Inductors

World's smallest transponder coils for automotive electronics

March 17, 2015

TDK Corporation presents new EPCOS SMT transponder coils with extremely compact dimensions: Measuring just 4.5 mm x 3.2 mm x 3.2 mm, the TC1812 has an inductance of 2.38 mH and is designed for operation in the Z-axis. The TC1210 coil is available with an inductance value of 1.08 mH or 1.34 mH, depending on type, and is suitable for operation in either the X- or Y-axis. Furthermore, both TC1210 versions are currently the smallest transponder coils in the world as they measure just 3.2 mm x 2.5 mm x 2.2 mm.

Thanks to the reduced dimensions, it has also been possible to reduce the mass of the components by about a third compared to the predecessor products. For example, the TC1210 (B82450A1084C000) weighs just 50 mg, while the TC1812 (B82451A2384D000) weighs only 120 mg. This makes them an excellent choice for tire pressure monitoring systems (TPMS). These applications demand especially robust, low-mass components due to the high acceleration forces that are encountered. The terminals of the windings are laser-welded and provide high mechanical stability.

The TC1210 coil has a high sensitivity of 3.1 mV/µT or 3.5 mV/µT, depending on the type, while the TC1812 coils offers a sensitivity of 7.6 mV/µT. All new transponder coils are designed for a center frequency of 125 kHz, comply with the AEC-Q200 standard and are RoHS-compatible.

Main applications

- Tire pressure monitoring systems (TPMS)
- Operation in the X- or Y-axis (TC1210)
- Operation in the Z-axis (TC1812)

Main features and benefits

- World's smallest transponder coils for automotive electronics
- High sensitivity
- Qualified to AEC-Q200
- RoHS-compatible

Key data

Series	Inductance [mH]	Center frequency [kHz]	Q_{min}	Sensitivity [mV/µT]	R_{DC} [Ω]	f_{res} [MHz]	Ordering code
TC1210	1.08	125	15	3.1	35	>2.5	B82450A1084C000
	1.34		15	3.5	42	>2.0	B82450A1344C000
TC1812	2.38		25	7.6	43	>1.5	B82451A2384D000

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* 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 2014, TDK posted total sales of USD 9.6 billion and employed about 83,000 people worldwide.

* 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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