mCube MC3672: The smallest WLCSP MEMS Accelerometer for Wearables

Description: With the MC3672, mCube has released the industry's smallest WLCSP ultra-low power accelerometer for wearables, enabling significantly extended battery life and very small form factors. This new component should increase the company's market share. One target is earbud applications, like Apple's AirPods, where power consumption is a major parameter and the space is very limited.

Unlike its main competitors, Bosch Sensortec and STMicroelectronics, mCube provides monolithic sensor integration for consumer electronics in a WLCSP package. This uses only wafer level steps to assemble the ASIC, MEMS sensor, MEMS cap and package. Mainly produced by TSMC, which made great efforts to provide complete platforms for MEMS manufacturing, the component is elegantly designed and better integrated than most of its competitors.

After Bosch Sensortec released a WLCSP 3-axis accelerometer, mCube chose a different approach, although it still uses a Via-Middle TSV process for the package integration. Two TSV processes are used in this component, including for connecting the MEMS sensor to the IC electronics.

The final size is smaller compared than Bosch's device, at 1.1mmx1.3mmx0.74mm. This is a 45% footprint and 21% thickness reduction compared to the previous 1.6mmx1.6mmx0.94mm mCube MC3635 LGA package and a 64% footprint reduction compared to the present 2mmx2mm LGA package.

The report includes a complete overview of the evolution of mCube's MEMS accelerometers since the second generation. It also features a detailed technology and cost comparison with leading edge accelerometers from Bosch Sensortec and STMicroelectronics and a process comparison with Bosch's WLCSP accelerometer.

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mCube accelerometer evolution

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