



Inductors

April 2010

Multilayer ceramic coils with high Qfactor in 0402

TDK-EPC, a group company of the TDK Corporation, announces the development of the MLG0402Q series of TDK multilayer ceramic coils in 0402 with a Q factor of 15.8 at 1 GHz and 10 nH. This is the world's best* and 40 percent higher than existing products.

Mass production is scheduled to start in April 2010.

The new coils are chip components with a compact 0402 size ($0.4 \times 0.2 \times 0.2 \text{ mm}^3$). Their market-leading Q factor was achieved by employing a new technology that increases the precision of position control when forming the layers, thus allowing an optimization of the coil design. The high Q factor means that efficiency is high with low loss, particularly when the coil is used in high-frequency circuits. The lineup of the E12 series comprises 15 components with low resistance ranging from a maximum of 0.4 to 2.6 Ω , a rated current of 100 to 250 mA, and an inductance ranging from 1 to 15 nH. In addition, TDK-EPC plans to introduce an E24 series with 12 further inductance values in May 2010.

These components have an operating temperature range of -40 to $+85 \text{ }^\circ\text{C}$ and are designed for use in the high-frequency circuits of mobile communications devices such as mobile phones. They are also suitable for use in other high-frequency wireless signal circuits such as those found in Bluetooth devices.

*As of March 2010, according to TDK investigations.

Glossary

- Q factor: A dimensionless parameter that indicates inductor performance. It is the ratio of reactance to resistance at a defined frequency and is expressed as Q. The higher the Q factor, the higher the performance of the inductor.
- E series: Short for exponent. E12 refers to a series divided by a geometric progression from 1 to 12 (the 12th root of 10).

Main applications

- High-frequency circuits of mobile communication devices such as mobile and cordless phones.

Main features and benefits

- Q factor of 15.8 (at 1 GHz and 10 nH) is 40 percent higher than existing products, minimizing loss in high-frequency circuits.
- Chip component with a compact 0402 size

Key data

Parameter	MLG0402Q series
Inductance	1 to 15 nH
Operating temperature range	-40 to +85 °C
DC resistance (max.)	0.4 to 2.6 Ω
Rated current	100 to 250 mA
Dimensions	0.4 x 0.2 x 0.2 mm ³