

## Ferrites

### Product range of PQ cores extended

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TDK-EPC, a group company of TDK Corporation, presents its extended range of EPCOS PQ ferrite cores. With the newly added core sizes PQ40/40 and PQ50/50 the full range of PQ cores is now covered between the sizes PQ16/11.6 and PQ50/50.

The PQ cores have been developed in particular for transformers in switch-mode power supplies. The insertion height of these cores can be adjusted while retaining the same footprint by appropriate adaptation of the cores. The new ferrite cores can be used for both standard wire wound transformers in AC/DC and DC/DC converters and for planar transformers.

Compared with conventional ETD/ER/E core designs, the main advantage of the PQ cores is the stable round center leg and the larger outer surfaces. As a result of the round center leg and the larger surface area for the windings, the length of the copper wire can be reduced. As a consequence, costs can be lowered in the transformer production. Moreover, the larger outer areas provide better heat dissipation. The PQ core shape has been optimized in such a way that the same transformer performance as for an E core can be reached with smaller dimensions and less weight. The PQ cores are available in a wide range of ferrite materials: N49, N51, N87, N92, N95 and N97.

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#### Glossary

- Core shape: designations such as Q or E are derived from the shapes of the cross-sections because they resemble those letters. The letter P in a PQ core stands for power.
- Switch-mode power supply: energy efficient and compact circuitry for power supplies.
- AC/DC converters: power supplies that convert alternating current with a mains voltage to a direct current with a fixed value or values. Example: power supply in a PC.
- DC/DC converters: these converters produce another DC voltage or voltages with a fixed level from a DC voltage source. Example: power supply of microprocessors.

#### Main applications

- Switch-mode power supplies for applications in information technology and industrial and automotive electronics

#### Main features and benefits

- Small dimensions and low weight
- Less copper wire needed for the winding than for conventional E core shapes, reduced costs in the transformer production
- Good heat dissipation through large surfaces
- Available in a range of different ferrite materials

**Main characteristics**

Parameter	Unit	PQ40/40	PQ50/50
Form factor $\Sigma/A$	mm <sup>-1</sup>	0.490	0.342
Effective magnetic length $l_e$	mm	92.5	113.0
Effective magnetic cross-section $A_e$	mm <sup>2</sup>	188.3	330.0
Effective magnetic volume $V_e$	mm <sup>3</sup>	17 430	37 270
Inductance factor* $A_L$	nH	3200 to 5500	4700 to 8200
Dimensions (l x w x h)	mm	40.5 x 28 x 19.9	50 x 32 x 25

\*depending on the ferrite material

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**About TDK-EPC Corporation**

TDK-EPC Corporation (TDK-EPC), a TDK group company, is a leading manufacturer of electronic components, modules and systems headquartered in Tokyo, Japan. TDK-EPC has emerged from the combination of the electronic components business of TDK and the EPCOS Group and markets its products under the product brands, TDK and EPCOS.

The product portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors. With this product spectrum TDK-EPC offers a broad range of products and solutions of outstanding value from a single source and focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer electronics. The company has design and manufacturing locations and sales offices in Asia, Europe, and in North and South America.

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