





# 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

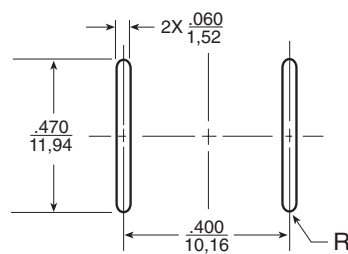
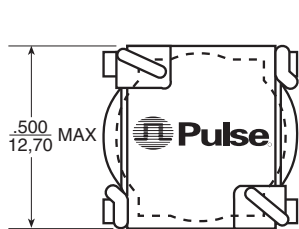
### Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C <sup>11</sup>

| Part Number <sup>9,10</sup> | Inductance @ Irated (µH) | Irated (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>i</sub> (Orsted) |
|-----------------------------|--------------------------|------------|----------|------|-------------|---|--------------------------------------|----------------------------------|
|                             |                          |            | TYP      | MAX  |             |   |                                      |                                  |
| P0144NL                     | 9.4                      | 3.80       | 27       | 31   | 15.2        | 10.4                                    | 2.65                                 | 11.95                            |
| P0145NL                     | 13.3                     | 3.13       | 40       | 46   | 18.8        | 14.6                                    | 3.13                                 | 14.12                            |
| P0146NL                     | 23                       | 2.43       | 65       | 75   | 24.3        | 25                                      | 4.10                                 | 18.46                            |
| P0147NL                     | 50                       | 1.65       | 121      | 139  | 37.0        | 56                                      | 6.15                                 | 27.69                            |
| P0148NL                     | 75                       | 1.35       | 181      | 208  | 44.3        | 83                                      | 7.47                                 | 33.67                            |
| P0149NL                     | 90                       | 1.23       | 246      | 283  | 49.2        | 100                                     | 8.19                                 | 36.93                            |
| P0150NL                     | 137                      | 0.99       | 387      | 445  | 59.4        | 152                                     | 10.12                                | 45.61                            |
| P0151NL                     | 200                      | 0.81       | 585      | 673  | 71.3        | 220                                     | 12.17                                | 54.85                            |
| P0152NL                     | 305                      | 0.65       | 845      | 972  | 85.8        | 331                                     | 14.94                                | 67.34                            |
| P0153NL                     | 439                      | 0.53       | 1322     | 1520 | 99.6        | 472                                     | 17.83                                | 80.37                            |

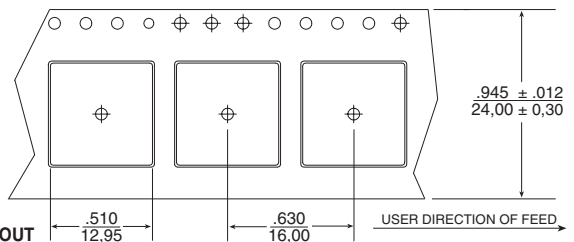
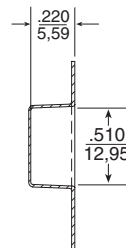
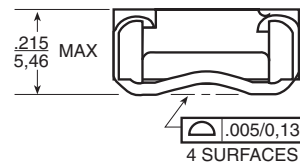
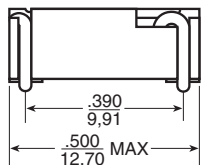
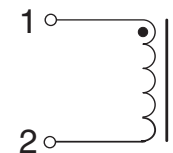
- NOTES:**
- The reference inductance at rated DC current is a typical value.
  - Temperature rise is 50°C in typical buck or boost circuits at 250kHz and with the reference ET applied to the inductor.
  - Total loss in the inductor is 380mW for 50°C temperature rise above ambient.
  - To estimate temperature rise in a given application, determine copper and core losses, divide by 380 and multiply by 50.
  - For the copper loss (mW), calculate  $I_{DC}^2 \times R_{DC}$ .
  - 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>i</sub> from the table by I<sub>DC</sub> of the application.
  - Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P0144NL becomes P0144NLT). 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.

### Mechanical

### Schematic



Suggested Pad Layout



TAPE & REEL LAYOUT

Weight . . . . . 1.5 grams  
 Tape & Reel . . . . . 500/reel  
 Tube . . . . . 40/tube  
 Dimensions: Inches  
 mm

Unless otherwise specified, all tolerances are ± .010 / 0.25