Market News

Industry's first automotive qualified SiC six-pack power module for EV traction inverters – Easy power upscaling with HybridPACK™ Drive CoolSiC™

Munich, Germany – 3 May 2021 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) today introduced a new automotive power module with CoolSiC™ MOSFET technology. At this year's virtual PCIM trade show, Infineon will present the new HybridPACK™ Drive CoolSiC™, a full-bridge module with 1200 V blocking voltage optimized for traction inverters in electric vehicles (EV). The power module is based on the automotive CoolSiC trench MOSFET technology for high-power density and high-performance applications. This offers higher efficiency in inverters with longer ranges and lower battery costs, particularly for vehicles with 800 V battery systems and larger battery capacity.

"The 800 V system of the Electric Global Modular Platform (E-GMP) represents the technological basis for the next generation of electric vehicles with reduced charging time", said Dr. Jin-Hwan Jung, Head of the Electrification Development Team at Hyundai Motor Group. "By using traction inverters based on Infineon's CoolSiC power module, we were able to increase the range of the vehicle by more than five percent because of efficiency gains resulting from the lower losses of this SiC solution compared to Si based solution."

"The automotive e-mobility market has become highly dynamic, paving the ground for ideas and innovation", said Mark Münzer, Head of Innovation and Emerging Technology at Infineon. "As the price of SiC devices significantly decreases, the commercialization of SiC solutions will accelerate, resulting in more cost-efficient platforms adopting SiC technology to improve the range of electric vehicles."

The HybridPACK Drive was first introduced in 2017, using Infineon's silicon EDT2 technology, specifically optimized to deliver the best efficiency on a real-world driving cycle. It offers a scalable power range of 100 kW to 180 kW within the 750 V and 1200 V class. This product is Infineon's market-leading power module with a track record of more than one million pieces shipped for more than 20 electric vehicle platforms. The new CoolSiC version is based on Infineon's silicon carbide trench

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MOSFET structure. Compared to planar structures, the trench structure enables a higher cell density, resulting in the best-in-class figure of merit. Therefore, trench MOSFETs can be operated at lower gate-oxide field strengths, resulting in increased reliability.

The power module offers an easy upscale path from silicon to silicon carbide with the same footprint. This allows the inverter design to achieve higher power of up to 250 kW in the 1200 V class, greater driving range, smaller battery size and optimized system size and cost. In order to offer an optimal cost-performance ratio for different power levels, this product is available in two versions with different chip counts, resulting in either a 400 A or 200 A DC rating version in the 1200 V class.

CoolSiC Automotive MOSFET technology

The first-generation of CoolSiC automotive MOSFET technology is optimized for use in traction inverters, with a focus on achieving the lowest conduction losses, especially under partial load conditions. Combined with low switching losses of silicon carbide MOSFETs, this enables an efficiency gain in inverter operation compared to silicon IGBTs.

In addition to optimizing performance, Infineon puts great emphasis on reliability. Automotive CoolSiC™ MOSFETs are designed and tested to achieve short circuit robustness and a high degree of cosmic ray and gate-oxide robustness, which is key for designing efficient and reliable automotive traction inverters and other high voltage applications. The HybridPACK Drive CoolSiC power module is fully qualified to the AQG324 norm for automotive power modules.

Availability

The new HybridPACK Drive CoolSiC is in production now and will be available starting June 2021. More information is available at www.infineon.com/sicatv. The product will be showcased at Infineon's Virtual Power Conference, which complements "PCIM Europe digital days."

Infineon's Virtual Power Conference 2021

Experience the difference in Power – Power semiconductors are the key to an energy-efficient world. New technologies such as silicon carbide (SiC) and gallium nitride (GaN) enable higher power efficiency, smaller form factors and lower weight.

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Silicon also plays a major role in many designs. Energy efficiency is the focus of the "Virtual Power Conference," which will be available 'live' from May 4 to 6, 2021. As a leading supplier of power semiconductors, Infineon will use the exclusive digital platform to present technologies and systems that generate energy more efficiently, transmit and distribute with lower losses, and showcase a wide range of energy-efficient applications. Focus areas comprise the verticals Industry, Transport & e-Mobility and Consumer. The online platform opens its doors starting 4 May 2021. Please click here to register.

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