

SCAPE TO MARKET

Welcome to the sixth edition of *SCAPE to Market* – a quarterly update on the latest developments in the EV power electronics industry. In this report, we study various trends such as advancements in power conversion, battery management, and the improvement of innovative modules based on GaN and SiC for improved energy efficiency. Also highlighting regulatory measures being implemented to ensure fair competition in the European EV market, safeguarding local industries from subsidized global imports.

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MARKET

- **Enhancing BLDC Motor Efficiency in Electric Vehicles Through Fuzzy Logic Control and Optimized SOC Management:** Researchers at a recent (IConSCEPT) conference have developed a system that integrates a Brushless DC (BLDC) motor with a bi-directional DC-DC driver, controlled by a Fuzzy Logic Controller, to improve the efficiency and reliability of EVs. The Fuzzy Logic Controller optimizes the energy transfer between the motor and battery, leading to better management of the vehicle's state of charge (SOC), reduced energy losses, and increased driving range. Simulation results demonstrate significant advancements in battery longevity and overall vehicle performance, making this approach promising for commercial EV applications. → [READ MORE](#)
- **NXP Introduces a New Battery Junction Box IC for EV Battery Pack Monitoring:** NXP Semiconductors has introduced the MC33777, a battery junction box IC for electric vehicles (EVs). This new device integrates monitoring and protection functions into one chip, reducing complexity and cost for OEMs while improving safety and performance. Key benefits include faster response times for safety-critical events, cost savings by eliminating melting fuses, and extending EV range through precise energy management. The MC33777 aims to simplify EV power electronics, accelerating next-generation designs. → [READ MORE](#)
- **Innovation in GaN Power Modules: VisIC Technologies teaming up with Heraeus Electronics and PINK to deliver state-of-the-art power modules for EVs:** This collaboration aims to develop an advanced power module for battery electric vehicles using D3GaN technology. This module leverages gallium nitride (GaN) for improved efficiency and power density, silicon nitride (Si₃N₄) substrates for superior thermal management, and silver sintering for enhanced durability. The innovation aims to deliver high power performance and long-term reliability at a competitive cost, setting new standards in BEV power electronics and accelerating GaN adoption in the EV market. → [READ MORE](#)



- **Navitas reports Gen-3 'Fast' SiC in robust TOLL package for EVs:** Navitas Semiconductor has introduced third-generation silicon carbide (SiC) MOSFETs, which use a proprietary 'trench-assisted planar' technology that provides efficiency performance over the temperature range, with G3F MOSFETs delivering high-speed, cool-running performance that ensures up to 25°C lower case temperatures and up to 3x longer life than alternative SiC products. Designed for critical EV applications such as onboard chargers and DC-DC converters. → [READ MORE](#)

POLICY

- **EU releases revised tariffs on Chinese imported vehicles**
The European Commission has imposed provisional countervailing duties on Chinese (BEVs) following an anti-subsidy investigation. The duties range from 17.4% to 37.6%, targeting major manufacturers like BYD, Geely, and SAIC, due to concerns about unfair subsidization threatening EU BEV producers. These measures are part of the EU's effort to protect its EV market from low-cost imports and ensure fair competition. Final duties will be applied as of 5 July 2024 for maximum duration of four months and could be in place for up to five years. → [READ MORE](#)

