

SMT POWER INDUCTORS

Toroid - Ruggedized HCCI-80 Series

PulseR
Ruggedized Solutions



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

Electrical Specifications @ 25°C — Operating Temperature -55°C to +130°C

Pulse ⁴ Part Number	Inductance @ Irated (μH)	Irated (A)	DCR (mΩ)		Inductance @ 0Apc (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:

$$Trise = K3 * (Coreloss(W) + Copperloss(W))^{.833} (C)$$

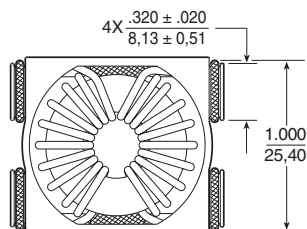
$$CopperLoss = Irms^2 * DCR_Typical (m\Omega) / 1000$$

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

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

- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. PL8304 becomes PL8304T). Pulse complies to industry standard tape and reel specification EIA481.

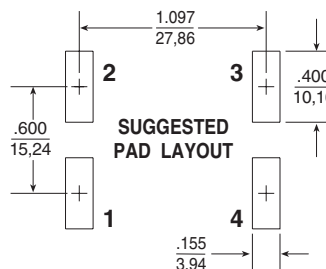
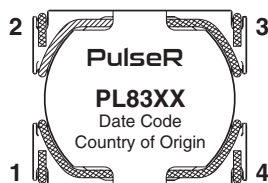
Mechanical



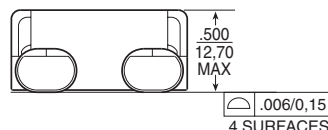
Weight 18.7 grams
Tape & Reel 75/reel
Tube 20/tube

Dimensions: Inches
mm

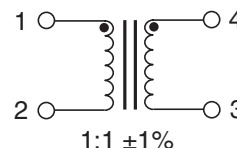
Unless otherwise specified,
all tolerances are ± .010
0,25



SUGGESTED
PAD LAYOUT



Schematic

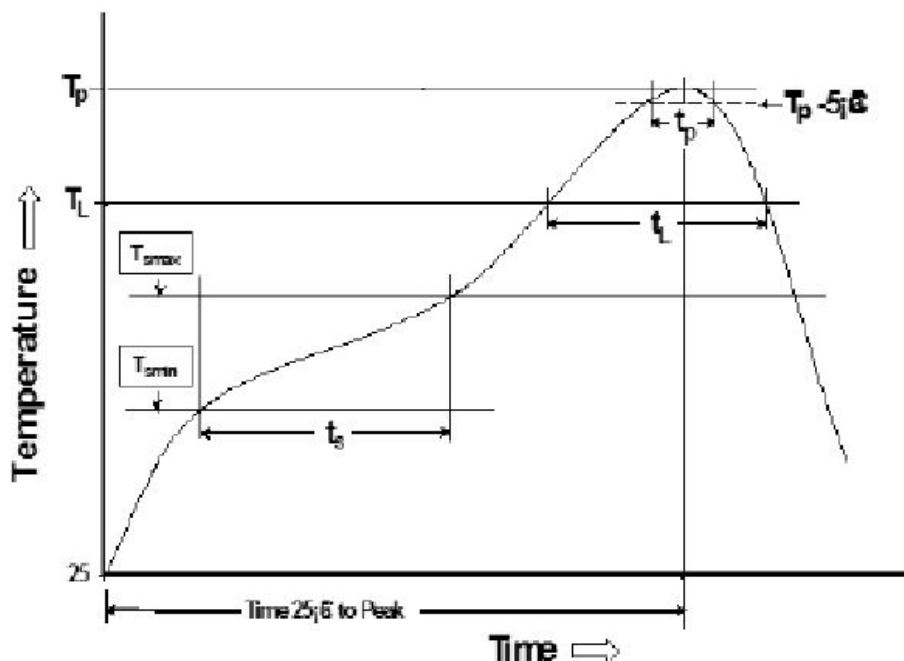


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Tin/Lead Recommended Reflow Profile (Based on J-STD-020D)



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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