

NEC Electronics America, Inc.

2880 Scott Blvd.
Santa Clara, CA 95050-2554 USA
1-800-366-9782 (U.S. Only)
1-408-588-6000
www.am.necel.com

Automotive Products

Fact Sheet

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NEC Electronics America offers a range of products for the digital car, including embedded microcontrollers (MCUs), power MOSFETS, and high-performance system LSI products. As a committed supplier and innovator in the automotive semiconductor market, NEC Electronics is a member of the FlexRay® Consortium and offers a wide range of MCUs for in-vehicle communication systems based on LIN, CAN, and FlexRay® technologies. In addition to MCUs, NEC Electronics America has an extensive portfolio of automotive-qualified power MOSFETS that have quality measures in the parts-per-billion (PPB) level. High-end system LSI products for automotive audio, connectivity, navigation, and vision processing applications round out the offering. Quality management systems at NEC Electronics' worldwide manufacturing facilities are certified for compliance with the TS 16949 standard, and for customers in North America, NEC Electronics America offers local manufacturing of automotive microcontrollers at its wafer fab in Roseville, California.

32-Bit V850 Microcontrollers ⁽¹⁾

- Scalable performance – up to 432 MIPS at 200 MHz
- Low noise and low power consumption
- Wide range of peripherals and up to six CAN interfaces
- LIN bus communication support (LIN 2.0, SAE 2602)
- Advanced network support for FlexRay and Media LB technologies
- Flash memory, RAM, mask ROM and ROMless versions
- Flash memory capacities ranging from 64 KB to 1.5 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 automatic discharge and diagnostic functionality; buffered clocked serial interface (CSI)
- Extensive variety of packages, ranging from a 64-pin QFP to BGAs with 240 or more pins
- On-chip floating-point unit (FPU) on select devices; direct memory access (DMA) controller
- Suitable for audio, body, safety, 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

¹ NEC Electronics Corporation was ranked the number 1 supplier of 32-bit microcontrollers worldwide in 2007 by Garner Dataquest (March 2008).

16-Bit 78KOR Microcontrollers

- Six times the performance of 78K0 microcontrollers
- Flash memory capacities ranging from 24 to 256 KB
- Large roadmap packages with pinouts ranging from 30 to 100 pins
- Two independent data flash memory blocks with simultaneous write and erase capability
- State-of-the-art single-voltage flash memory that supports secure self-programming
- Enhanced LIN support with automatic baud rate detection and generation
- Powerful and configurable timer array unit (TAU) with up to 24 channels
- Flexible pinout functionality via ability to be mapped by software
- Suitable for mid-range audio, body, telematics, instrumentation, electronic power steering and gateway control systems

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

System LSI Products

- Industry-leading parallel processing technology for automotive multimedia/navigation and vision processing systems
- Highly integrated solutions, with a wide range of on-chip peripherals, including 3D graphics engine, LCD controller, and Serial ATA, DDR2, audio and serial interfaces
- Suitable for navigation, multimedia, and infotainment systems; capable of delivering the performance needed for handling 3D graphics rendering and video decoding
- Vision processing solutions for safety applications (including functions for lane tracking, obstacle and driver alertness detection, and night vision processing)
- Complete support package, including hardware setup recommendations, software development support, operating system support and middleware

Power Management Devices

Power MOSFETs

- Super-low ON resistance (1.2 mΩ) with advanced trench process
- Large portfolio of devices able to handle currents up to 180 amps
- Wide variety of package types to suit every mounting requirement
- Wide range of operating voltages up to 100V
- High reliability based on long-term experience and product robustness
- Proven in automotive, telecommunications, industrial and consumer applications

Intelligent Power Devices

- Short-circuit protection
- Over-temperature protection with shut down and automatic 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>.

Media Contacts

Denise Garibaldi, NEC Electronics America, Inc.
Denise.Garibaldi@am.necel.com, (408) 588-6620

Klaudeen Arezue Shemirani, NEC Electronics America, Inc.
Klaudeen.Shemirani@am.necel.com, (408) 588-5402

Lisa Neitzel, Porter Novelli, Lisa.Neitzel@porternovelli.com, (415) 975-2265

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