Inductors

3D transponder coils for 22 kHz with high sensitivity

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TDK Corporation is extending its B82453C*A* series of 3D transponder coils with a new type that features an operating frequency of 22 kHz. The new component (B82453C0335A022) complements the existing spectrum designed for a frequency of 125 kHz and is suitable for automotive passive entry passive start (PEPS) and other access systems based on the lower frequency.

The new 3D transponder coil also offers high inductance values of 30 mH, 33 mH and 55 mH, respectively, for the x-, y- and z-axes. This results in extremely high sensitivity values of 25.5 mV/µT for the x- and y-axes, and 23.3 mV/µT for the z-axis. These are the world's highest sensitivity values for 3D transponder coils and are about 20 percent higher than those of existing products with comparable dimensions and inductance values.

Like the existing types for 125 kHz, the new 22-kHz coil is RoHS-compatible and has dimensions of just 11.5 x 12.5 x 3.6 mm. Moreover, thanks to its plastic overmolding and laser-welded connections the component is mechanically very stable. This has been proven in the severe drop tests prescribed for PEPS components. Accordingly, these transponder coils are qualified to AEC-Q200.

Main applications

- Automotive PEPS systems and other access systems

Main features and benefits

- High sensitivity of 25.5 mV/µT (x- and y-axes), 23.3 mV/µT (z-axis)
- Dimensions of only 11.5 x 12.5 x 3.6 mm
- Very high mechanical stability
- Qualified to AEC-Q200

Key data

Ordering code	Axis	L_R [mH] ±5%	Q (typ.) -10%/+15%	S (typ.) [mV/µT]	$f_{res, min.}$ [kHz]	$R_{DC, max.}$ [Ω]
B82453C0335A022	X	30.00	9.0	25.5	170	480
	Y	33.00	9.5	25.5	170	500
	Z	55.00	7.5	23.3	140	1100

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 passive components, such as ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, high-frequency products, and piezo and protection components, as well as sensors and sensor systems and power supplies. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda TDK's further main product groups include magnetic application products, energy devices, and flash memory application devices. TDK focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer 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 2017, TDK posted total sales of USD 10.5 billion and employed about 100,000 people worldwide.

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Please forward reader inquiries to marketing.communications@epcos.com.

Contacts for regional media

Region	Contact		Phone	Mail
ASEAN	Mr. K. UNTERWEGER	EPCOS PTE LTD SINGAPORE	+65 6597 0618	klaus.unterweger@epcos.com
Greater China	Ms. S. SUEN	EPCOS LTD HONG KONG	+852 3669 8224	stella.suen@epcos.com
Europe	Mr. C. JEHLE	EPCOS Munich, GERMANY	+49 89 54020 2441	christoph.jehle@epcos.com
India	Mr. G. DALVI	EPCOS India Private Ltd. Mumbai, INDIA	+91 22 2575 0804	girish.dalvi@epcos.com
Japan	Mr. Y. OSUGA	TDK Corporation Tokyo, Japan	+813 6852 7102	pr@jp.tdk.com
North America	Ms. D. MARTIN	EPCOS Inc. Fountain Hills AZ, USA	+1 480 836 4104	debbie.martin@epcos.com
South America	Mr. C. DALL'AGNOL	EPCOS do Brasil Ltda. Gravataí, BRAZIL	+55 51 3484 7158	candido.dallagnol@epcos.com