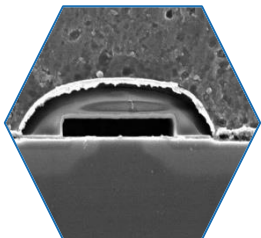


SiC Transistor Comparison 2020

Compare the technology and cost of 29 SiC transistors from Wolfspeed, Rohm, STMicroelectronics, Infineon, Littelfuse, ON Semiconductor, Microsemi, and UnitedSiC.



The market outlook for SiC devices is promising. This market will reach a compound annual growth rate (CAGR) of 31% for the period 2019-2025 according to Yole Développement. Since the commercialization of the first SiC device in 2001, the performance of SiC devices and the value that they add have been gradually proven. Their price has also become increasingly acceptable to end users.

SiC transistors still have some technical and commercial challenges to face, despite the value they add. These include the wafer price and the complexity of some process steps, specifically SiC epitaxy, SiC etching and high temperature implantation. These challenges still hinder SiC adoption on a large commercial scale.

In this report, System Plus Consulting presents an overview of the state of the art of SiC transistors. It covers 29 SiC transistors, (25 SiC MOSFETs and 4 SiC JFETs), of five voltage classes, 650V, 900V, 1000V, 1200V, and 1700V. They are from Rohm, STMicroelectronics, Wolfspeed, Infineon, Littelfuse, ON Semiconductor, Microsemi, and UnitedSiC. They target different power applications, including two automotive qualified devices.

The report provides detailed optical and Scanning Electron Microscope (SEM) pictures of the device's packaging and structure, with a focus on the microscopic level of transistor design.

This report includes an estimated manufacturing cost of the analyzed SiC transistors and their selling prices. It provides physical, technological and manufacturing cost comparisons between them.

COMPLETE TEARDOWN WITH

- SiC transistor benchmark
- Detailed optical and SEM photos
- Precise measurements
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated selling price
- Comparisons of technology design parameters, performance (Figure of merits, current density), and costs (Wafer, die, component, and cost per Ampere)

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- Comparisons include Wafer and Die Costs and Die Ampere Cost
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System Plus Consulting Services

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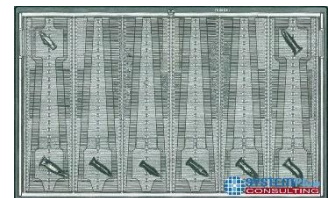
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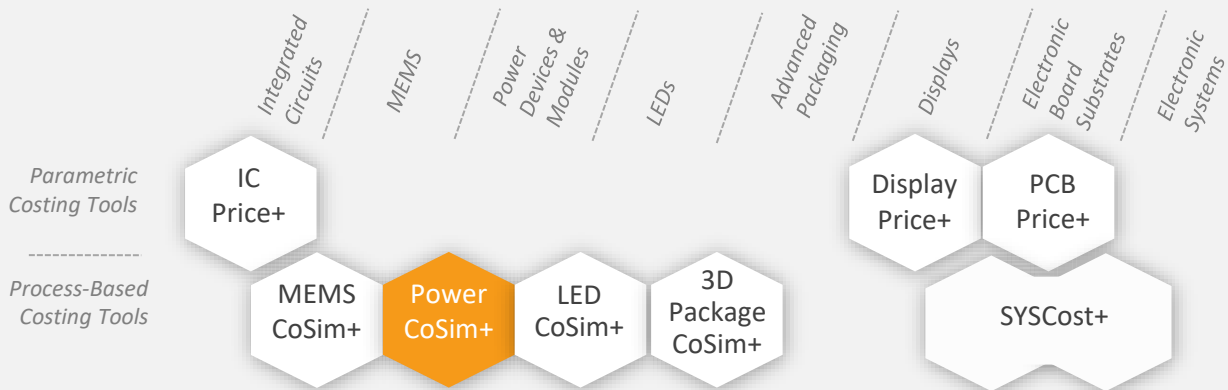


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Wolfspeed All-SiC Module CAB450M12XM3
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Our analysis is performed with our costing tool Power CoSim+.

System Plus Consulting offers powerful costing tools to evaluate the production cost and selling price from single chip to complex structures.

Power CoSim+

Cost simulation tool to evaluate the cost of any Power Electronics process or device: from single chip to complex structures.

ABOUT SYSTEM PLUS CONSULTING

WHAT IS A REVERSE COSTING®?

Reverse Costing® is the process of disassembling a device (or a system) in order to identify its technology and calculate its manufacturing cost, using in-house models and tools.



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