



# POWER INDUCTORS

## OVERVIEW



Power Inductors are used in virtually every electronic system and every market segment from small sub-watt wearable and hand-held devices to large kilowatt and megawatt industrial power installations. They can be used in a variety of functions including differential mode filtering, output chokes and as the main energy storage device in multiple power supply topologies.

The key parameters when selecting a power inductor are:

- Inductance value which will be based on the requirements of the circuit application.
- Current rating to ensure the part will not overheat and that it is compatible with the circuit requirements.
- Saturation current to ensure the component will not saturate at peak application current.
- AC core and AC conductor loss calculation to verify thermals and efficiency.

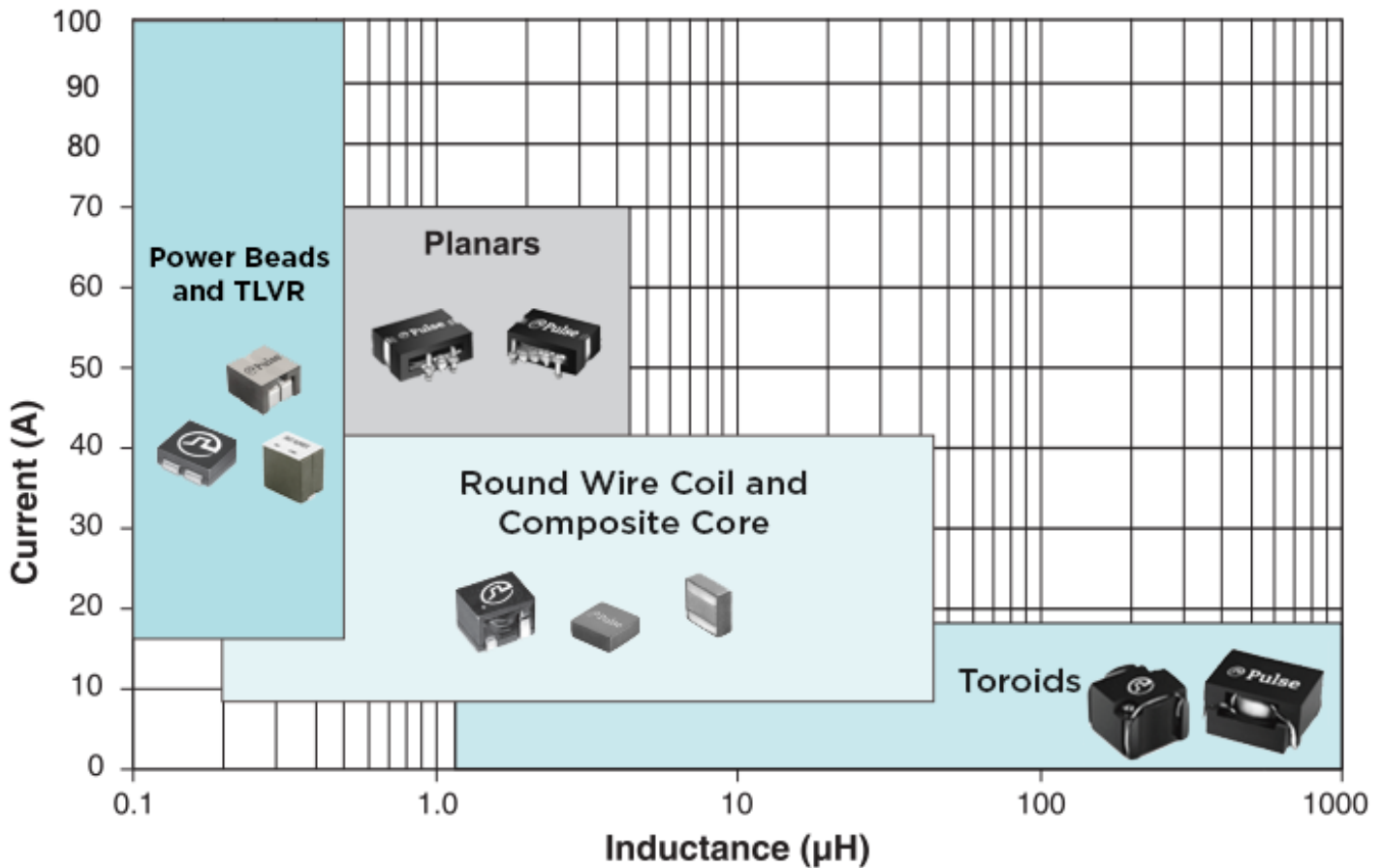
Pulse Power Inductors come in a wide-range of product technologies including power beads, molded, composite, round wire coils, drum cores, flat wire, planar and toroids. Offerings range from a few mA to 150Apk, from 20nH to 10mH in both surface mount and through-hole configurations.



# POWER INDUCTORS OVERVIEW

FOR SWITCH MODE POWER APPLICATIONS

## PRODUCT OVERVIEW: SMT POWER INDUCTORS



### Power Bead Inductors:

Low Inductance ( $<0.5\mu\text{H}$ ), high current ( $>100\text{A}$ ) applications for single and multi-phase applications.

### Dual Winding TLVR Inductors:

Low Inductance ( $<0.2\mu\text{H}$ ), high Current ( $>44\text{A}$ ) for quick transient response applications

### Planar Inductors:

Mid-Inductance (0.5 to 4µH), high current ( $>73\text{A}$ ) applications.

### Round Wire Coil Inductors:

Mid-Inductance, High-Efficiency Inductors (0.3 to 20µH) up to 50A.

### Composite Core Inductors:

Mid-Inductance (0.1 to 20µH), wide current (0.5 to 32A) applications, high power density.

### Toroid Inductors:

Versatile multi-use platforms for single and dual winding applications.

## POWER INDUCTORS: PRODUCT TYPES



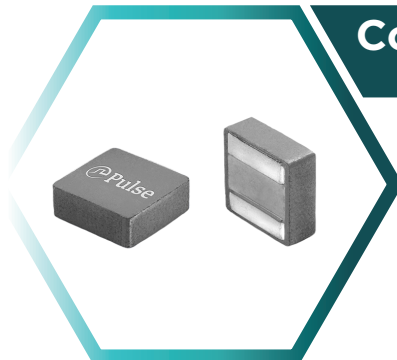
### Power Bead Inductors

- Commonly used for high current multi-phase application for powering processors, memory modules, high current ASICs and FPGs
- 1T or 2T structure for ultra low DCR ( $<0.120\mu\text{Ohms}$ )
- Ferrite core to minimize AC loss and maximize energy storage density
- 20nH to 1uH,  $>140\text{Apk}$
- 30+ platform sizes (4x4mm to 13x13mm)



### Dual Winding TLVR Inductors

- Used in Multi-phase and Vcore regulators with fast transient requirements
- Dual winding for quick reaction to a sudden change in load
- 100V isolation between windings
- 70nH to 200nH, up to 145Apk
- 9 platform sizes (10x5x6mm to 12x6x12mm)
- Range of matching compensation inductors available



### Composite Inductors

- Commercial (130C) and Automotive Grade (155C)
- Highest Energy Storage and Low DCR
- 200nH to 50uH
- $>120\text{Apk}$
- 40+ platform sizes from 4x4x2.0mm to 16x16x13mm

## POWER INDUCTORS: PRODUCT TYPES CONT'D

### Round Wire Coil Inductors



- Ferrite Core for low AC Losses
- Designed to minimize PCB area
- 300nH to 100uH
- >80Apk
- 6 platforms from 7x7x6mm to 26x26x15mm

### Alternate Constructions



- **Planar Inductors:** Typically, low profile, high current (>30Arms) utilizing a ferrite core and copper plate windings.
- **Toroid Inductors:** Round magnet wire wound on distributed gap powder material cores. Soft saturation and excellent shielding.
- **Flat Coil Inductors:** Utilize flat wire coil for the windings to create a low DCR and low profile high current solution
- **Wire-wound Inductors:** General purpose inductors wound with round magnet wire and using a gapped ferrite core.