Single Coil Inductors

**Core material**
- Ferrite
  - NiZn: Robust WE-PD, WE-PD2, WE-LOS, WE-Ti
  - MnZn: Performance WE-PD, WE-HCF, WE-TPC
- Iron
  - Powder: Power Density WE-LHMI
  - Alloy: Efficient WE-MAPI, WE-XHMI, WE-HCI and WE-PMCI
- Round Wire: Up to 4 wires in parallel for ultra low losses, e.g. WE-PD, WE-TPC, WE-MAPI, WE-LHMI
- Flat Wire: Best filling grade for highest power density possible, e.g. WE-HCI, WE-XHMI and extremely low DCR e.g. WE-HCM
- Litz Wire: Up to 115 wires twisted for highest ripple current application, e.g. WE-HCF

**Wire types**
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**Shielding types**
- Unshielded (Cost efficient)
- Semi shielded (All-Rounder)
- Shielded (Best Performance)
- Molded (Highest Power)

**Suitable for all kind of applications**
- SMD Surface Mount
- THT Through Hole

**Features**
- AEC-Q200 qualified (certain series)
- Temperature Range -40 °C – 125 °C/150 °C /155 °C
- Outstanding saturation behavior
- Extreme low $R_{DC}$
- Highest power density based in package volume
- Robust design for advanced applications
- Best filter characteristics
- Operating Voltage rating up to 400 V
- Size from 1.6 mm up to 41 mm
- Current rating up to >125 A
- Inductance value from 25 nH up to 22 mH
- Switching frequency from 10 kHz up to 10 MHz

**Line Filter**
- Single coil inductors are used for filter designs like LC Filter
- Every material has different filter characteristics
- The graphic helps to find the best inductor
Usage of single coil inductors:
- Often used in DC/DC converter, e.g. buck converter.
- One of the most important factors of an inductor is its current capability.

![Inductor in a DC/DC Converter](image)

**Inductor in a DC/DC Converter**

- Thick lines are showing the current load of the inductor with the duty cycle shown in the right graph.
- The current load is depending on the switching frequency and the inductance value.

![Ripple Current over Inductor](image)

**Ripple Current over Inductor**

- In this example the duty cycle is 50%.
- Soft saturation leads to overall higher ripple.
- Hard saturation may lead to ripple peaks when inductor is close to saturation.

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