Pressure sensors

Miniaturized sensor dies for automotive and IoT applications

- Smallest automotive types with dimensions of just 1 mm x 1 mm x 0.4 mm (C33)
- Qualification based on AEC-Q101
- Low-profile types for IoT applications with dimensions of 0.65 mm x 0.65 mm x 0.24 mm (C39)
- Very long-term stability

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TDK Corporation presents new miniaturized EPCOS MEMS pressure sensor dies. The automotive versions of the C33 series boast dimensions of just 1 mm x 1 mm x 0.4 mm, making them one of the smallest of their kind*. They are designed for absolute pressures of 1.2 bar to 10 bar, and are qualified based on AEC-Q101. The typical operating voltage is 3 V. With a supply voltage of 5 V they offer sensitivities of between 15 mV/bar and 80 mV/bar, depending on the type. The miniaturized pressure sensors are suitable for a temperature range from -40 °C to +135 °C and can even withstand 140 °C for short periods. They also offer a very long-term stability of ± 0.35% FS (full scale).

The C39 type, with its footprint of just 0.65 mm x 0.65 mm is especially suitable for IoT and consumer applications. One noteworthy feature of the C39 is its low insertion height of just 0.24 mm, which makes the low-profile MEMS pressure sensor die ideal for applications in smartphones and wearables, for example, where space requirements are critical. The C39 is designed for an absolute pressure of 1.2 bar and, like the C33 series, offers long-term stability of ± 0.35% FS. All the pressure sensor dies operate on the piezoresistive principle and deliver, via a Wheatstone bridge, an analog signal that is proportional to the applied pressure and the supply voltage.

* Status: September 2017 according to EPCOS market research

Main applications

- C33: Automotive applications
- C39: Consumer and IoT applications

Main features and benefits

- Compact dimensions of just 1 mm x 1 mm x 0.4 mm, and 0.65 mm x 0.65 mm x 0.24 mm, respectively
- Very long-term stability of ± 0.35% FS
- Automotive types qualified based on AEC-Q101

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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