

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 336μH

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

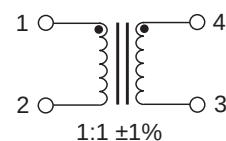
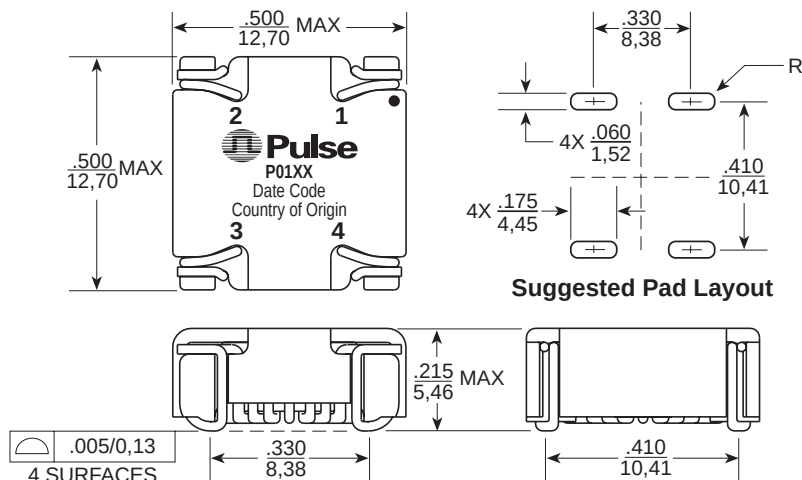
Part Number	Inductance @ Irated (μH)	Irated (A)	DCR (MAX) (mΩ)	ET (V-μsec)	Inductance @0A _{DC} (μH ±20%)	100 Gauss ET ₁₀₀ (V-μsec)	1 Amp DC H ₁ (Orsted)	Connection
P0174	2.0	8.30	7.6	7.31	2.2	1.20	5.43	Parallel
P0175	2.4	7.20	10.9	7.81	2.6	1.33	5.97	Parallel
P0176	5.0	5.20	19.0	11.72	5.5	1.93	8.69	Parallel
P0174	7.8	4.15	30.3	14.61	8.6	2.41	10.86	Series
P0177	9.3	3.84	29.8	16.12	10.4	2.65	11.95	Parallel
P0175	9.6	3.60	43.6	15.62	10.4	2.65	11.95	Series
P0178	14.1	3.12	45.3	19.73	15.7	3.25	14.66	Parallel
P0179	19.7	2.64	66.3	23.45	22.1	3.86	17.38	Parallel
P0176	20.0	2.60	76.0	23.43	22.1	3.86	17.38	Series
P0180	29.3	2.16	106	28.50	32.8	4.70	21.18	Parallel
P0177	37.3	1.92	119	32.25	41.7	5.30	23.89	Series
P0181	42.6	1.80	151	34.49	47.6	5.66	25.52	Parallel
P0178	56.2	1.56	181	39.46	62.8	6.51	29.32	Series
P0182	61.3	1.48	224	40.85	67.5	6.75	30.41	Parallel
P0179	79.0	1.32	265	46.90	88.2	7.71	34.75	Series
P0183	84.2	1.22	324	46.22	91.0	7.83	35.30	Parallel
P0180	117.3	1.08	424	57.00	131.0	9.40	42.36	Series
P0181	170.3	0.90	603	68.99	190.3	11.33	51.05	Series
P0182	245.3	0.74	897	81.70	270.2	13.50	60.82	Series
P0183	336.7	0.61	1295	92.43	364.0	15.66	70.59	Series

NOTES:

- The reference inductance at rated DC current is a typical value.
- Temperature rise is 50°C in typical buck or boost circuits at 250kHz and with the reference ET applied to the inductor.
- Total loss in the inductor is 380mWatts for a 50°C temperature rise above ambient.
- To estimate temperature rise in a given application, determine copper and core losses, divide by 380 and multiply by 50.
- For the copper loss, calculate $I_{DC}^2 \times R_N$.
- For core loss, using frequency (f) and operating flux density (B), calculate $6.11 \times 10^{-18} \times B^{2.7} \times f^{2.04}$.
- For flux density (B), calculate ET (V-μsec) for the application, divide by ET₁₀₀ from the table, and multiply by 100.
- Limit the DC bias (H) to 46 orstedts. Calculate H by multiplying H₁ from the table by I_{DC} of the application.
- The maximum DCR listed is approximately 17% over the nominal DCR.
- Add suffix "T" to part number for tape and reel package (i.e. P0183T).

Mechanical

Schematic



Weight 1.5 grams
Tape & Reel 500/reel
Tube 40/tube

Dimensions: Inches
mm
Unless otherwise specified,
all tolerances are ± .010
0.25