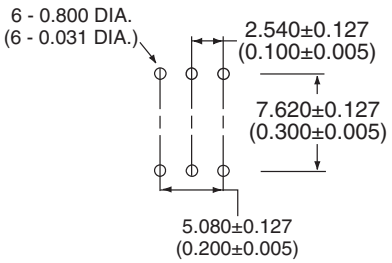
## MECHANICAL DIMENSIONS

### PLA192



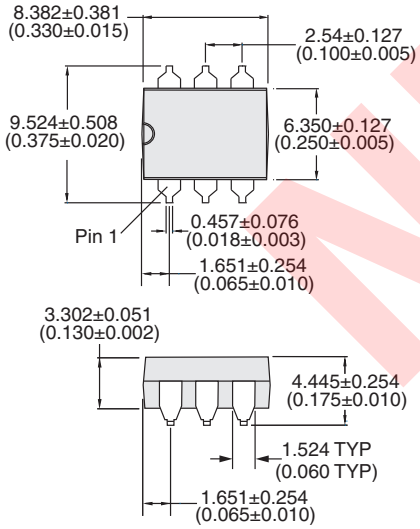

**PCB Hole Pattern**

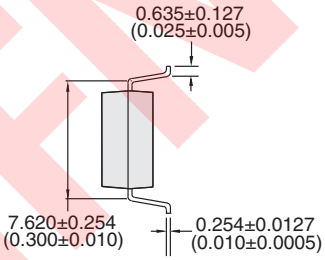



Controlling dimension: inches

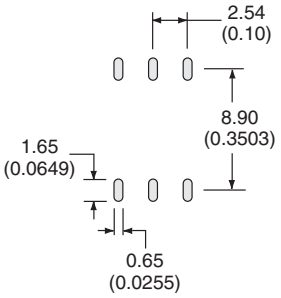
Dimensions
mm
(inches)

### PLA192S




**PCB Land Pattern**

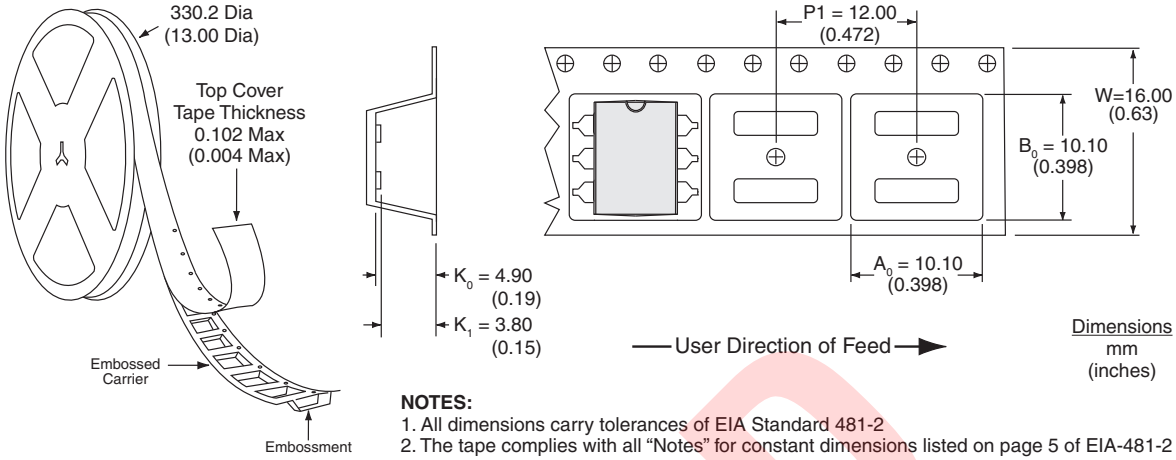



Controlling dimension: inches

Dimensions
mm
(inches)

NEND

## PLA192STR




**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

NFND

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

IXYS
A Littelfuse Technology

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11/18/2025