



# SMT Power Inductors

Toroid - HCCI - 80 Series



- ⌚ **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 -40°C to +130°C<sup>6</sup>

Pulse <sup>4,5</sup> Part Number	Inductance @ I <sub>rated</sub> (µH TYP)	I <sub>rated</sub> (A)	DCR (mΩ)		Inductance @ 0A <sub>DC</sub> (µH ±15%)	Reference ET (Volt-µsec)	Flux Density Factor (K1)	Core Loss Factor (K2)	Temp. Rise Factor (K3)	Connection
			TYP	MAX						
P0599NL	1.1	38	1.1	1.3	2.1	4.20	0.62	1.50E-09	33.8	Parallel
P0598NL	1.6	34	1.4	1.6	3.9	4.20	0.48	1.50E-09	33.8	Parallel
P0597NL	2.45	27	2.2	2.5	5.7	6.00	0.39	1.50E-09	33.8	Parallel
P0596NL	3.2	24	3.0	3.5	8.0	4.20	0.33	1.50E-09	33.8	Parallel
P0599NL	4.3	19	4.4	5.1	8.4	8.40	0.31	1.50E-09	33.8	Series
P0595NL	4.52	19	4.2	4.8	10.5	9.00	0.29	1.50E-09	33.8	Parallel
P0598NL	6.4	17	5.6	6.4	15.6	8.40	0.24	1.50E-09	33.8	Series
P0597NL	9.8	13.5	8.8	10.1	22.8	12.00	0.20	1.50E-09	33.8	Series
P0596NL	12.8	12	12.0	13.8	32.0	8.40	0.17	1.50E-09	33.8	Series
P0595NL	18.1	9.5	16.8	19.3	42.0	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 the rated I<sub>DC</sub> current and reference ET applied to the inductor.
- Total loss in the inductor 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:  

$$\text{Trise} = K3 * (\text{Coreloss (W)} + \text{Copperloss (W)})^{0.333} \text{ (C)}$$

$$\text{CopperLoss} = \text{Irms}^2 * \text{DCR\_Typical (m}\Omega\text{)} / 1000$$

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

$$\Delta B = K1 * \text{Volt-}\mu\text{sec} * 100$$
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P0595NL becomes P0595NLT). Pulse complies to industry standard tape and reel specification EIA481.
- The "NL" suffix indicates an RoHS-compliant part number. Non-NL suffixed parts are not necessarily RoHS compliant, but are electrically and mechanically equivalent to NL versions. If a part number does not have the "NL" suffix, but an RoHS compliant version is required, please contact Pulse for availability.
- The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

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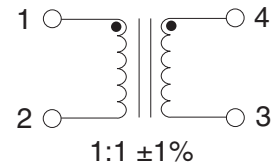
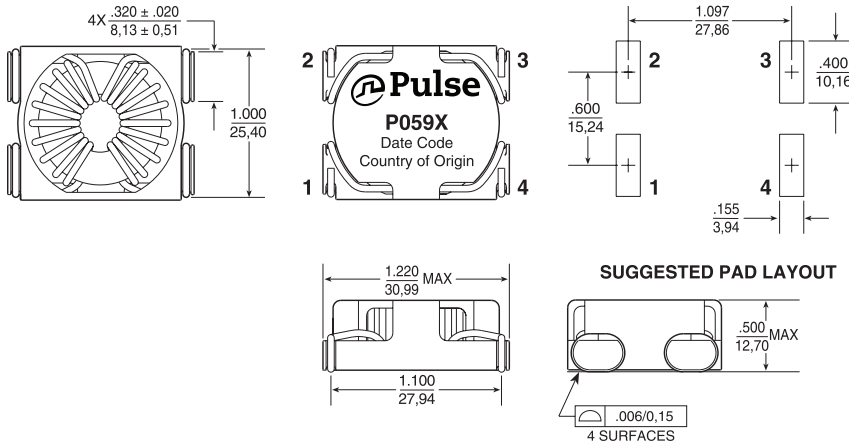
Toroid - HCCI - 80 Series



## Mechanical

## Schematic

**P059X**



**Weight** .....18.7grams  
**Tape & Reel** .....75/reel  
**Tube** .....20/tube  
**Dimensions:** <sup>Inches</sup>/<sub>mm</sub>  
 Unless otherwise specified,  
 all tolerances are:  $\pm \frac{0.10}{0.25}$

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