

# 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°C<sup>11</sup>

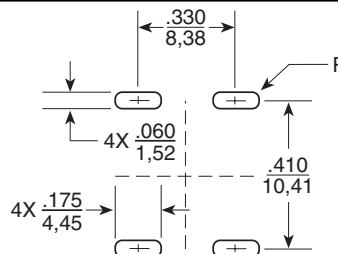
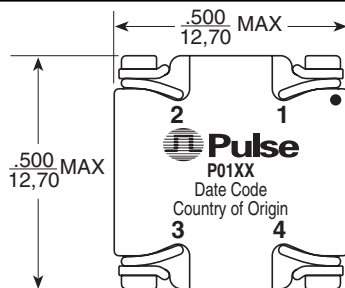
Part Number <sup>9,10</sup>	Inductance @ Irated (μH MIN)	Irated (A)	DCR (MAX) (mΩ)	ET (V-μsec)	Inductance @0A <sub>DC</sub> (μH ±10%)	100 Gauss ET <sub>100</sub> (V-μsec)	1 Amp DC H <sub>1</sub> (Orsted)	Connection
P0174	2.0	8.30	7.6	7.31	2.2	1.20	5.43	Parallel
P0175	2.4	7.20	10.9	7.81	2.6	1.33	5.97	Parallel
P0176	5.0	5.20	19.0	11.72	5.5	1.93	8.69	Parallel
P0174	7.0	4.16	32.0	14.61	8.75	2.41	10.86	Series
P0177	9.3	3.80	29.8	16.12	10.4	2.65	11.95	Parallel
P0175	8.4	3.78	43.6	15.62	10.4	2.65	11.95	Series
P0178	14.1	3.10	45.3	19.73	15.7	3.25	14.66	Parallel
P0179	19.8	2.60	66.3	23.45	22.1	3.86	17.38	Parallel
P0176	17.9	2.60	76.0	23.43	22.45	3.86	17.38	Series
P0180	29.3	2.20	106	28.50	32.8	4.70	21.18	Parallel
P0177	33.8	1.89	120	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	50.9	1.54	182	39.46	62.8	6.51	29.32	Series
P0182	61.3	1.50	224	40.85	67.5	6.75	30.41	Parallel
P0179	71.5	1.30	266	46.90	88.2	7.71	34.75	Series
P0183	84.2	1.20	324	46.22	91.0	7.83	35.30	Parallel
P0180	106.1	1.07	404	57.00	131.0	9.40	42.36	Series
P0181	154.2	0.89	604	68.99	190.3	11.33	51.05	Series
P0182	218.9	0.74	888	81.70	270.2	13.50	60.82	Series
P0183	295.0	0.64	1272	92.43	364.0	15.66	70.59	Series

#### NOTES:

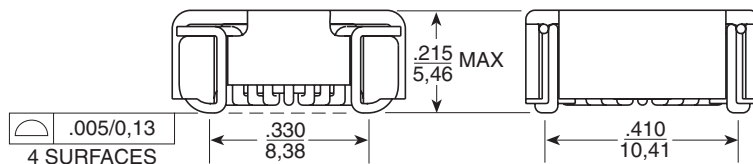
- Temperature rise is 50°C in typical buck or boost circuits at 250kHz and with the reference ET applied to the inductor.
- Total loss in the inductor is 380mW for a 50°C temperature rise above ambient.
- To estimate temperature rise in a given application, determine copper and core losses, divide by 380 and multiply by 50.
- For the copper loss (mW), calculate  $I_{DC}^2 \times R_N$ .
- For core loss (mW), using frequency (f in Hertz) and operating flux density (B in Gauss), calculate  $6.11 \times 10^{-18} \times B^{2.7} \times f^{2.04}$ .
- For flux density (B in Gauss), calculate ET (V-μsec) for the application, divide by ET<sub>100</sub> from the table, and multiply by 100.

- Limit the DC bias (H) to 46 orstedts. Calculate H by multiplying H<sub>1</sub> from the table by loc of the application.
- The maximum DCR listed is approximately 17% over the nominal DCR.
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P0174 becomes P0174T). Pulse complies to industry standard tape and reel specification EIA481.
- To order RoHS compliant part, add the suffix "NL" to the part number (i.e. P0174 becomes P0174NL and P0174T becomes P0174NLT).
- The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

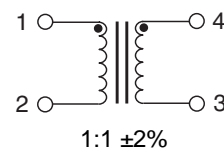
### Mechanical



Suggested Pad Layout



### Schematic



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

Dimensions: Inches  
mm  
Unless otherwise specified,  
all tolerances are ± .010  
0,25