



POWER INDUCTOR OVERVIEW

FOR SWITCH MODE POWER APPLICATIONS

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 is 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.

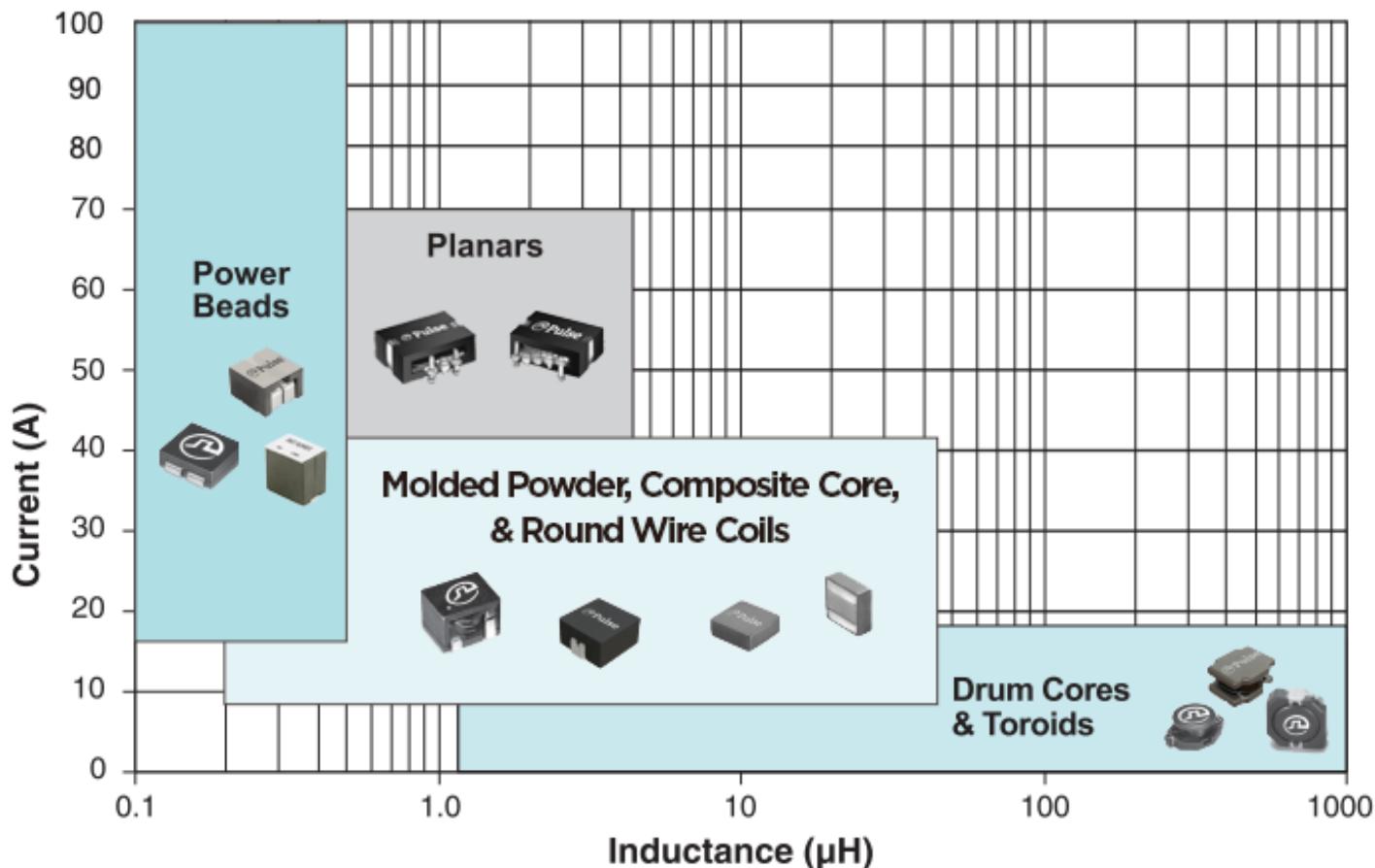
Pulse Power Inductors come in a wide-range of product technologies including power beads, molded, composite, round wire coils, drum cores, flat wire, planar and toroids. Offerings range from a few mA to 150A_{pk}, from 20nH to 10mH in both surface mount and through-hole configurations.

POWER INDUCTORS OVERVIEW

FOR SWITCH MODE POWER APPLICATIONS

 **Pulse**
a YAGEO company

PRODUCT OVERVIEW: SMT POWER INDUCTORS



Drum Cores (Shielded and Unshielded):

Typically for lower current applications and less efficiency sensitive designs.

Toroid Inductors:

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

Composite Core Inductors:

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

Molded Powder Inductors:

Mid-Inductance (0.2 to 20uH), wide current (5-55A) applications, soft saturation.

Round Wire Coil Inductors:

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

Power Bead Inductors:

Low Inductance (<0.5uH), high current (>100A_{pk}) applications for single and multi-phase applications.

Planar Inductors:

Mid-Inductance (0.5 to 4uH), high current (>73A) applications



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 (<0.120uOhms)
- Ferrite core to minimize AC loss and maximize energy storage density
- 20nH to 1uH, >140Apk
- 30+ platforms sizes (4x4mm to 13x13mm)



Molded Powder Inductors

- Commercial (130C) and Automotive Grade (155C)
- Soft saturation characteristics
- Industry Standard Footprints
- 100nH to 100uH
- > 110Apk
- 46+ platform sizes from 4x4x1.2mm to 24x22x13mm



Composite Inductors

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



Round Wire Coil Inductors

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



Drum Core Inductors

- Shielded and Unshielded Constructions
- Typically used in applications where efficiency is less critical
- 0.3uH to 5mH
- >56A_{pk}
- 55+ platform sizes from 2x2x1mm to 23x23x10mm



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.