



SMT Power Inductors

Toroid - Polecat Series



-  **Height:** 5.5mm Max
-  **Footprint:** 12.7mm x 12.7mm Max
-  **Current Rating:** up to 8.3A
-  **Inductance Range:** 2.0μH to 364μH

Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C¹¹

Part ^{9,10} Number	Inductance @ Irated (μH MIN)	Irated (A)	DCR (MAX) (mΩ)	ET (V-μsec)	Inductance @0Adc (μH ±10%)	100 Gauss ET ₁₀₀ (V-μsec)	1 Amp DC H1 (Orsted)	Connection
P0174NL	2.0	8.30	7.6	7.31	2.2	1.20	5.43	Parallel
P0175NL	2.4	7.20	10.9	7.81	2.6	1.33	5.97	Parallel
P0176NL	5.0	5.20	19.0	11.72	5.5	1.93	8.69	Parallel
P0174NL	7.0	4.16	32.0	14.61	8.75	2.41	10.86	Series
P0177NL	9.3	3.80	29.8	16.12	10.4	2.65	11.95	Parallel
P0175NL	8.4	3.78	43.6	15.62	10.4	2.65	11.95	Series
P0178NL	14.1	3.10	45.3	19.73	15.7	3.25	14.66	Parallel
P0179NL	19.8	2.60	66.3	23.45	22.1	3.86	17.38	Parallel
P0176NL	17.9	2.60	76.0	23.43	22.45	3.86	17.38	Series
P0180NL	29.3	2.20	106	28.50	32.8	4.70	21.18	Parallel
P0177NL	33.8	1.89	120	32.25	41.7	5.30	23.89	Series
P0181NL	42.6	1.80	151	34.49	47.6	5.66	25.52	Parallel
P0178NL	50.9	1.54	182	39.46	62.8	6.51	29.32	Series
P0182NL	61.3	1.50	224	40.85	67.5	6.75	30.41	Parallel
P0179NL	71.5	1.30	266	46.90	88.2	7.71	34.75	Series
P0183NL	84.2	1.20	324	46.22	91.0	7.83	35.30	Parallel
P0180NL	106.1	1.07	404	57.00	131.0	9.40	42.36	Series
P0181NL	154.2	0.89	604	68.99	190.3	11.33	51.05	Series
P0182NL	218.9	0.74	888	81.70	270.2	13.50	60.82	Series
P0183NL	295.0	0.64	1272	92.43	364.0	15.66	70.59	Series

Notes:

1. Temperature rise is 50°C in typical buck or boost circuits at 250kHz and with the reference ET applied to the inductor.
2. Total loss in the inductor is 380mW for a 50°C temperature rise above ambient.
3. To estimate temperature rise in a given application, determine copper and core losses, divide by 380 and multiply by 50.
4. For the copper loss (mW), calculate $IDC^2 * RN$.
5. For core loss (mW), using frequency (f in Hertz) and operating flux density (B in Gauss), calculate $6.11 * 10^{-18} * B^{2.7} * f^{2.04}$.
6. For flux density (B in Gauss), calculate ET (V-sec) for the application, divide by ET_{100} from the table, and multiply by 100.
7. Limit the DC bias (H) to 46 orsted. Calculate H by multiplying H1 from the table IDC of the application.
8. The maximum DCR listed is approximately 17% over the nominal DCR.
9. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P0174NL becomes P0174NLT).
10. 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.
11. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

SMT Power Inductors

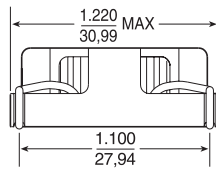
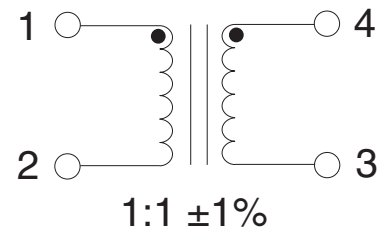
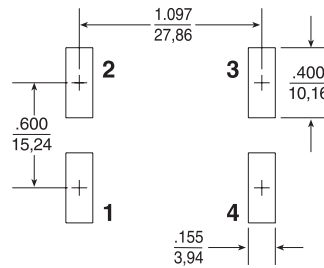
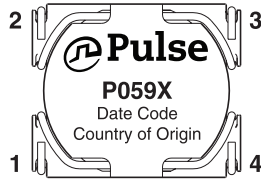
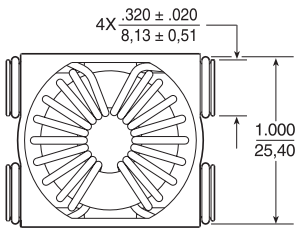
Toroid - Polecat Series



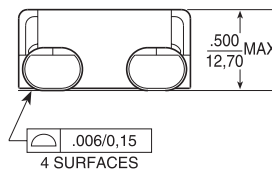
Mechanical

Schematic

POTXXNL



SUGGESTED PAD LAYOUT



Weight1.5grams
 Tape & Reel500/reel
 Tube35/tube
 Dimensions: $\frac{\text{Inches}}{\text{mm}}$
 Unless otherwise specified,
 all tolerances are: $\pm \frac{0.10}{0.25}$

For More Information

Pulse Worldwide Headquarters

15255 Innovation Drive Ste 100
 San Diego, CA 92128
 U.S.A.

Pulse Europe

Pulse Electronics GmbH
 Am Rottland 12
 58540 Meinerzhagen
 Germany

Pulse China Headquarters

Pulse Electronics (ShenZhen) CO., LTD
 D708, Shenzhen Academy of
 Aerospace Technology,
 The 10th Keji South Road,
 Nanshan District, Shenzhen,
 P.R. China 518057

Pulse North China

Room 2704/2705
 Super Ocean Finance Ctr.
 2067 Yan An Road West
 Shanghai 200336
 China

Pulse South Asia

3 Fraser Street 0428
 DUO Tower
 Singapore 189352

Pulse North Asia

1F., No.111 Xiyuan Road
 Zhongli District
 Taoyuan City 32057
 Taiwan (R.O.C)

Tel: 858 674 8100
 Fax: 858 674 8262

Tel: 49 2354 777 100
 Fax: 49 2354 777 168

Tel: 86 755 33966678
 Fax: 86 755 33966700

Tel: 86 21 62787060
 Fax: 86 2162786973

Tel: 65 6287 8998
 Fax: 65 6280 0080

Tel: 886 3 4356768
 Fax: 886 3 4356820

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners. © Copyright, 2019. Pulse Electronics, Inc. All rights reserved.