

## NEC Electronics Extends Support for Automotive Audio and Navigation Control Systems with New 32-Bit Microcontrollers Boasting Industry's Highest Built-In Flash Memory Capacity

### New V850E/Sx3-H Microcontrollers Offer 1.5 Megabytes of Flash Memory, Improved CPU Performance and Integrated Noise-Reduction Circuitry

**KAWASAKI Japan, DUESSELDORF, Germany, SANTA CLARA Calif. December 16, 2008** – Leading 32-bit microcontroller supplier NEC Electronics Corporation has reaffirmed its commitment to the automotive market by expanding support for audio and navigation applications with its new V850E/Sx3-H™ microcontrollers (MCUs). Based on the company's well-established V850E1™ core, the new V850E/Sx3-H devices offer the industry's highest flash memory capacity for 32-bit MCUs, in addition to improved CPU performance for today's audio and infotainment systems. These improvements, together with a small 0.5 millimeter pin-pitch QFP package, make the new devices ideally suited for use in high-functionality, high-performance automotive radios, compact disc systems, DVD systems, USB/SD card readers and digital terrestrial broadcast equipment.

"In car audio and navigation systems, we are seeing a migration toward consumer electronics-based technologies such as USB, SD card and Bluetooth®, in response to growing user demands for smooth transitions between in-car and out-of-car experiences," said Shinichi Iwamoto, vice president, microcomputer operations unit, NEC Electronics Corporation. "In turn, car manufacturers are demanding MCUs with more built-in memory capacity and lower radiated noise to support the significant increase in software that these media require. Our new V850E/Sx3-H devices enable automotive designers to meet these goals, offering industry-leading memory capacity and improved CPU performance while adhering to strict reliability constraints."

Augmenting the company's existing V850ES/SG3™ and V850ES/SJ3™ MCUs, the newest devices in NEC Electronics' S Series consist of two lineups: the V850E/SJ3-H™ and the V850E/SK3-H™. In addition to 1.5 megabytes (MB) of flash memory, 1.5 times more capacity than V850ES/Sx3 devices, the V850E/Sx3-H MCUs can execute 85 Dhrystone MIPS at a clock speed of 48 megahertz (MHz), compared to 32 MHz by existing devices. These improvements allow the MCUs to store more software for system control while speeding up software execution time.

For improved reliability, integrated built-in spread spectrum clock generators (SSCG) reduce the MCU clock's oscillation (fundamental) and higher frequencies, which helps to reduce the risk of degraded radio performance and chip errors. This also decreases the resources required to evaluate and investigate electromagnetic interference (EMI) in anti-EMI components, allowing designers to lower system development costs and shorten development time. Pin layouts and software in the new devices are backward compatible with those in V850ES/SG3 and V850ES/SJ3 models, making it easy for design engineers to leverage existing design assets to avoid incurring additional costs. Serial interface channels include eight UART channels, eight CSI channels and six I2C channels that allow designers to support a larger number of media types.

More information about NEC Electronics V850E/Sx3-H MCUs can be found at <http://www.am.necel.com/micro/promotion/v850/sx3-h.html>.

### Pricing and Availability

Samples of the new MCUs are available now. The six V850E/SJ3-H MCUs are available in 144-pin QFP packages. The three V850E/SK3-H MCUs are available in 176-pin QFP packages. Mass production is scheduled to begin in November 2009. Prices will vary depending on memory, package and pin

configurations. For example, the V850E/SK3-H, with 1.5 MB of flash memory and 92 kilobytes of RAM in a 176-pin quad flat package (QFP), will be priced at US\$20 each in 10,000-unit quantities. Pricing and availability are subject to change.

#### **Commitment to the Automotive Market**

NEC Electronics is dedicated to serving the needs of automotive customers and offers a wide range of MCUs and power management devices (PMDs) for use in automotive applications. In addition, the company's zero-defects initiative has resulted in industry-leading MCU quality levels, while error-correction code (ECC) ensures flash memory-based MCU reliability. On a worldwide basis, NEC Electronics Corporation was rated the number one supplier of 32-bit MCUs in 2007, according to the Gartner Dataquest March 2008 rankings report.

#### **About NEC Electronics Corporation**

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.](#) and [NEC Electronics \(Europe\) GmbH](#). More information about NEC Electronics worldwide can be found at [www.necel.com](http://www.necel.com).

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