

# SMT POWER INDUCTORS

## Toroid - Bobcat Series



-  **Height:** 5.5mm Max
-  **Footprint:** 12.7mm x 12.7mm Max
-  **Current Rating:** up to 3.8A
-  **Inductance Range:** 9.4μH to 439μH

### Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C<sup>11</sup>

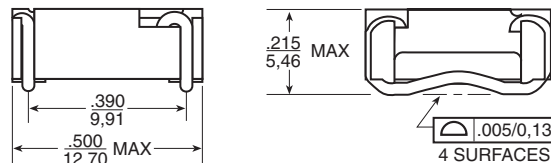
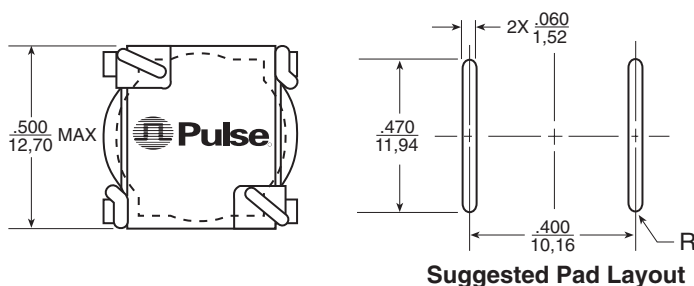
| Part Number <sup>9,10</sup> | Inductance @ I <sub>rated</sub> (μH) | I <sub>rated</sub> (A) | DCR (mΩ) |      | ET (V-μsec) | Inductance @ 0A <sub>DC</sub> (μH ±20%) | 100 Gauss ET <sub>100</sub> (V-μsec) | 1 Amp DC H <sub>1</sub> (Orsted) |
|-----------------------------|--------------------------------------|------------------------|----------|------|-------------|-----------------------------------------|--------------------------------------|----------------------------------|
|                             |                                      |                        | TYP      | MAX  |             |                                         |                                      |                                  |
| P0144                       | 9.4                                  | 3.80                   | 27       | 31   | 15.2        | 10.4                                    | 2.65                                 | 11.95                            |
| P0145                       | 13.3                                 | 3.13                   | 40       | 46   | 18.8        | 14.6                                    | 3.13                                 | 14.12                            |
| P0146                       | 23                                   | 2.43                   | 65       | 75   | 24.3        | 25                                      | 4.10                                 | 18.46                            |
| P0147                       | 50                                   | 1.65                   | 121      | 139  | 37.0        | 56                                      | 6.15                                 | 27.69                            |
| P0148                       | 75                                   | 1.35                   | 181      | 208  | 44.3        | 83                                      | 7.47                                 | 33.67                            |
| P0149                       | 90                                   | 1.23                   | 246      | 283  | 49.2        | 100                                     | 8.19                                 | 36.93                            |
| P0150                       | 137                                  | 0.99                   | 387      | 445  | 59.4        | 152                                     | 10.12                                | 45.61                            |
| P0151                       | 200                                  | 0.81                   | 585      | 673  | 71.3        | 220                                     | 12.17                                | 54.85                            |
| P0152                       | 305                                  | 0.65                   | 845      | 972  | 85.8        | 331                                     | 14.94                                | 67.34                            |
| P0153                       | 439                                  | 0.53                   | 1322     | 1520 | 99.6        | 472                                     | 17.83                                | 80.37                            |

- NOTES:**
1. The reference inductance at rated DC current is a typical value.
  2. Temperature rise is 50°C in typical buck or boost circuits at 250kHz and with the reference ET applied to the inductor.
  3. Total loss in the inductor is 380mW for 50°C temperature rise above ambient.
  4. To estimate temperature rise in a given application, determine copper and core losses, divide by 380 and multiply by 50.
  5. For the copper loss (mW), calculate  $I_{DC}^2 \times R_{DC}$ .
  6. For core loss (mW), using frequency (f in Hertz) and operating flux density (B in Gauss), calculate  $6.11 \times 10^{-18} \times B^{2.7} \times f^{2.04}$ .
  7. 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.

8. Limit the DC bias (H) to 46 orsted. Calculate H by multiplying H<sub>1</sub> from the table by I<sub>DC</sub> of the application.
9. Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P0144 becomes P0144T). Pulse complies to industry standard tape and reel specification EIA481.
10. To order RoHS compliant part, add the suffix "NL" to the part number (i.e. P0144 becomes P0144NL and P0144T becomes P0144NLT).
11. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.

## Mechanical

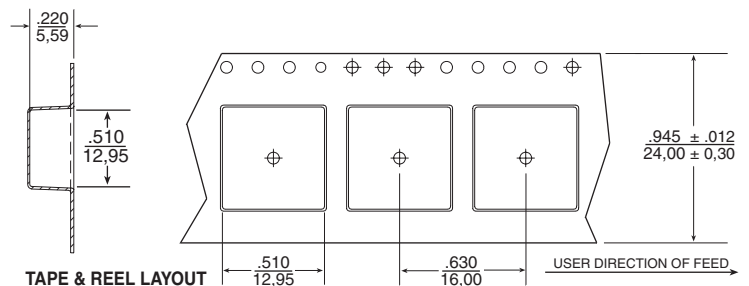
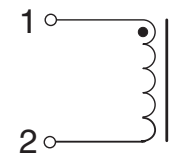
## Schematic



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

Dimensions: Inches  
mm

Unless otherwise specified, all tolerances are ± .010  
0.25



# Mouser Electronics

Authorized Distributor

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Pulse:

[P0145](#) [P0146](#) [P0147](#) [P0153](#) [P0182T](#)