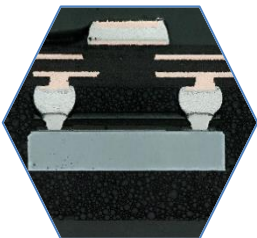
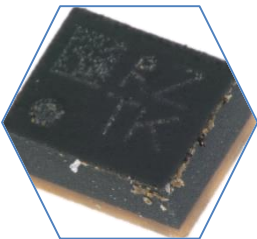


Murata Incredible High Performance (IHP) SAW Filter

The first thin-film SAW filter for 2.4 GHz Wi-Fi smartphone front-ends.



As the leader in radio-frequency (RF) front-ends, Murata commanded a quarter share of the market in 2019 with its discrete and module offering. With a large panel of customers and applications, the company can address multiple smartphone functions, including low band Power Amplifier Integrated Duplexers (PAMiD) and diversity receivers. For a long time, it was limited to low- and mid-band frequencies by surface acoustic wave (SAW) technology. But with the development of the Incredible High Performance (IHP) SAW filter the company is now able to enter the high frequency market, reaching Wi-Fi front-ends, for instance. The IHP SAW filter has shown results comparable to competing bulk acoustic wave (BAW) filters in this field.

Found in a low-end smartphone, the Sony Xperia XA2 Ultra and the Asus ZenFone 4 Pro, the filter die is packaged using a standard five-pin Land Grid Array (LGA) design manufactured by Murata. The component is located near the Wi-Fi transceiver and is part of the 2.4GHz Wi-Fi front-end path. Until now, it was common to find a BAW filter here. The new structure of the IHP SAW could now see it replacing BAW filters more generally. The filter, realized mainly with surface micromachining, takes SAW filters to new areas. With a thin film of lithium tantalate bonded onto a silicon substrate, the structure is able to provide similar performance as BAW filters at lower cost.

Moreover, compared to other SAW filters that Murata provides to the smartphone industry, the IHP SAW has higher attenuation, lower insertion losses and better thermo-compensation performance. Its Chip Scale Packaging (CSP) provides an air cavity that protects the transducer and limits temperature effects.

This report proposes a complete analysis of the IHP SAW component including analyses of the filter die and the CSP, along with cost analysis and price estimation for the component. It also includes physical and cost comparisons with Murata's other SAW filters. Finally, a technical and cost comparison with BAW filter technologies is included.

COMPLETE TEARDOWN WITH

- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Selling price estimation
- Comparison with Murata's SAW filter technologies
- Comparison with BAW filter technologies

Title: Murata IHP SAW Filter

Pages: 100

Date: October 2019

Format:
PDF & Excel file

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AUTHORS

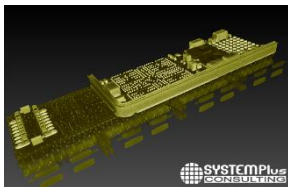


Dr. Stéphane Elisabeth has joined System Plus Consulting's team in 2016. He has a deep knowledge of Materials characterizations and Electronics systems. He holds an Engineering Degree in Electronics and Numerical Technology, and a PhD in Materials for Microelectronics.



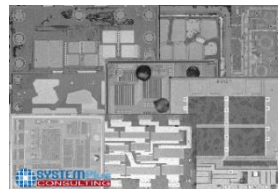
Dr. Youssef El Gmili has joined System Plus Consulting's team in 2019 after ten years passed on high level research and development on microelectronics. He has a deep knowledge in the study and analysis of semiconductors Materials. He holds a Master Degree in Microelectronics, and a Phd in Physics/Materials Science.

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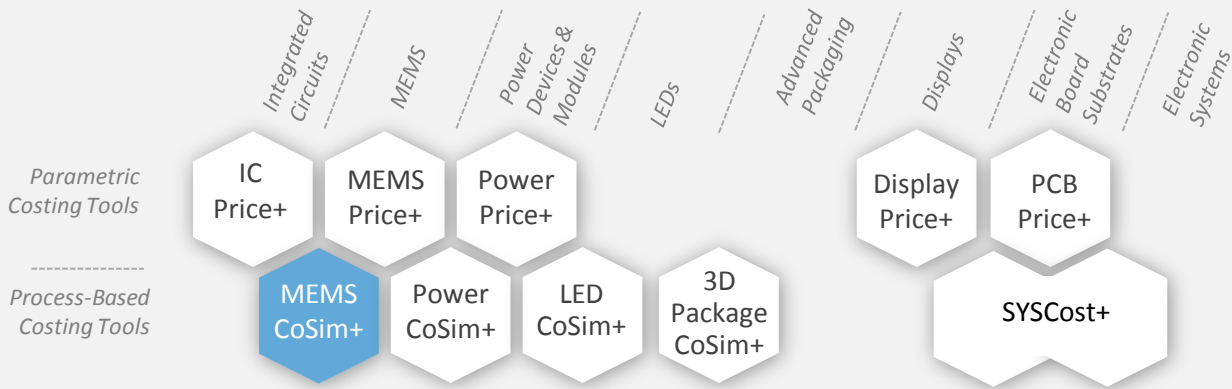
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