



NXP Speeds Electric Vehicle Development with New Power Inverter Platform

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ASIL-D motor inverter prototype, developed with VEPCO Technologies, Inc., features one of NXP's new power control reference platforms for Electric Vehicles

MUNICH, Germany, Nov. 07, 2018 (GLOBE NEWSWIRE) -- NXP Semiconductors N.V. (NASDAQ: NXPI), the world's largest supplier of automotive semiconductors¹, has announced a new automotive power control reference platform for an electric vehicle traction motor inverter. NXP's new power inverter reference design platform combines its comprehensive portfolio of world-class automotive microcontrollers (MCUs), robust power management system basis chips (SBCs), and new isolated high-voltage IGBT gate drivers with application specific system enablement software to help carmakers deliver the next generation of hybrid and electric vehicles with greater speed and less development risk.

Traction motor inverters convert DC battery voltage to multi-phase alternating current to drive the traction motors of electric and hybrid vehicles at the speed and acceleration demanded by the driver. Complex system control is required to monitor the motor's state, sense the driving currents and reliably calculate and apply the desired torque energy.

NXP has partnered with VEPCO Technologies, Inc. to engineer an ASIL-D-capable, high-voltage power control reference platform and inverter prototype. For the prototype, the platform controls a Fuji Electric 800V silicon IGBT power module with integrated current and temperature sensing for driving 100 kW 3-phase motors.

NXP plans to enable its customers to develop motor inverters based on the reference design platform with its system control components, enablement software and functional safety enablement while VEPCO Technologies will offer contract system engineering services for application and performance specific development on the platform.

"VEPCO Technologies' deep motor drive knowledge and system experience together with NXP's comprehensive automotive portfolio, functional safety products and tools offer our customers a compelling power inverter enablement platform," said Dr. Guoliang Zhang, director of systems engineering at VEPCO. "Our professional engineering services, such as customized application IPs, added on top of the Power Inverter Module platform will advance the platform to meet a customer's unique safety and technical requirements with significant time-to-market savings and development cost reduction."

According to NXP's internal market estimates, 50 percent of all light vehicles sold worldwide will have some form of electric propulsion by 2030. These dynamics have created opportunities for new players who need partners with the automotive experience and the deep product and software portfolio needed to build cost-effective and efficient system solutions.

With more than 30 years of automotive experience and a rich automotive portfolio, NXP is well positioned to deliver the optimal performance, robust functional safety and power management required for the next generation of electric and hybrid vehicles.

"The ambitious road to vehicle electrification requires more than high-voltage power switches," said Rick Beale, senior global marketing director of advanced automotive analog at NXP. "NXP provides functionally safe system intelligence and control to manage the electric vehicle's power. Our new power inverter and battery management reference platforms are examples of how we leverage our portfolio strengths in this dynamic and growing area."

Traction Motor Inverter Systems

The control reference platform uses NXP automotive components to provide the required functional building blocks with an efficient system bill-of-materials (BoM) for both inverter control and drive operations and functional safety assurance.

- The new GD3100 isolated high-voltage gate driver IC that targets ISO 26262 ASIL D compliancy, with the following features:
 - IGBT gate control redundancy and on/off state validation
 - IGBT current and temp monitoring
 - Analog and logic BIST
 - Low and high voltage fail safe inputs.
- The MPC5775E microcontroller comes with integrated Motor Control capabilities and a software resolver implementation. Running PMSM sensorless field-oriented control uses < 10% of its computing capabilities leaving maximum bandwidth for all the safety features and complex driving strategies required for today's EV and Hybrid Systems.
- The FS65xx is a highly robust power management safety System Basis Chip designed in multiple electrification applications, it includes ASIL- D ready fail-silent functional safety as a safety element out of context. It is part of a growing functional safety SBC family.

- Flexible and open system enablement provides customers tools for implementing their unique value-add energy management intellectual property and achieving their required levels of functional safety.

Availability:

All motor inverter reference platform components are sampling today with first platform prototypes available 4Q18.

Notes

¹ Source: Strategy Analytics 2017

About NXP Semiconductors

NXP Semiconductors N.V. (NASDAQ:NXPI) enables secure connections and infrastructure for a smarter world, advancing solutions that make lives easier, better and safer. As the world leader in secure connectivity solutions for embedded applications, NXP is driving innovation in the secure connected vehicle, end-to-end security & privacy and smart connected solutions markets. Built on more than 60 years of combined experience and expertise, the company has over 30,000 employees in more than 30 countries and posted revenue of \$9.26 billion in 2017. Find out more at www.nxp.com

For more information, please contact:**Europe / U.S.**

Jason Deal
Tel: +44 7715228414
Email: jason.deal@nxp.com

Japan

Kiyomi Masuda (増田 清美)
Tel: +81-70-3627-6472
Email: kiyomi.masuda@nxp.com



NXP USA, Inc.