SMT POWER INDUCTOR
Toroid HCCI-80 Series
Ruggedized

iNRCORE FAMILY OF BRANDS

- Height: 12.7mm MAX
- Footprint: 31mm x 25.4mm MAX
- Current Rating: up to 38A
- Operating Temperature: -55°C to +130°C
- Lead Finish: Sn63/Pb37
- Moisture Sensitivity Level: 1

Electrical Specifications @ 25°C

Part Number	Parallel Rating							Series Rating							Core Loss Factor (K2)	Temp. Rise Factor (K3)
	Inductance @ Irated (μH)	Irated (A)	DCR (mΩ) TYP	DCR (mΩ) MAX	Inductance @ 0 ADC (μH)	ET REF [2] (Volt-μsec)	Flux Density Factor (K1)	Inductance @ Irated (μH)	Irated (A)	DCR (mΩ) TYP	DCR (mΩ) MAX	Inductance @ 0 ADC (μH)	ET REF [2] (Volt-μsec)	Flux Density Factor (K1)		
PL8304	1.10	38	1.1	1.3	2.1	4.20	0.62	4.30	19	4.4	5.1	8.4	8.40	0.31	1.50E-09	33.8
PL8303	1.60	34	1.4	1.6	3.5	4.20	0.48	6.40	17	5.6	6.4	13.8	8.40	0.24	1.50E-09	33.8
PL8302	2.45	27	2.2	2.5	5.1	6.00	0.39	9.80	13.5	8.8	10.1	20.4	12.00	0.20	1.50E-09	33.8
PL8301	3.20	24	3.0	3.5	7.2	4.20	0.33	12.80	12	12.0	13.8	28.7	8.40	0.17	1.50E-09	33.8
PL8300	4.52	19	4.2	4.8	9.5	9.00	0.29	18.10	9.5	16.8	19.3	38.0	18.00	0.14	1.50E-09	33.8

NOTES:

1. Add suffix "**NL**" for RoHS compliant version; i.e. PL8304 becomes **PL8304NL**. NL parts have 100% SN Lead Finish (MSL:4)
2. For Tape & Reel packaging, add "**T**" suffix at the end of the part number: i.e. **PL8304T.**
3. Temperature rise is 55°C in typical buck or boost circuits operating at 300kHz with rated Idc current and reference applied to inductor.
4. Total inductor loss is 1.8W for 55°C temperature rise above ambient.
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 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:

   $Trise = K3 \& (Coreloss(W) + Copperloss(W)^{0.833}(C)$

   $CopperLoss = Irms^2 \& DCR\_Typical(mW) / 1000$

   $CoreLoss = K2 \& (Freq\_kHz)^{1.26} * (DB)^{2.11}$

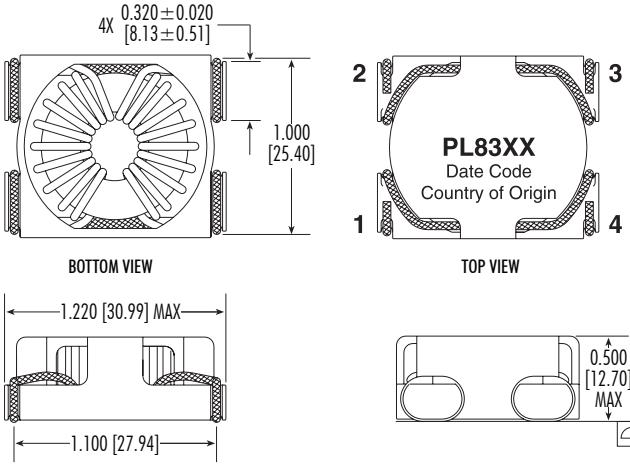
   $\Delta B = K1 \& Volt\text{-}\mu sec \& 100$

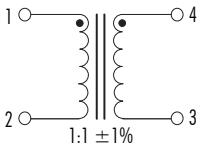
Mechanicals

Electrical Schematics

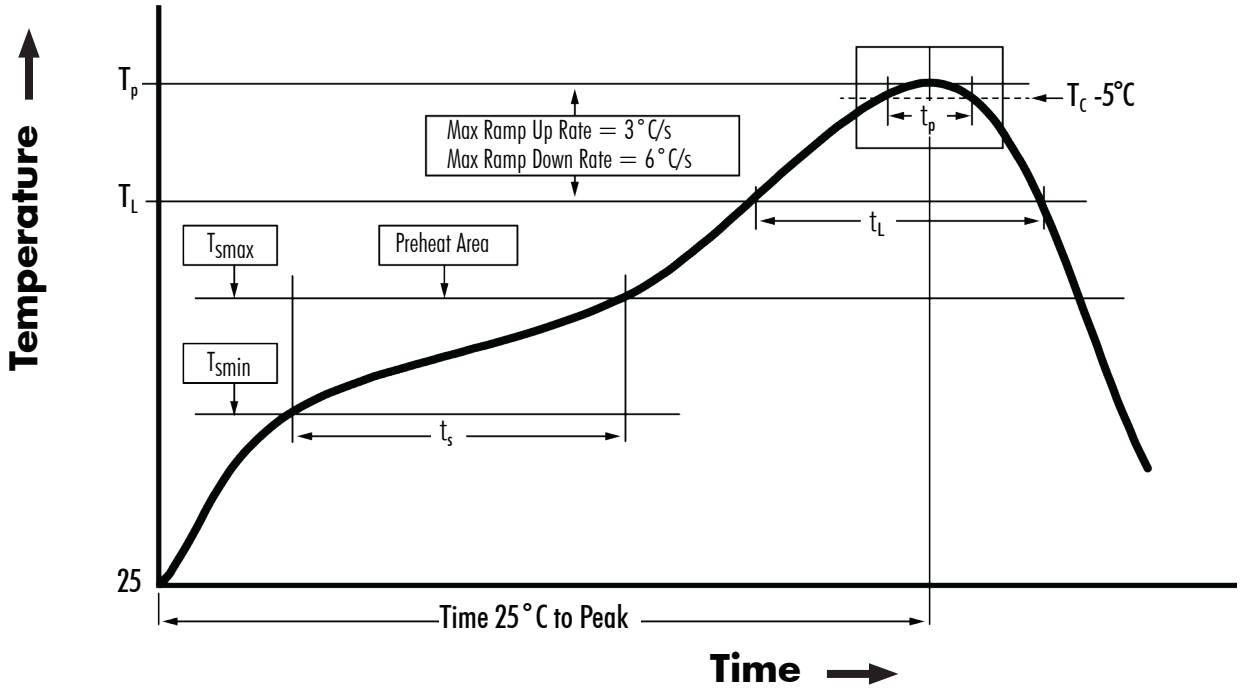
PL83XX

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





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 number of reflow cycles not to exceed 2.

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