

HIGH FREQUENCY PLANAR TRANSFORMERS

Ruggedized



- ⊗ Height: 7.4mm MAX
- ⊗ Footprint: 19.8mm x 19.6mm MAX
- ⊗ Current Rating: up to 73A
- ⊗ Inductance Range: 0.405μH to 6.2μH
- ⊗ Operating Temperature: -40°C to +130°C
- ⊗ Moisture Sensitivity Level: 1

Electrical Specifications @ 25°C

| Part Number | Inductance @ Irated (μH ±15%) | Irated ³ (ADC) | DCR (mΩ) | | Inductance @ 0 ADC (μH ±15%) | Saturation Current ⁴ | | Heating Current ⁵ (A) |
|---------------------------------|-------------------------------|---------------------------|----------|------|------------------------------|---------------------------------|-------|----------------------------------|
| | | | TYP | MAX | | 25°C | 100°C | |
| 2-TURN (LOW-LOSS) SERIES | | | | | | | | |
| PL10100 | 0.45 | 73 | 0.38 | 0.48 | 0.45 | 95 | 80 | 73 |
| PL10101 | 0.63 | 54 | 0.38 | 0.48 | 0.65 | 63 | 53 | 73 |
| PL10102 | 0.85 | 39 | 0.38 | 0.48 | 0.91 | 46 | 37 | 73 |
| PL10103 | 1.05 | 30 | 0.38 | 0.48 | 1.10 | 35 | 30 | 73 |
| PL10104 | 1.25 | 25 | 0.38 | 0.48 | 1.30 | 29 | 26 | 73 |
| PL10105 | 1.45 | 21 | 0.38 | 0.48 | 1.50 | 24 | 22 | 73 |
| 2-TURN SERIES | | | | | | | | |
| PL10106 | 0.45 | 52 | 0.78 | 0.98 | 0.45 | 95 | 80 | 52 |
| PL10107 | 0.63 | 52 | 0.78 | 0.98 | 0.65 | 63 | 53 | 52 |
| PL10108 | 0.85 | 39 | 0.78 | 0.98 | 0.91 | 46 | 37 | 52 |
| PL10109 | 1.05 | 30 | 0.78 | 0.98 | 1.10 | 35 | 30 | 52 |
| PL10110 | 1.25 | 25 | 0.78 | 0.98 | 1.30 | 29 | 26 | 52 |
| PL10111 | 1.45 | 21 | 0.78 | 0.98 | 1.50 | 24 | 22 | 52 |
| 3-TURN SERIES | | | | | | | | |
| PL10112 | 0.95 | 42 | 1.15 | 1.43 | 1.00 | 68 | 54 | 42 |
| PL10113 | 1.40 | 36 | 1.15 | 1.43 | 1.50 | 43 | 35 | 42 |
| PL10114 | 1.90 | 25 | 1.15 | 1.43 | 2.00 | 29 | 25 | 42 |
| PL10115 | 2.40 | 20 | 1.15 | 1.43 | 2.50 | 23 | 21 | 42 |
| PL10116 | 2.80 | 15 | 1.15 | 1.43 | 3.00 | 18 | 16 | 42 |
| PL10117 | 3.40 | 12 | 1.15 | 1.43 | 3.50 | 15 | 13 | 42 |
| 4-TURN SERIES | | | | | | | | |
| PL10118 | 1.60 | 37 | 1.44 | 1.80 | 1.60 | 55 | 43 | 37 |
| PL10119 | 2.40 | 30 | 1.44 | 1.80 | 2.42 | 35 | 27 | 37 |
| PL10120 | 3.30 | 17 | 1.44 | 1.80 | 3.60 | 20 | 18 | 37 |
| PL10121 | 4.00 | 14 | 1.44 | 1.80 | 4.40 | 16 | 15 | 37 |
| PL10122 | 4.90 | 11 | 1.44 | 1.80 | 5.34 | 13 | 12 | 37 |
| PL10123 | 5.80 | 9 | 1.44 | 1.80 | 6.20 | 11 | 10 | 37 |

NOTES:

1. Add suffix "NL" for RoHS (Non-Lead) compliant version; i.e. PL10101 becomes PL10101NL.
2. For Tape & Reel packaging, add "T" suffix at the end of the part number: i.e. PL10101T
3. The rated current as listed is either 85% of the saturation current or the heating current, depending on which value is lower.
4. The saturation current is the current which causes the inductance to drop by 15% at the stated ambient temperature (25°C and 100°C). This current is determined by placing the component in the specified ambient environment and applying a short duration pulse current (to eliminate self-heating effects) to the component.
5. The heating current is the DC current which causes the temperature of the part to increase by approximately 45°C. This current is determined by mounting the component on a PCB with 0.25" wide, 2 oz. equivalent copper traces, and applying the current to the device for 30 minutes with no forced air cooling.
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 losses (or temperature rise) for a given application, the total copper and core losses should be taken into account. For approximate value of core losses, in a given application, use the core loss graph on page 24.
7. Meets solerability test per IPC/EIA J-STD-002B using flux type ORLO.

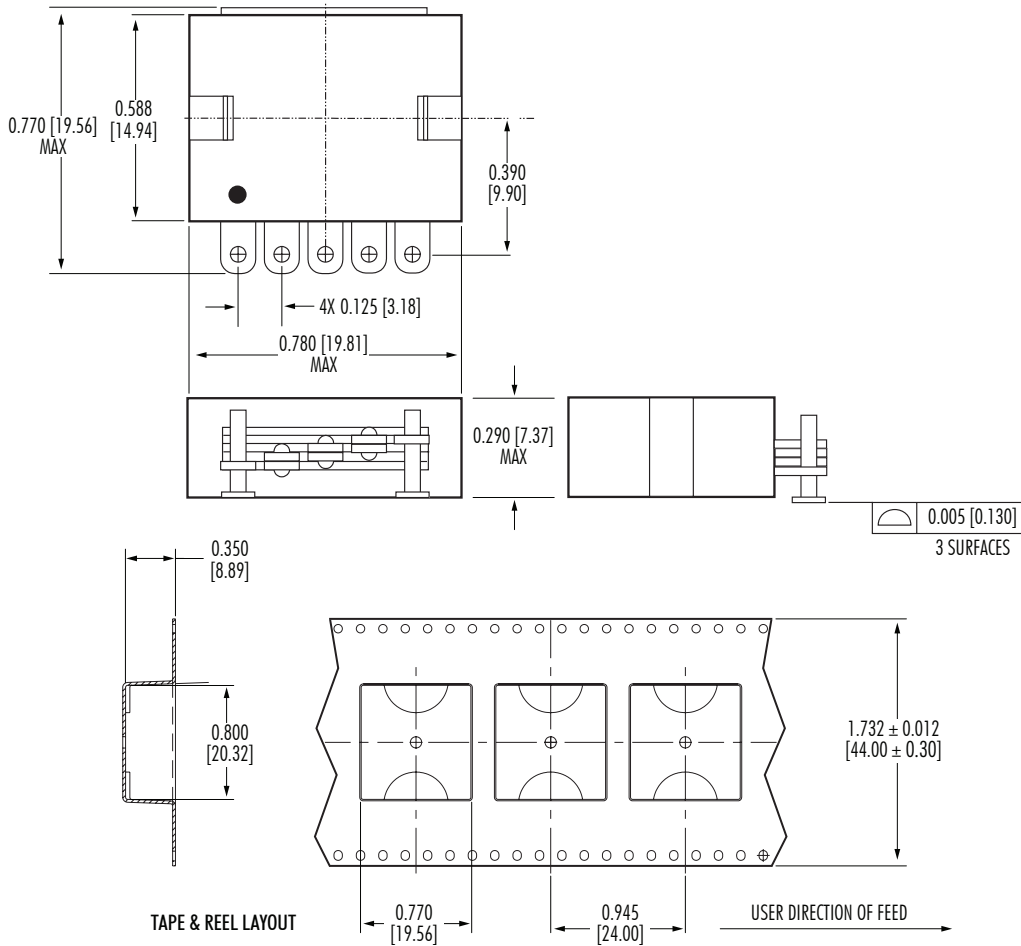


Mechanicals

PL101XX

Dimensions: inch [mm]
Tolerance (unless otherwise specified): ±0.010 [0.25]

Weight:TBD
Tray:.....TBD



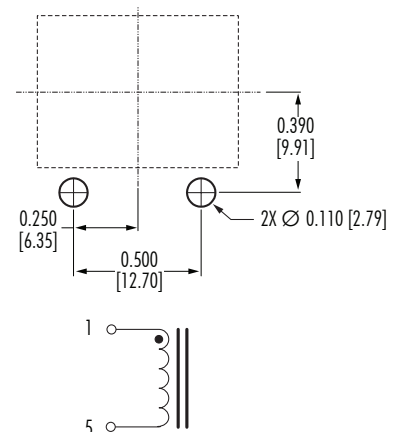
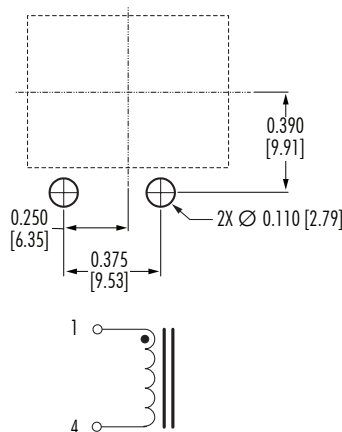
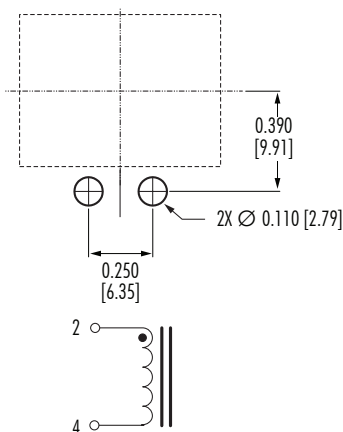
Suggested Pad Layout and Schematics

PL101XX

PL10100 - PL10111
0.405 to 1.50 µH
21 to 73 ADC

PL10112 - PL10117
1.00 to 3.40 µH
12 to 42 ADC

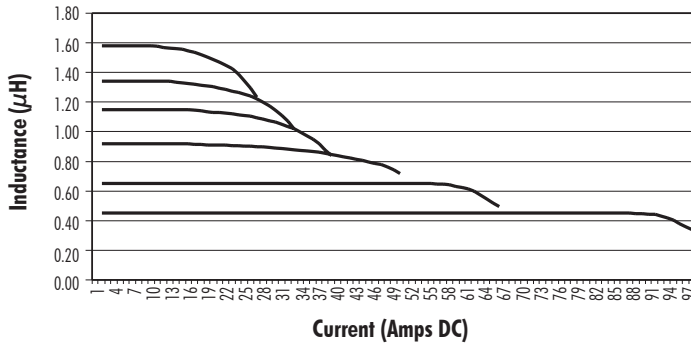
PL10118 - PL10123
1.60 to 6.20 µH
9 to 37 ADC



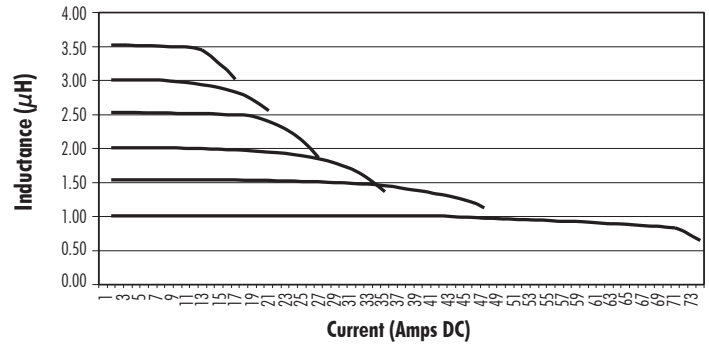
Inductance vs. Current Characteristics (25°C)

PL101XX

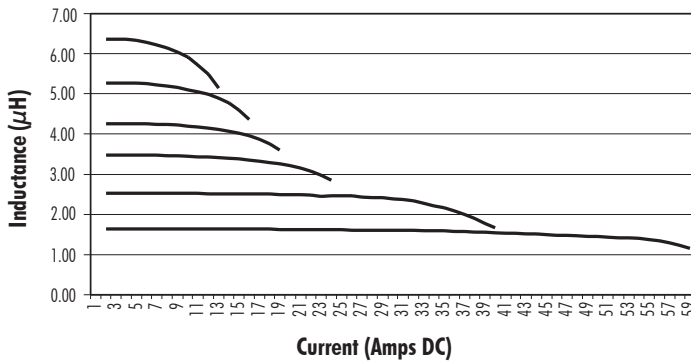
PL10110 - PL10111



PL10112 - PL10117



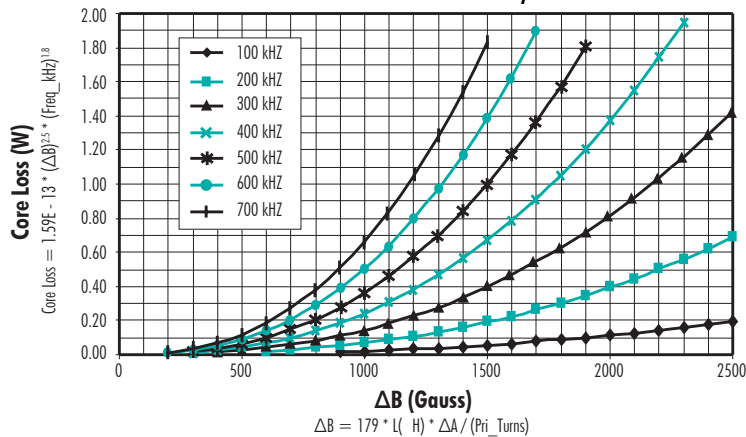
PL10118 - PL10123



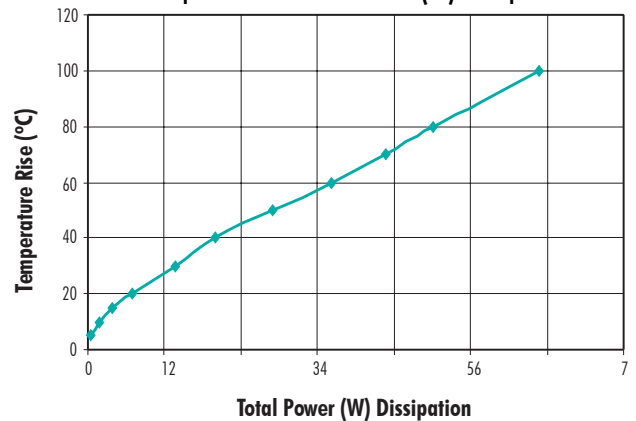
Measurement Charts

PL101XX

Core Loss vs. Flux Density



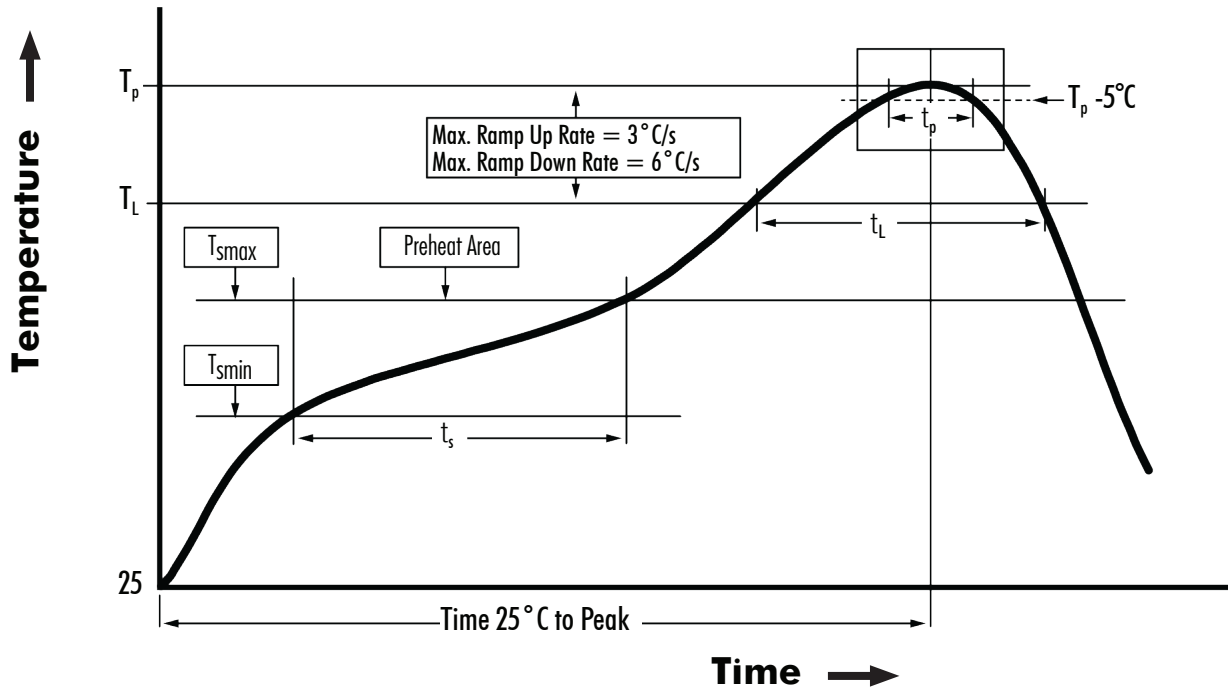
Temperature Rise vs. Power (W) Dissipation



Total Power Dissipation = Copper Loss (W) + Core Loss (W)
 Copper Loss (W) = $\text{Current (rms)}^2 \cdot \text{DCR (m}\Omega) / 1000$
 Core Loss (W) = per table



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

