Inductors Four new series of thin-film metal power inductors

- · Includes the world's smallest series of metal power inductors
- Offers up to twice the rated current and half the DC resistance of existing ferrite products

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TDK Corporation has developed four new series of miniature, low-profile thin-film metal power inductors featuring up to twice the rated current and half the DC resistance of comparable ferrite inductors. The new TDK TFM family is available in four form factors, including IEC 1608, which at $1.6 \times 0.8 \times 1.0 \text{ mm}^3$ is the world's smallest metal power inductor. The other case sizes in the lineup are 2520, 2016 and 2012. The new TFM thin-film metal power inductors feature inductances ranging from 0.47 µH to 2.2 µH and rated currents from 0.8 A to 4.0 A, providing customers with a wide selection for various needs. Mass production began in September 2012.

While the core material of inductors is predominantly ferrite, TDK has harnessed its proprietary materials technology to create a magnetic metal with high saturation flux density, enabling excellent electrical properties in a very compact component. Compared to the previous ferrite type (TFC252010/2.2µH), for example, the rated current has been doubled without sacrificing extremely stable DC superposition characteristics. TDK's cutting-edge thin-film technology enables the creation of a high-precision coil pattern in the wafer process. Combined with advanced plating technology, this results in reduced DC resistance, thus cutting losses. In smartphones, for example, with their multiple power supply inductors, the use of the new TDK TFM thin-film metal power inductors will thus contribute toward improved power supply efficiency and longer battery life.

Thanks to their high rated current, small footprint and low profile, the TFM thin-film metal power inductors are well suited for use in the DC-DC converters that serve as power supplies in smartphones, tablet PCs and mobile devices.

Glossary

• Saturation flux density: The magnetic flux density at the point where a further increase in the coil current no longer produces a significant increase in magnetization of the core.

Main applications

• Power supply circuits in smartphones, tablet PCs and mobile devices

Main features and benefits

- Metal magnetic core material supports higher rated currents.
- Thin-film technology achieves low DC resistance in miniature, low-profile package.

Key data

Туре	Dimensions [mm]	Inductance [µH]	DC resistance * [mΩ]	Rated current ** [A]
TFM160810	1.6 x 0.8 x 1.0	0.47 to 1.5	114 to 750	0.8 to1.6
TFM201210	2.0 x 1.2 x 1.0	0.47 to 1.5	65 to 300	1.5 to 2.5
TFM201610	2.0 x 1.6 x 1.0	0.47 to 2.2	46 to 180	1.7 to 3.2
TFM252010	2.5 x 2.0 x 1.0	0.47 to 2.2	30 to 115	2.3 to 4.0

* Maximum

** Based on inductance change ratio (at 30% drop from initial value).

About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's current product line includes passive components, magnetic application products as well as energy devices, flash memory application devices, and others. TDK today focuses on demanding markets in the areas of information and communication technology and consumer, automotive and industrial electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2012, TDK posted total sales of USD 9.9 billion and employed about 79,000 people worldwide.

About TDK-EPC Corporation

TDK-EPC Corporation, a TDK group company, is a leading manufacturer of electronic components, modules and systems, headquartered in Tokyo, Japan. TDK-EPC was founded in 2009 from the combination of the passive components business of TDK and the EPCOS Group. The portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, magnets, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors. The company markets the product brands TDK and EPCOS.

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