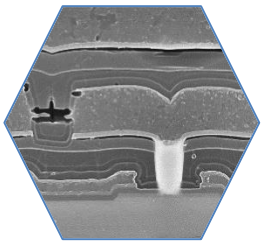


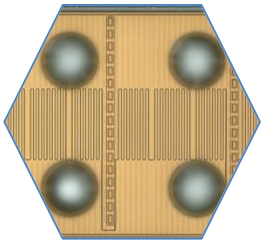
200V EPC2112 eGaN® HEMT with Monolithic Optimized Gate Driver

Discover the unique enhancement-mode gallium-nitride (eGaN®) transistor monolithically integrated with a Gate Driver from EPC.



GaN devices are penetrating confidently into different applications: for example, wall chargers and LiDAR applications, which are high end solutions that take full benefit of high frequency switching in GaN power devices. According to Yole Développement's the GaN power business will reach around \$423M by 2023, with a compound annual growth rate (CAGR) of 93%.

Based on a complete teardown analysis, this report provides a detailed manufacturing cost analysis of the die and the package as well as the estimated selling price of the device.



System Plus Consulting proposes a complete reverse costing of the EPC2112, the first monolithically integrated HEMT from Efficient Power Conversion (EPC). The device is an enhancement-mode gallium-nitride (eGaN®) single Field Effect Transistor (FET) with a Gate Driver Integrated Circuit (IC). It is adapted for High Frequency DC-DC conversion and Wireless Power applications.

Moreover, the report includes a technology and cost comparison of this unique EPC2112 device with the monolithic GaN solution proposed by Navitas.

Finally, this report provides a comparison of EPC2112 with the previous 200V EPC GaN device, the EPC2010. This comparison highlights the differences in die design and their impact on production cost.

Title: EPC2112 Integrated Gate Driver eGaN®

Pages: 86

Date: September 2019

Format: PDF & Excel file

This new Integrated Gate Driver eGaN® IC design consists of a 40-mΩ, 200V eGaN® power transistor and an optimized gate driver in a low inductance surface mount Ball Grid Array (BGA) package. Compared with their silicon counterparts, GaN transistors have significantly lowered capacitance. This translates into lowered switching losses at higher frequencies for the same on-resistance and voltage rating.

Besides this, EPC's chip-scale packaging significantly reduces its final device costs, bringing a competitive advantage not only with competitors in GaN but also with silicon.

COMPLETE TEARDOWN WITH

- Detailed optical and SEM photos
- Precise measurements
- Material EDX analysis
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated selling price
- Technology and cost comparisons between the monolithic HEMT from EPC and the solution offered by Navitas
- Technology and cost comparison between 200V EPC's devices: EPC2112 and EPC2010

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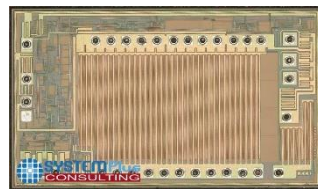
Nicolas Radufe is in charge of physical analysis at System Plus Consulting. He has a deep knowledge in chemical and physical analyses. He previously worked in microelectronics R&D for CEA/LETI in Grenoble and for STMicroelectronics in Crolles.

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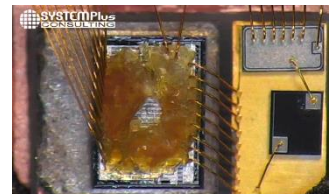
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July 2019



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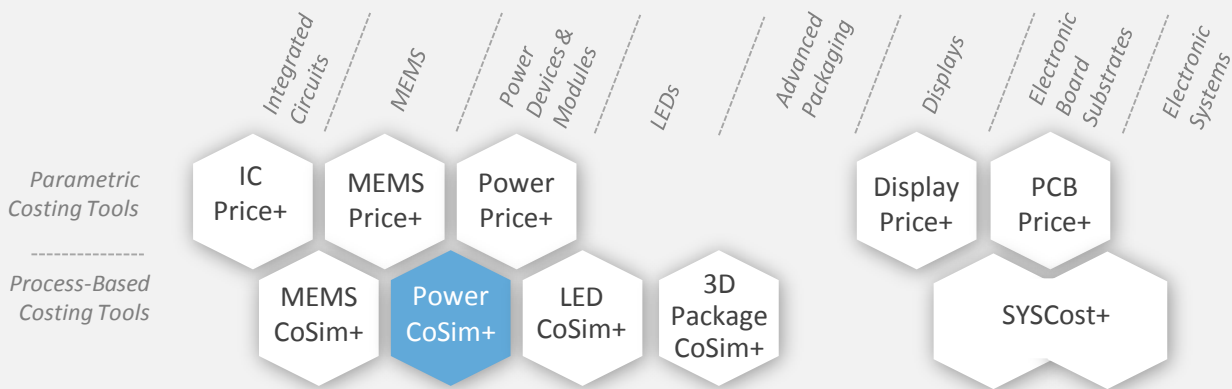
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Transphorm GaN-on-Silicon HEMT TPH3206PS

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November 2016

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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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