

# SMT POWER INDUCTORS

## Toroid - Tomcat Series



-  **Height:** 7.6mm Max
-  **Footprint:** 18.2mm x 15.0mm Max
-  **Current Rating:** up to 14.4A
-  **Inductance Range:** 1.5μH to 139μH

### Electrical Specifications @ 25°C — Operating Temperature -40°C to +130°C<sup>10</sup>

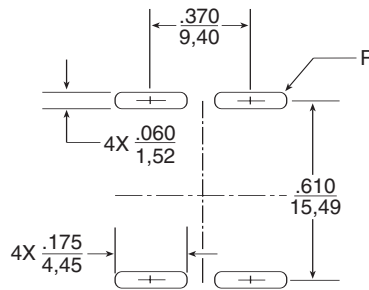
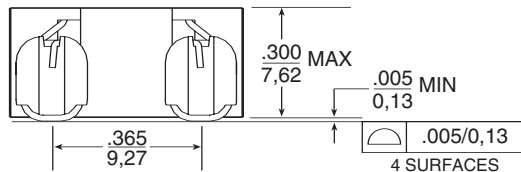
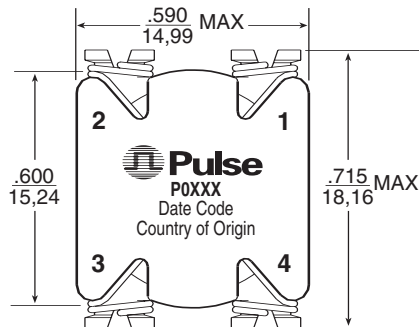
| Part Number <sup>8,9</sup> | Inductance @ Irated (μH) | Irated (A) | DCR (TYP) (mΩ) | ET (V-μsec) | Storage Capacity (μJoules) | Inductance @ 0A <sub>DC</sub> (μH ±20%) | 100 Gauss ET <sub>100</sub> (V-μsec) | 1 Amp DC H <sub>1</sub> (Orsted) | Connection |
|----------------------------|--------------------------|------------|----------------|-------------|----------------------------|-----------------------------------------|--------------------------------------|----------------------------------|------------|
| P0395NL                    | 1.5                      | 14.40      | 4.41           | 4.80        | 159.01                     | 2.2                                     | 1.71                                 | 3.77                             | Parallel   |
| P0396NL                    | 2.4                      | 11.20      | 6.54           | 6.00        | 152.83                     | 3.5                                     | 2.14                                 | 4.71                             | Parallel   |
| P0397NL                    | 4.2                      | 8.20       | 10.47          | 7.85        | 142.57                     | 5.9                                     | 2.78                                 | 6.12                             | Parallel   |
| P0398NL                    | 5.8                      | 6.80       | 14.94          | 9.05        | 133.80                     | 7.9                                     | 3.21                                 | 7.06                             | Parallel   |
| P0395NL                    | 6.1                      | 7.20       | 17.60          | 9.60        | 159.01                     | 9.0                                     | 3.42                                 | 7.53                             | Series     |
| P0399NL                    | 7.6                      | 5.70       | 20.99          | 10.25       | 124.18                     | 10.1                                    | 3.64                                 | 8.00                             | Parallel   |
| P0396NL                    | 9.7                      | 5.60       | 26.20          | 12.00       | 152.83                     | 14.0                                    | 4.28                                 | 9.42                             | Series     |
| P0400NL                    | 12.1                     | 5.40       | 23.24          | 13.85       | 176.62                     | 18.5                                    | 4.92                                 | 10.83                            | Parallel   |
| P0397NL                    | 17.0                     | 4.10       | 41.90          | 15.70       | 142.57                     | 23.7                                    | 5.56                                 | 12.24                            | Series     |
| P0401NL                    | 18.0                     | 4.40       | 38.15          | 16.50       | 174.26                     | 27.4                                    | 5.99                                 | 13.18                            | Parallel   |
| P0398NL                    | 23.1                     | 3.40       | 59.70          | 18.10       | 133.80                     | 31.5                                    | 6.42                                 | 14.12                            | Series     |
| P0402NL                    | 27.0                     | 3.54       | 53.21          | 20.50       | 169.14                     | 40.5                                    | 7.27                                 | 16.01                            | Parallel   |
| P0399NL                    | 30.6                     | 2.85       | 84.00          | 20.50       | 124.18                     | 40.5                                    | 7.27                                 | 16.01                            | Series     |
| P0403NL                    | 34.8                     | 3.00       | 73.89          | 22.50       | 156.47                     | 50.5                                    | 8.13                                 | 17.89                            | Parallel   |
| P0400NL                    | 48.5                     | 2.70       | 93.00          | 27.70       | 176.62                     | 74.1                                    | 9.84                                 | 21.66                            | Series     |
| P0401NL                    | 72.0                     | 2.20       | 152.60         | 33.00       | 174.26                     | 109.8                                   | 11.98                                | 26.36                            | Series     |
| P0403NL                    | 139.1                    | 1.50       | 295.60         | 45.00       | 156.47                     | 202.2                                   | 16.26                                | 35.78                            | Series     |
| P0402NL                    | 108.0                    | 1.77       | 212.80         | 41.00       | 169.14                     | 161.8                                   | 14.55                                | 32.01                            | Series     |

#### NOTES:

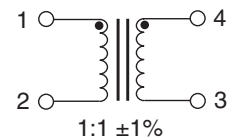
- The reference inductance is a typical value at the AC and DC excitation listed.
- Temperature rise is 55°C in typical buck or boost circuits at 100kHz and with the reference ET applied to the inductor.
- Total loss in the inductor is 634mW for a 55°C temperature rise above ambient.
- To estimate temperature rise in a given application, determine copper and core losses, divide by 634 and multiply by 50.
- For the copper loss (mW), calculate  $I_{OC}^2 \times R_{DC}$ .
- For core loss (mW), using frequency (f in Hertz) and operating flux density (B in Gauss), calculate  $2.24 \times 10^{-10} \times B^{2.11} \times f^{1.26}$ .
- 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.
- Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the part number (i.e. P0395NL becomes P0395NLT). 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



Weight ..... 4.2 grams  
Tape & Reel ..... 300/reel  
Tube ..... 35/tube

Dimensions:  $\frac{\text{Inches}}{\text{mm}}$   
Unless otherwise specified,  
all tolerances are  $\pm \frac{.010}{0.25}$