# SMT POWER INDUCTORS

Shielded Drum Core - PL91XX Series
Ruggedized

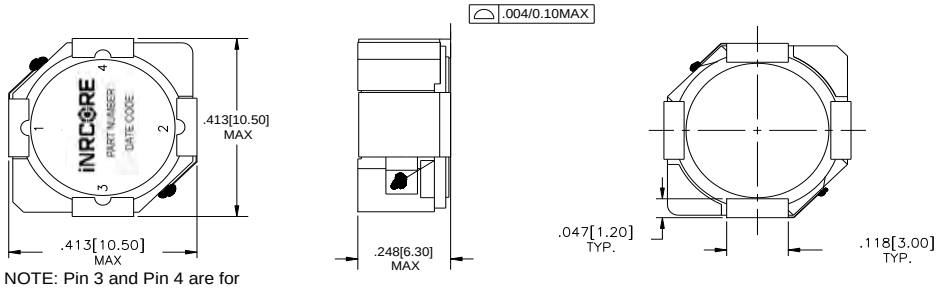
- Height: 0.248 inches (6.3mm) Max
- Footprint: 0.413 inches x 0.413 inches (10.5mm x 10.5mm) Max
- Inductance Range: 0.96µH to 879µH
- Current Rating: up to 10.5A
- Moisture Sensitivity Level: 1

| Electrical Specifications @ 25 °C – Operating Temperature – 55 °C to +130 °C | | | | | | | |
|---|---|---|---|---|---|---|---|
| Part Numbers | Inductance @Irated (µH TYP) | Irated[2] (A) | DCR (mΩ) | | Inductance @0ADC (µH) | Saturation[3] Current (A) @25°C | Heating[4] Current (A) |
| | | | TYP | MAX | | | |
| PL9101 | 0.96 | 10.5 | 3.2 | 4.5 | 1.0* | 12.7 | 10.5 |
| PL9102 | 1.52 | 9.5 | 3.9 | 5.5 | 1.8* | 10.1 | 9.5 |
| PL9103 | 2.34 | 7.8 | 5.5 | 7.8 | 2.7* | 8.4 | 7.8 |
| PL9104 | 3.27 | 6.7 | 7.7 | 11 | 3.9* | 7.2 | 6.7 |
| PL9105 | 4.39 | 5.6 | 11 | 15.6 | 5.1* | 6.3 | 5.6 |
| PL9106 | 5.54 | 5.2 | 12.6 | 18 | 6.8* | 5.6 | 5.2 |
| PL9107 | 6.73 | 5.0 | 14 | 20 | 8.2* | 5.1 | 5 |
| PL9108 | 8.19 | 4.6 | 16 | 22 | 10 | 4.6 | 4.8 |
| PL9109 | 9.90 | 4.2 | 20 | 27 | 12 | 4.2 | 4.3 |
| PL9110 | 13.4 | 3.6 | 22 | 30 | 15 | 3.6 | 4 |
| PL9111 | 15.4 | 3.4 | 31 | 40 | 18 | 3.4 | 3.4 |
| PL9112 | 17.6 | 3.2 | 35 | 45 | 22 | 3.2 | 3.2 |
| PL9113 | 22.5 | 2.8 | 47 | 62 | 27 | 2.8 | 2.8 |
| PL9114 | 28.5 | 2.5 | 53 | 70 | 33 | 2.5 | 2.6 |
| PL9115 | 31.4 | 2.4 | 55 | 75 | 39 | 2.4 | 2.5 |
| PL9116 | 38.4 | 2.2 | 76 | 100 | 47 | 2.2 | 2.2 |
| PL9117 | 48.3 | 1.9 | 87 | 110 | 56 | 1.9 | 2.1 |
| PL9118 | 55.9 | 1.8 | 95 | 120 | 68 | 1.8 | 2 |
| PL9119 | 67.6 | 1.7 | 133 | 178 | 82 | 1.7 | 1.7 |
| PL9120 | 86.1 | 1.4 | 175 | 230 | 100 | 1.4 | 1.5 |
| PL9121 | 103 | 1.3 | 192 | 253 | 120 | 1.3 | 1.4 |
| PL9122 | 121 | 1.2 | 216 | 280 | 150 | 1.2 | 1.3 |
| PL9123 | 149 | 1.1 | 242 | 310 | 180 | 1.1 | 1.2 |
| PL9124 | 186 | 1.00 | 318 | 400 | 220 | 1.0 | 1.05 |
| PL9125 | 224 | 0.91 | 370 | 460 | 270 | 0.91 | 0.96 |
| PL9126 | 279 | 0.82 | 520 | 690 | 330 | 0.82 | 0.84 |
| PL9127 | 335 | 0.72 | 571 | 760 | 390 | 0.72 | 0.8 |
| PL9128 | 398 | 0.68 | 638 | 850 | 470 | 0.68 | 0.77 |
| PL9129 | 464 | 0.63 | 844 | 1060 | 560 | 0.63 | 0.66 |
| PL9130 | 563 | 0.57 | 943 | 1200 | 680 | 0.57 | 0.63 |
| PL9131 | 681 | 0.52 | 1054 | 1550 | 820 | 0.52 | 0.6 |
| PL9132 | 879 | 0.46 | 1418 | 1750 | 1000 | 0.46 | 0.5 |

*Inductance at 0ADC 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. PL9101 becomes **PL9101T**).

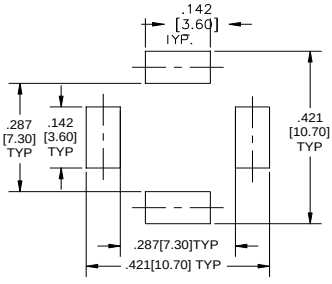
***NOTES FROM TABLE:*** *(See back page)*

## Mechanical




NOTE: Pin 3 and Pin 4 are for mechanical connection only.

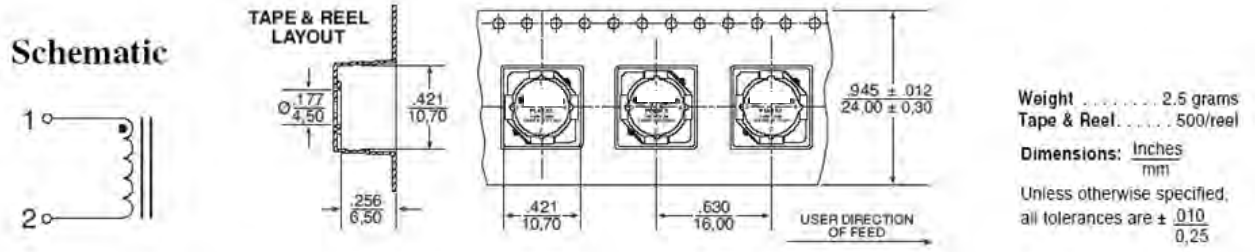
## Electrical Schematic

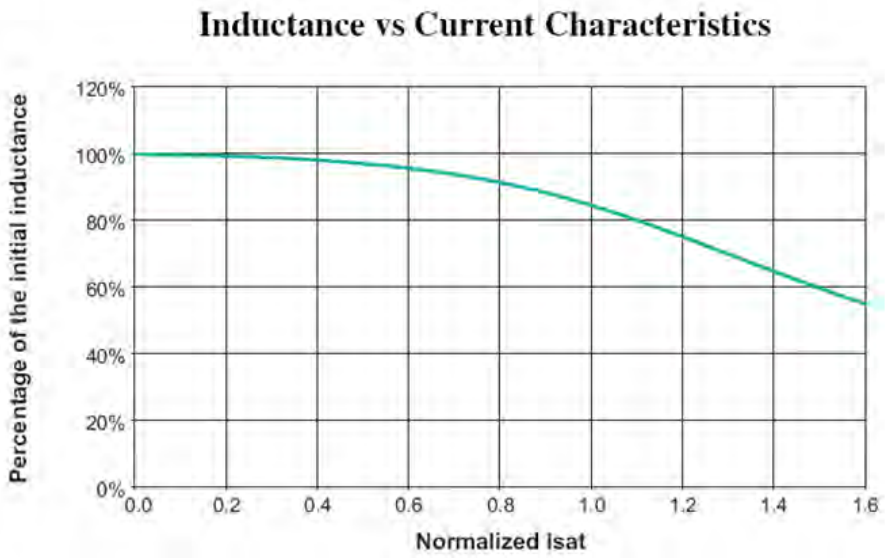



SUGGESTED PAD LAYOUT

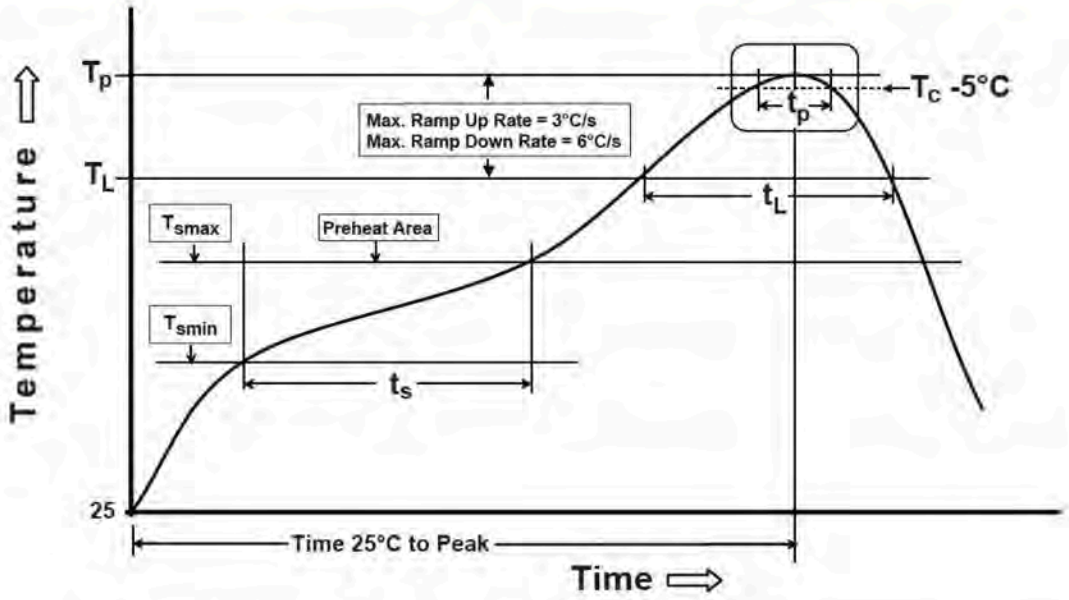
## Notes for tables:

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 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.
5. 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 compo-nent. 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.



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




| $T_{SMIN}$ (°C) | $T_{SMAX}$ (°C) | $T_L$ (°C) | $T_P$ (°C MAX) | $t_S$ (s) | $t_L$ (s) | $t_P$ (s MAX) | Ramp-up rate ($T_L$ to $T_P$) | Ramp-down rate ($T_P$ to $T_L$) | Time 25°C to peak temperature (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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