

# SMT POWER INDUCTORS

Shielded Drum Core - PL95XX Series

Ruggedized



- ⊗ Height: 0.122 inches (3.1mm) Max
- ⊗ Footprint: 0.256 inches x 0.256 inches (6.5mm x 6.5mm) Max
- ⊗ Inductance Range: 2.15μH to 85.39μH
- ⊗ Current Rating: up to 2.60A
- ⊗ Moisture Sensitivity Level: 1

## Electrical Specifications @ 25 °C – Operating Temperature – 55 °C to +130 °C

| Part Numbers | Inductance @I <sub>rated</sub> (μH TYP) | I <sub>rated</sub> <sup>2</sup> (A) | DCR (mΩ ) |  | Inductance MAX | Saturation <sup>3</sup> @OADC (μH) | Current (A) @25°C | Heating <sup>4</sup> Current (A) |
|--------------|---|-------------------------------------|-----------|--|----------------|------------------------------------|-------------------|----------------------------------|
|              |   |                                     | TYP       |  |                |                                    |                   |                                  |
| PL9501       | 2.15                                    | 2.60                                | 15.3      |  | 17.6           | 2.5*                               | 2.60              | 3.45                             |
| PL9502       | 2.58                                    | 2.30                                | 16.6      |  | 20.3           | 3.3*                               | 2.30              | 3.31                             |
| PL9503       | 3.43                                    | 2.10                                | 22.5      |  | 27.0           | 4.0*                               | 2.10              | 2.84                             |
| PL9504       | 4.63                                    | 1.85                                | 24.9      |  | 31.1           | 5.0*                               | 1.85              | 2.70                             |
| PL9505       | 5.22                                    | 1.70                                | 32.3      |  | 41.9           | 6.0*                               | 1.70              | 2.37                             |
| PL9506       | 6.57                                    | 1.50                                | 37.9      |  | 49.9           | 8.0*                               | 1.50              | 2.19                             |
| PL9507       | 8.65                                    | 1.30                                | 45        |  | 54             | 10                                 | 1.30              | 2.01                             |
| PL9508       | 9.78                                    | 1.20                                | 59        |  | 72             | 12                                 | 1.20              | 1.76                             |
| PL9509       | 12.13                                   | 1.10                                | 66        |  | 82             | 15                                 | 1.10              | 1.65                             |
| PL9510       | 15.23                                   | 1.05                                | 88        |  | 102            | 18                                 | 1.05              | 1.44                             |
| PL9511       | 18.70                                   | 0.95                                | 103       |  | 119            | 22                                 | 0.95              | 1.33                             |
| PL9512       | 21.54                                   | 0.85                                | 114       |  | 146            | 27                                 | 0.85              | 1.26                             |
| PL9513       | 27.71                                   | 0.76                                | 155       |  | 183            | 33                                 | 0.76              | 1.08                             |
| PL9514       | 33.57                                   | 0.68                                | 193       |  | 210            | 39                                 | 0.68              | 0.97                             |
| PL9515       | 40.15                                   | 0.60                                | 196       |  | 230            | 47                                 | 0.60              | 0.96                             |
| PL9516       | 49.68                                   | 0.55                                | 248       |  | 305            | 56                                 | 0.55              | 0.86                             |
| PL9517       | 60.66                                   | 0.48                                | 278       |  | 351            | 68                                 | 0.48              | 0.81                             |
| PL9518       | 74.71                                   | 0.45                                | 323       |  | 419            | 82                                 | 0.45              | 0.75                             |
| PL9519       | 85.39                                   | 0.40                                | 417       |  | 520            | 100                                | 0.40              | 0.66                             |

\*Inductance at OADC tolerance on indicated part numbers is ±30%; tolerance is ±20% on all other parts.

Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PL9501 becomes **PL9501T**).

## Notes from Tables

1. Temperature of the component (ambient plus temperature rise) must be within specified operating temperature range.
2. The rated current as listed is either the saturation current or the heating current depending on which value is lower.
3. The saturation current is the current which causes the inductance to drop to 75% of its initial inductance at zero bias. This current is determined by placing the component at room ambient (25°C), and applying a short duration pulse current (to eliminate self-heating effects) to the component.
4. The heating current is the DC current, which causes the temperature of the part to increase by approximately 40°C. This current is
5. determined by extending the terminals of the component with 30mm length 28 gauge buss wires and applying the current to the device for 30 minutes. The temperature is measured by placing the thermo-couple between the winding and the shield.
6. In high volt\*time applications, additional heating in the component can occur due to core losses in the inductor which may necessitate derating the current in order to limit the temperature rise of the component. In order to determine the approximate total loss (or temperature rise) for a given application, both copper losses and core losses should be taken into account.



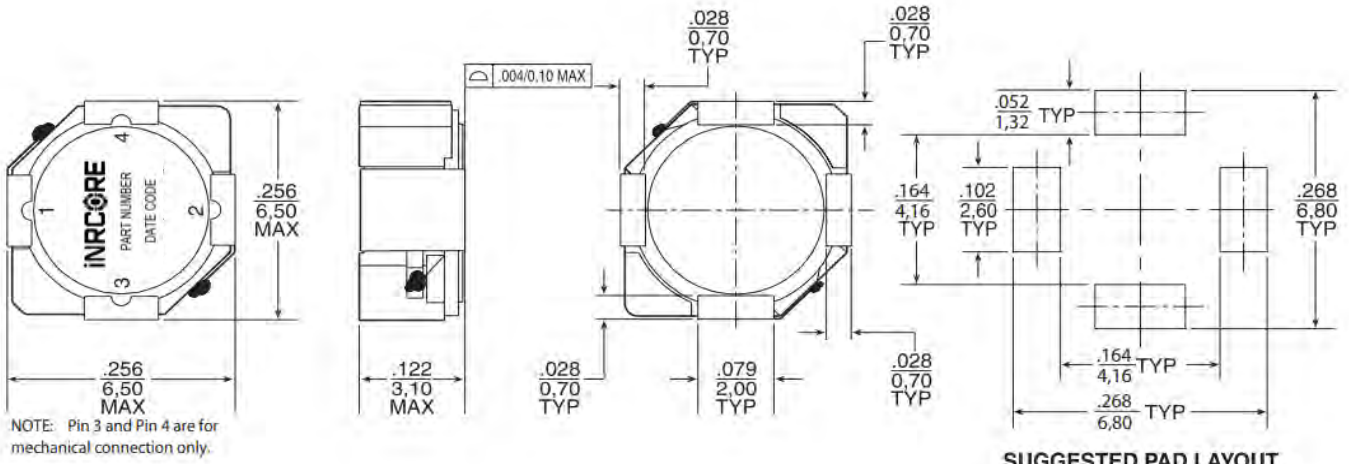
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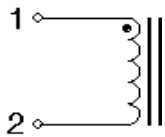


## Mechanical

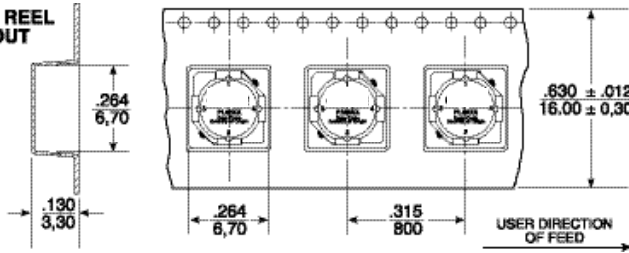
## Electrical Schematic



## Schematic



## TAPE & REEL LAYOUT

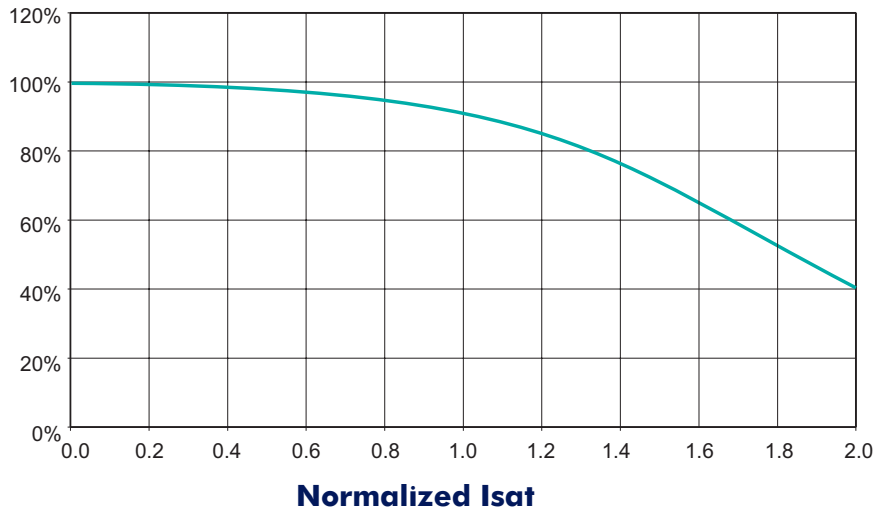


Dimensions:  $\frac{\text{Inches}}{\text{mm}}$

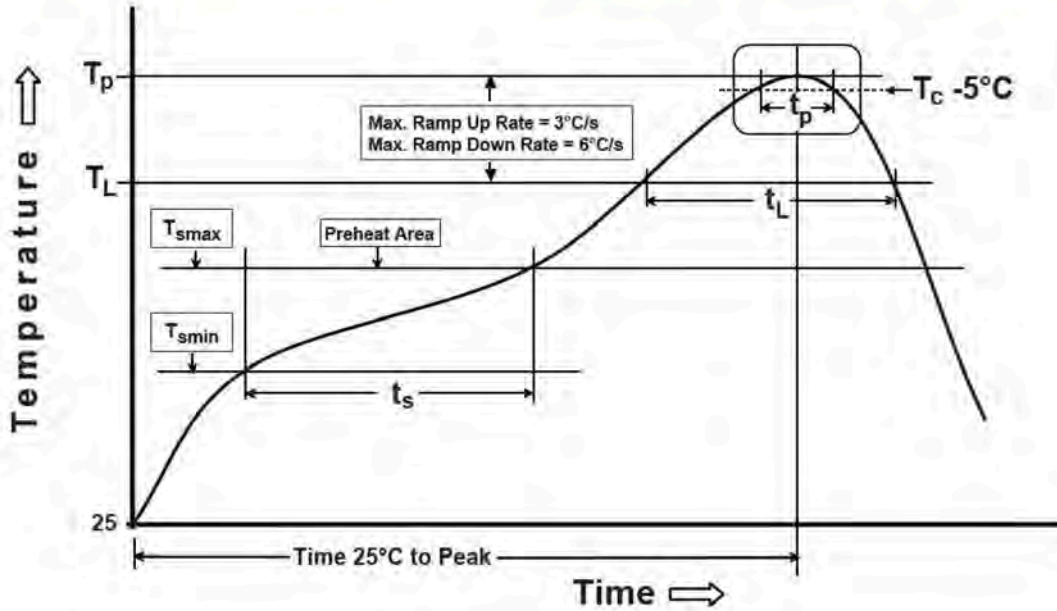
Unless otherwise specified, all tolerances are:  $\pm \frac{.010}{0,25}$

Percentage of the initial inductance

## Inductance vs. Current Characteristics



## Tin/Lead Recommended Reflow Profile (Based on J-STD-020D)



| $T_{SMIN}$<br>(°C) | $T_{SMAX}$<br>(°C) | $T_L$<br>(°C) | $T_P$<br>(°C MAX) | $t_s$<br>(s) | $t_L$<br>(s) | $t_p$<br>(s MAX) | Ramp-up rate<br>( $T_L$ to $T_P$ ) | Ramp-down rate<br>( $T_P$ to $T_L$ ) | Time<br>25°C to peak temperature<br>(s MAX) |
|--------------------|--------------------|---------------|-------------------|--------------|--------------|------------------|------------------------------------|--------------------------------------|---|
| 100                | 150                | 183           | 235               | 60-120       | 60-150       | 20               | 3°C/s MAX                          | 6°C/s MAX                            | 360   |

Notes:

1. All temperatures measured on the package leads.
2. Maximum times of reflow cycle: 2.

### For More Information

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