

- ⊗ Height: 12.7mm Max
- ⊗ Footprint: 31.0mm x 25.4mm Max
- ⊗ Current Rating: up to 38A
- ⊗ Inductance Range: 1.1μH to 18.1μH

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

Part4 Number	Inductance @ I <sub>rated</sub> (μH)	I <sub>rated</sub> (A)	DCR (mΩ)		Inductance @ OADC (μH)	Reference ET (Volt-μsec)	Flux Density Factor (K1)	Core Loss Factor (K2)	Temp. Rise Factor (K3)	Connection
			TYP	MAX						
PL8304	1.1	38	1.1	1.3	2.1	4.20	0.62	1.50E-09	33.8	Parallel
PL8303	1.6	34	1.4	1.6	3.5	4.20	0.48	1.50E-09	33.8	Parallel
PL8302	2.45	27	2.2	2.5	5.1	6.00	0.39	1.50E-09	33.8	Parallel
PL8301	3.2	24	3.0	3.5	7.2	4.20	0.33	1.50E-09	33.8	Parallel
PL8304	4.3	19	4.4	5.1	8.4	8.40	0.31	1.50E-09	33.8	Series
PL8300	4.52	19	4.2	4.8	9.5	9.00	0.29	1.50E-09	33.8	Parallel
PL8303	6.4	17	5.6	6.4	13.8	8.40	0.24	1.50E-09	33.8	Series
PL8302	9.8	13.5	8.8	10.1	20.4	12.00	0.20	1.50E-09	33.8	Series
PL8301	12.8	12	12.0	13.8	28.7	8.40	0.17	1.50E-09	33.8	Series
PL8300	18.1	9.5	16.8	19.3	38.0	18.00	0.14	1.50E-09	33.8	Series

- NOTES:
- Temperature rise is 55°C in typical buck or boost circuits operating at 300kHz with rated Idc current and reference ET applied to inductor.
  - Total inductor loss is 1.8W for 55°C temperature rise above ambient.
  - 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, both copper and core losses should be taken into account.

Estimated Temperature Rise:

$$Trise = K3 * (Coreloss(W) + Copperloss(W)) / 833 \text{ (C)}$$

$$CopperLoss = I_{rms}^2 * DCR_{Typical} (m\Omega) / 1000$$

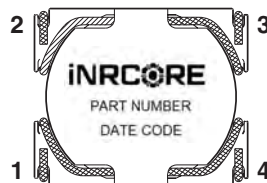
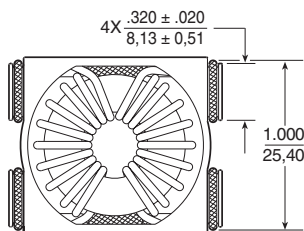
$$CoreLoss = K2 * (Freq\_kHz)^{1.26} * (\Delta B)^{2.11}$$

$$\Delta B = K1 * Volt\text{-}\mu sec * 100$$

- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PL8304 becomes **PL8304T**).

### Mechanical

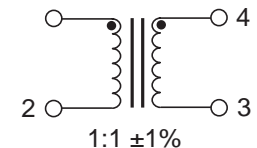
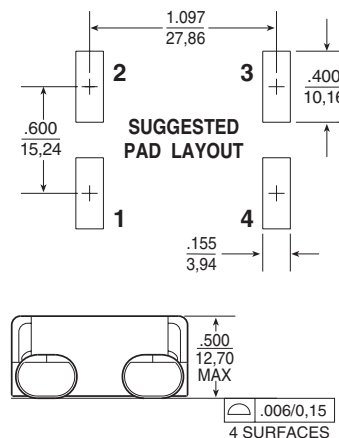
### Electrical Schematic



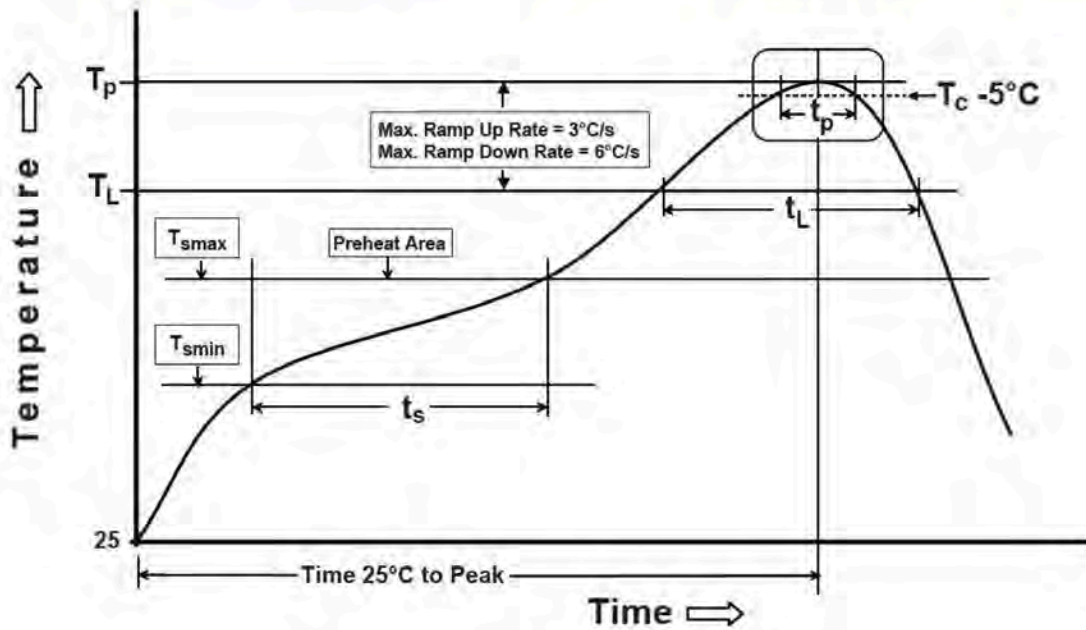
Weight ..... 18.7 grams  
 Tape & Reel ..... 75/reel  
 Tube ..... 20/tube

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

Unless otherwise specified, all tolerances are:  $\pm \frac{.010}{0.25}$



**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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