Qualcomm WCD9335: Technology and Cost Comparison

Description: Qualcomm, a world leader in mobile technologies, offers the new Snapdragon 820, a complete chipset currently powering or in-development with more than 100 smartphones worldwide. The U.S. versions of Samsung's latest flagship phones, the Galaxy S7 and Galaxy S7 Edge, integrate the Snapdragon 820 chipset. In this chipset, we discovered for the first time a Qualcomm component featuring Fan-Out Wafer-Level Packaging (FOWLP): the Qualcomm Audio Codec WCD9335.

Located on the smartphone's main board, the audio codec chip's presence in the Samsung Galaxy S7 and S7 Edge depends on the smartphone version. The international version, featuring an Exynos chipset, integrates the audio codec chip from Cirrus Logic. The U.S. version, featuring the Snapdragon 820 chipset, integrates the audio codec from Qualcomm.

The Qualcomm WDC9335 is wafer-level packaged with fan-out technology. This is still relatively rare in the smartphone market but is expected to spread quickly. The FOWLP technology used is the eWLB, licensed by Intel/Infineon to several OSATs including ASE Group, Nanium, and STATS ChipPAC.

Thanks to this FOWLP process, Qualcomm is able to propose a very small die independent of the area required by the I/O pads. The result is a very cost-effective component that can compete with a standard fan-in WLP technology.

This report includes a comparison with the audio codec solution from Cirrus Logic for the international version, which uses a standard fan-in WLP technology. It also features comparisons with FOWLP technologies like RCP from NXP/nepes, and eWLB 1st-generation from Infineon.

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