



Multilayer ceramic capacitors

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Further miniaturized series of C0G MLCCs

TDK-EPC Corporation, a group company of TDK Corporation, presents a new series of multilayer ceramic capacitors (MLCC) with C0G temperature characteristics and a rated voltage of 50 V. Mass production began in December, 2009. The new series of TDK MLCCs are 60 percent or one size smaller than existing products with the same capacitance. With three times the capacitance of existing TDK MLCCs, the new products will have the

world's highest capacitance* in the 50 V rated voltage range for C0G.

With the new series, TDK-EPC is meeting the market demand for miniaturization in automotive and consumer applications. Using specialized thin-layer and multilayer technologies it developed new ceramic dielectric materials that enable the spacing between the ceramic dielectric layers to be reduced by approximately 30 percent.

The new C0G MLCCs feature a temperature coefficient of 0 ± 30 ppm/°C over the complete operating temperature range from -55°C to +125°C. This means that the new components can be used in applications that require highly accurate capacitors such as time constant and oscillator circuits. They are also suited for use in snubber circuits and EMI filtering in power supplies of automotive electronic control units (ECU), consumer electronics, and industrial equipment. The new ceramic capacitors can also replace film capacitors in some general consumer electronics applications.

* As of 1/ 2010 (TDK-EPC investigations)

Glossary

- C0G: A code for the temperature characteristics of low permittivity capacitors. C0G characteristics indicate a temperature coefficient of no more than 0 ± 30 ppm/°C. Further common temperature characteristics are X7R and X8R.
- ECU: Electronic control unit. Used to control automotive electronic devices.

Main applications

- EMI filtering and voltage stabilization in power supplies for automotive and consumer electronics applications.

Main features and benefits

- Reduction of the space between ceramic dielectric layers of around 30 percent compared to existing products, which results in a volume reduction of about 60 percent and an capacitance increase by about three times compared to existing products.
- C0G temperature characteristics with a temperature coefficient of 0 ± 30 ppm/°C over an operating temperature range of -55°C to +125°C.

Products & Technologies

Key data

| Size | Insertion height [mm] | Capacitance [nF] |
|----------------------|-----------------------|------------------|
| C1005 (0402)* | 0.55 max | 0.56 to 1 |
| C1608 (0603)* | 0.90 max | 3.9 to 10 |
| C2012 (0805)* | 0.70 max | 3.9 to 10 |
| | 0.95 max | 12 to 15 |
| | 1.35 max | 18 to 27 |
| | 1.45 max | 33 |
| | C3216 (1206)* | 0.70 max |
| | 0.95 max | 27 to 33 |
| | 1.30 max | 39 to 56 |
| | 1.80 max | 68 to 100 |

* Rated voltage: 50 V; temperature characteristic: C0G