NEC Electronics Announces Four New Intelligent Power Devices for Automotive Lighting Applications

Enable Smaller and Lighter Lighting Control Units with High Reliability

KAWASAKI, Japan, SANTA CLARA, Calif., (U.S.A.), DUESSELDORF, Germany, February 26, 2010 – NEC Electronics (TSE: 6723) announced today, four new intelligent power devices (IPDs), the μPD166017, μPD166019, μPD166020 and uPD166021. Each high-side IPD is applicable for automotive lighting and other critical vehicle loads. Designed for on-board electronic control units (ECUs) typically used in head- and fog-light applications, the new devices, or power ICs, have an embedded power MOSFET for switching and a control chip for protection features in a single package. The IPDs strongly contribute to the improvement of the ECUs' efficiency, which help designers to develop environmentally friendly automobiles.

Each new IPD features unique characteristics:

(1) **μPD166017 IPD, improved drive performance with low on-state resistance**

Using NEC Electronics' new power MOSFET Super Junction technology enables the μPD166017 IPD to reduce on-state resistance (6mΩ) by 40 percent, compared to the already available μPD166007, μPD166009 and μPD166010 devices in the same TO-252 five-pin package. This low on-state resistance enables the IPD to drive high-current lamps and heating elements. When two conventional IPDs were previously needed for seat heaters, now only one μPD166017 device is needed. Choosing the μPD166017 IPD for diesel glow plugs also will allow the reduction of the IPD size by 50 percent compared to current IPD solutions in TO-263 packages. The low on-state resistance minimizes thermal issues, allowing system manufacturers worldwide to reduce ECU sizes. Last but not least, the μPD166017 IPD has an analog current sense coupled to a diagnostic function.

(2) μPD166019 IPD, reduced parasitic noises, ideal for high-frequency applications

The uPD166019 IPD adopts a P-channel MOSFET as a high-side switch, allowing the removal of the internal charge pump required for a conventional N-channel MOSFET. It allows outstanding electromagnetic noise reduction which, combined with low on-state resistance, makes this device the ideal candidate for fast-switching applications and motor drive applications. In addition, the μPD166019 IPD slew rate can be adjusted by an external resistor, and the device includes a diagnostic function.

(3) **μPD166020 and μPD166021 IPDs, optimized drive performance enabling lower pulse-modulator (PWM) losses**

Due to the rather unstable voltage supply delivered by car batteries, applications driven by PWM increase to improve the lifetime of light bulbs. NEC Electronics' answer to the growing demand in faster switching devices are the µPD166020 and µPD166021 IPDs, which offer optimized on- and off-switching characteristics, reduced power losses and a reduction in overheating. Both devices also have an analog current sense and a diagnostic function.

Designed to replace mechanical switches and relays on ECUs, NEC Electronics' IPDs, using its state-of-the-art technologies, have been available since 2006 to address the increasing demand for smaller ECUs with improved functionalities. Samples of the new IPDs (µPD166017, µPD166019, µPD166020 and uPD166021) are available now. Mass production of these new products is scheduled to begin in Q1 of 2011 and is expected to reach a monthly production of 5,000,000 units in 2011. More information about the new products can be found at http://www.am.necel.com/ipd. (Availability is subject to change without notice.)

About NEC Electronics

NEC Electronics Corporation (TSE: 6723) specializes in semiconductor products encompassing advanced technology solutions for the high-end computing and broadband networking markets; system solutions for the mobile handset, PC peripheral, automotive and digital consumer markets; and multi-market solutions for a wide range of customer applications. NEC Electronics Corporation has subsidiaries worldwide including NEC Electronics America, Inc. (www.am.necel.com) and NEC Electronics (Europe) GmbH (www.eu.necel.com). More information about NEC Electronics worldwide can be found at www.necel.com.

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