

Transforming Retail User Experiences on Entry Retail Devices

Raising the bar in media/graphics processing, power efficiency, CPU performance, and security with the Intel® Celeron® processor and Intel® Atom™ processor E3800 product families.



Set a new standard for entry-level, retail devices with Intel's system-on-chip (SoC)

Challenges

- **Retailers want to display higher quality promotional content to attract consumers**, requiring digital signage with more processing power for media and 3D graphics.
- **Today's retail solutions are increasingly compute-intensive**, driving a need for higher performance at lower power consumption.
- **Retail floor space is at a premium, and the environment may be harsh**, creating demand for compact, low power, and retail-hardened systems.
- **Retail systems and transaction data must be protected against adept cybercriminals**, necessitating improved system protection and the widespread use of data encryption.

Solutions

- **Captivating visuals** are vital for attracting retail customers. Gen 7 Intel® Graphics Technology with dramatically improved media and graphics performance has 80 percent higher decode performance and five times the 3D graphics power of previous generations.¹
- **Small form factor, low power, and operation in harsh conditions** are necessities for outdoor systems, like ATMs, vending machines, and gas station pumps. This highly-integrated, one-chip solution allows for smaller form factor solutions over previous-generation, two-chip offerings. It is also power-efficient with a 5-10W thermal design power (TDP)² and supports the industrial temperature range of -40° to 110° C (-40° to 230° F), making it capable of operating reliably across retail environments.
- **Microarchitecture enhancements**, including quad-core processing and out-of-order instruction execution, significantly increase performance: up to double per core and four times per CPU compared to prior generations.^{3,4}
- **Secure systems and transactions** at point-of-sales devices are must-haves during peak selling times. Compared with the previous generation processor, the Intel® Celeron® processor and Intel® Atom™ processor E3800 product families add security enhancements, such as Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)⁵ and Secure Boot, which use hardware-assisted capabilities to encrypt/decrypt data and allow only trusted software to run on the device.



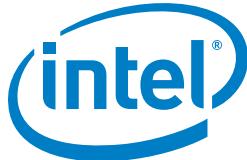
Intel developed a feature-rich, system-on-chip (SoC) family designed with the media, graphics, computing, and security capabilities needed to transform retailing

Compelling Retail Experiences

The rapidly expanding landscape of intelligent systems is transforming retail, particularly as systems become more interconnected and interdependent, commonly referred to as the Internet of Things (IoT). Retail systems working together provide a great opportunity to deliver new user experiences, such as powerful selling tools running on tablets for sales assistants and omni-channel retailing for consumers, just to name two.

The Intel Celeron processor and Intel Atom processor E3800 product families were designed to help take advantage of these emerging opportunities and create innovative, brand-differentiating retail offerings. The new processor families deliver significantly improved performance over previous generations,^{1,3,4} as well as an impressive array of I/O - all delivered on an SoC, raising up the entry class of retail devices, including tablets, digital signs, POS terminals, ATMs, intelligent vending machines, and interactive kiosks.

SOLUTION PROVIDED BY:



Software Flexibility

OEMs can choose from a wide variety of operating systems, including Windows* Embedded Standard 7/8, giving them the ability to optimize for cost and performance as needed. In addition, retail applications written using the Intel® Media SDK can scale (up and down) between Intel® Atom™, Intel Celeron, Intel® Core™, and Intel® Xeon® processors since they are based on a common microarchitecture. Thus, developers can focus their development efforts on creating code that makes systems unique, rather than on drivers and other lower level issues that worked previously on other Intel® processors.

Integrated I/O Interfaces

The SoC integrates a wide range of I/O, including:

- **Memory** (DDR3L with optional ECC)
- **Display** (embedded DisplayPort*, DisplayPort, HDMI, and VGA)
- **Storage** (SATA Gen2, eMMC, SD card)
- **Legacy I/O** (SDIO, SIO)
- **Audio** (low power and high definition versions)
- **High-speed I/O** (PCI Express* Gen 2.0 and USB 2.0/3.0)

Simplified System Design and BOM Optimization

This highly-integrated, one-chip solution helps save on bill of materials (BOM) cost and allows for smaller form factor solutions over previous-generation, two-chip offerings. With a high degree of I/O integration and various acceleration functionalities, the Intel Atom processor E3800 product family reduces the number of components, size, and design effort needed to develop small form factor printers.

Multi-layer Security

Keeping the retail environment secure, the Intel Celeron processor and Intel Atom processor E3800 product families offer security enhancements not available from their predecessors. Baseline security for all entry retail devices includes:

- Malware protection using whitelisting supported by McAfee* Embedded Control*
- Faster data encryption with McAfee Endpoint Encryption* that utilizes Intel AES-NI

Learn more about Intel solutions for retail at www.intel.com/retail.

¹Transition from PowerVR® SGX* to Gen 7 Intel® Graphics Technology.

²The TDP specification should be used to design the processor thermal solution. TDP is not the maximum theoretical power the processor can generate.

³Based on transition from the Intel® Atom™ processor N2000/D2000 product family and benchmark testing : CINT2006 Rate and CFP2006 Rate and (integer and floating point).

⁴Performance results are based on certain tests measured on specific computer systems. Any difference in system hardware, software or configuration will affect actual performance. For more information go to <http://www.intel.com/> performance.

⁵Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) requires a computer system with an Intel AES-NI-enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. Intel AES-NI is available on select Intel® processors. For availability, consult your reseller or system manufacturer. For more information, see <http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/>.

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