

EMC components

1005 (EIA 0402) noise absorbers reduce voltage ringing in switch-mode power supplies

- Effective suppression of voltage ringing without reducing power efficiency

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TDK Corporation has developed the YNA15 series of noise absorbers in case size 1005 (IEC) to suppress voltage ringing that can be caused by switch-mode power supplies (SMPS). The new TDK noise absorbers have a rated voltage of 25 V and a rated capacitance of 0.1 μ F. Depending on the type, the YNA15 series features ESR values of between 50 m Ω and 1 Ω . When the new component is used on the input side of the SMPS, for example, EMI noise caused by voltage ringing can be reduced by 3.5 dB (or approximately by one third). The YNA15 series thus effectively suppresses voltage ringing without reducing the power efficiency. A further benefit of the YNA15 series is that it can replace three components: the resistor and capacitor in the snubber circuit and the decoupling capacitor. Mass production began in November 2012.

Due to their design, SMPS may require capacitors with higher ESR values than offered by standard MLCCs. In order to meet these requirements and to suppress unwanted EMI noise, TDK developed an internal electrode structure that enables the design of noise absorbers with any desired ESR rating. As a result, EMI noise can be suppressed effectively in the frequency range where the voltage ringing occurs.

In recent years, smartphones and other compact portable devices have evolved toward integrating more and more functions. This in turn leads to higher power consumption and requires optimal design to ensure a suitably long battery life. Noise control in power supplies therefore must be implemented with as few components as possible and without compromising power efficiency. The new YNA15 series can satisfy such needs.

Main applications

- Suppression of voltage ringing in switch-mode power supplies

Main features and benefits

- Internal electrode structure enables the realization of ESR values from 50 m Ω up to 1 Ω)
- Rated voltage of 25 V

Key data

Type	Dimensions [mm]	Rated voltage [V]	Capacitance [μ F]	ESR [m Ω]
YNA15	1.0 x 0.5 x 0.3	25	0.1	50 to 1000

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 portfolio includes electronic components, modules and systems which are marketed under the product brands TDK and EPCOS, power supplies, magnetic application products as well as energy devices, flash memory application devices, and others. TDK 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 the manufacturer of TDK's electronic components, modules and systems and is headquartered in Tokyo, Japan. TDK-EPC was founded on October 1, 2009 from the combination of the electronic components business of TDK and the EPCOS Group. The product portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites, inductors, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors.

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