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Automotive Products

Fact Sheet

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NEC Electronics America offers a range of products for the digital car, including high-throughput embedded microcontrollers that support in-vehicle communication systems based on LIN, CAN and FlexRay technologies. For next-generation, high-voltage and high-current automotive applications, the company also offers a line of power management devices specially designed for the automotive market. As a committed supplier and innovator in the automotive semiconductor market, NEC Electronics is a member of the FlexRay Consortium, which is devoted to the development of an innovative communications network for automotive applications that require high levels of communications bandwidth and deterministic, fault-tolerant data transmission. Quality management systems at NEC Electronics' manufacturing facilities are ISO 9000- and TS16949-certified. For customers in North America, NEC Electronics America also offers local manufacturing of its automotive microcontrollers.

8-Bit 78K0 Microcontrollers

- Industry-leading low-EMI technology
- Extensive selection of flash ROM, RAM and I/O counts
- Integrated peripherals with J1850, CAN and IEBus communication interfaces
- LINbus communication support (LIN 2.0, SAE 2602)
- Flash memory capacities ranging from 8 to 128 KB
- Fail-safe circuitry (on-chip ring oscillators, clock monitor, power-on reset/power-on clear circuits and low-voltage indicator) for safety-critical applications
- New devices that integrate a microcontroller, voltage regulator and bus transceiver into one package
- Suitable for low- to mid-end audio systems, door modules, HVAC equipment, dashboard displays, low-end clusters and backup engine control systems

8-Bit 78K0S Microcontrollers

- Cost-effective with low noise and low power consumption
- Easy upgrade path to higher-end 78K0 microcontrollers
- Flash memory capacities ranging from 1 to 32 KB
- Suitable for remote keyless entry devices, center console displays, immobilizer systems, seat modules and wiper and alternator controls

32-Bit Microcontrollers

- Scalable performance—from 5 MIPS at 4 MHz to 260 MIPS at 200 MHz
- Low noise and low power consumption
- Wide range of peripherals and up to six CAN interfaces
- LINbus communication support (LIN 2.0, SAE 2602)
- Flash memory, RAM, mask ROM and ROMless versions
- Flash memory capacities ranging from 64 KB to 1 MB
- Available off-the-shelf with optimized circuitry and built-in voltage regulators
- Failsafe circuitry (on-chip ring oscillators, clock monitor, power-on reset/power-on clear circuits and low-voltage indicator) for safety-critical applications
- Analog-to-digital (A/D) converter with auto discharge and diagnostic functionality; buffered clocked serial interface (CSI)
- Wide range of packages from a 64-pin QFP to BGAs with 240 or more pins
- On-chip floating-point unit (FPU) on select devices
- DMA controller
- Suitable for audio, body, telematics, mid-range to high-end instrumentation, low-end multimedia, electronic power steering, gateway, smart junction box, anti-lock braking, powertrain and engine management control systems

High-End Microcontrollers

- Industry-leading technologies focusing on parallel processing and multi-threading
- Wide range of on- and off-chip peripherals, including graphics controllers, sophisticated security processors, Ethernet MACs, DMA interfaces, serial interfaces and real-time clocks
- Complete support package, including hardware setup recommendations, software development support, operating system support and middleware
- Suitable for car computers, voice recognition systems, high-end audio systems and applications that require lower power consumption and a very compact board design
- Ideal for next-generation applications ranging from video decoding for video-over-satellite systems to image processing for enhanced driving safety (for example, lane tracking, obstacle detection, driver alertness and night vision)

Third-Generation CAN Interfaces

- Full support of all CAN communication speeds (1 Mb/s at 8 MHz clock speed)
- Modular Full-CAN design with distinct advantages over basic CAN
- Dedicated hardware bridge functioning as a gateway for up to six CAN networks simultaneously
- TTCAN support that allows the distribution of network signals in time slots rather than external arbitration events
- Ability to add mailboxes without having to redesign the interface; ability to add interface channels and gateway modules (hardware bridge functionality)
- Suitable for all automotive applications where CAN communication is required

FlexRay Communications Controller IP

- Next-generation high-speed serial communications system
- High bandwidth
- Flexible configuration options
- Fault tolerance
- Support for other in-vehicle networking standards, including TTCAN, CAN, LIN and J1850

Power Management Devices

Power MOSFETs

- Super-low ON resistance (1.2 mΩ) with UMOS4 process
- Large portfolio of devices able to handle currents up to 160 amps
- Wide variety of package types to suit every mounting requirement
- Wide range of operating voltages up to 900V
- High reliability based on long-term experience and product robustness
- Proven in automotive, telecommunication, industrial and consumer application markets

Intelligent Power Devices

- Short-circuit protection
- Over-temperature protection with shut down and auto restart on cooling
- Diagnostic capabilities with load current sensing and fault indication
- Reverse battery protection and output clamping for inductive loads
- Cost-effective multichip packaging of control chip and power MOSFET
- Ideal for relay replacement, lamp, solenoid and injector drive applications

NEC Electronics America, Inc.

NEC Electronics America, Inc., headquartered in Santa Clara, California, is a wholly owned subsidiary of NEC Electronics Corporation (TSE: 6723), a leading provider of semiconductor products encompassing advanced technology solutions for the broadband and communications markets; system solutions for the mobile, PC, automotive and digital consumer markets; and platform solutions for a wide range of customer applications. NEC Electronics America offers a local manufacturing facility in Roseville, California, and the global manufacturing capabilities of its parent company. NEC Electronics America is the marketing and sales channel in the Americas for industrial-type active-matrix LCDs from NEC Technologies, Ltd., a global leader in innovative display technologies. More information about the products offered by NEC Electronics America, Inc. can be found at **http://www.am.necel.com**.

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