

# Intel® Celeron® Processor and Intel® Atom™ Processor E3800 Product Families in Retail

Transform user experiences in entry retail devices with full HD video decode, improved graphics, quad-core compute performance, and built-in security

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## Introduction

Intelligent devices that provide HD video capability, compelling graphics, responsive performance, and security are transforming in-store retail experiences. Today's retail customers expect POS systems, interactive kiosks, and digital signs to support rich media and graphics experience for timely and visually compelling digital promotions and a range of choices at checkout, with confidence that the device provides security to protect transactional and personal data.

The Intel® Celeron® processor and Intel® Atom™ processor E3800 product families for intelligent systems help bring these capabilities to entry retail devices. Compared to previous-generation Intel Celeron and Atom processors, this new processor family provides significantly improved media and graphics performance and enables smaller, more power-efficient entry devices, with enhanced security and better compute processing to drive great user experiences.

The Intel Celeron processor and Intel Atom processor E3800 product families, based on the Silvermont microarchitecture, utilize Intel's industry-leading 22nm process technology with 3-D Tri-Gate transistors to deliver significant improvements in computational performance and energy-efficiency in intelligent systems.

Advanced features include:

- **Media:** Scalable full HD video playback includes support for 10 or more simultaneous video streams.
- **Graphics:** Gen 7 Intel® Graphics Architecture enables enhanced visual processing over previous-generation Intel Atom processors.
- **Power and Form Factor:** SoC with smaller package size and industrial temperature range is ideal for thin, light and environmentally adaptive entry retail devices.
- **Compute:** Quad-core processing<sup>1</sup> enables improved out-of-order compute performance for more responsive user experiences.
- **Security:** Built-in hardware-assisted security enhancements include Intel® AES New Instructions (Intel® AES NI)<sup>2</sup> and Secure Boot.

Together, these improvements are ideal for driving enhanced experiences in entry retail, visual retail and transactional devices, including POS devices, intelligent vending machines, digital signage, interactive kiosks, and ATMs.

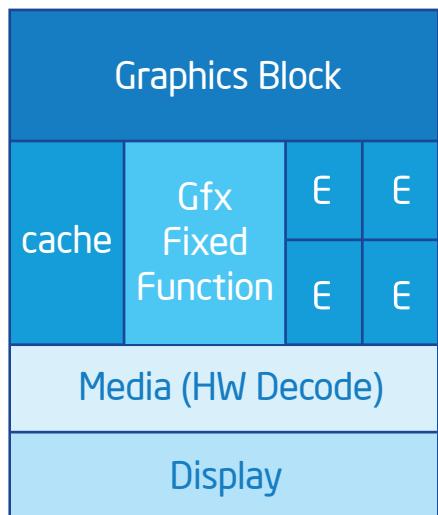
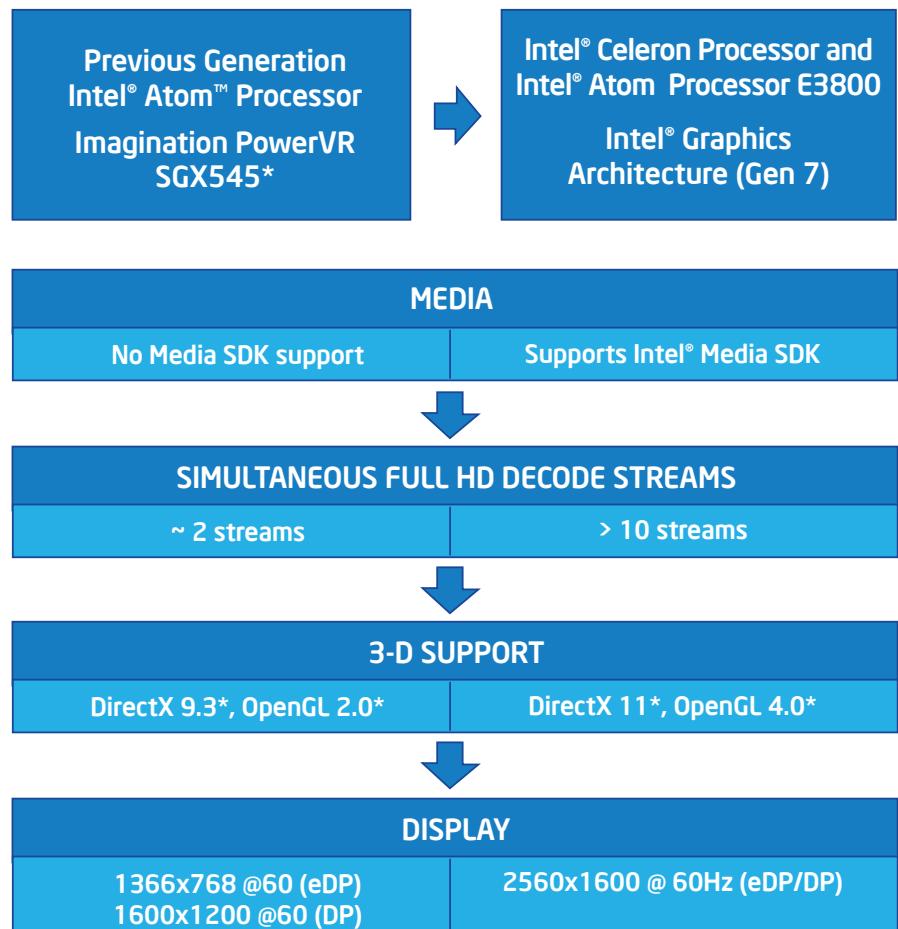
## Rich Visual Retail Experiences

The Intel Celeron processor and Intel Atom processor E3800 product families provide full HD simultaneous video decode capability, delivering interactive 2-D and 3-D graphics with much improved playback enabling immersive visual experiences for retail customers.

Graphics performance is based on Intel® HD Graphics 4000 with support for 3-D content through DirectX 11\*, OpenGL 4.0\*, and OpenGL 1.2.

The SoC provides support for HDMI 1.4a and DisplayPort\* 1.1, with maximum resolution of 2560x1600@60Hz and hardware-accelerated video decode for H.264\*, MVC\*, VPG8\*, JPEG/mJPEG\*, VC1/WMV9\*, and MPEG2\* standards.

Dedicated execution units and fixed-function and hardware decode engines provide enhanced graphics performance.



**Figure 1.** Graphics block of the Intel Celeron processor and Intel Atom processor E3800 product families.

**Table 1.** Media, graphics and display improvements of the Intel Celeron processor and Intel Atom processor E3800 product families compared to previous-generation Intel® processors.

## Bringing Visual Retail Experiences to a Broad Range of Devices

Enhanced 2-D and 3-D graphics performance, full hardware-based HD video decode, industrial temperature capabilities,<sup>1</sup> quad-core processing,<sup>1</sup> and hardware-based security features make the Intel Celeron processor and Intel Atom processor E3800 product families the ideal SoC solutions for a broad range of entry transactional and visual retail systems, including interactive kiosks, POS systems, intelligent vending and ATM machines.

- Graphics performance brings 3-D interactive content to a broad range of entry devices.
- Media and display: 10+ streams of full HD decode and dual independent display support drives promotional content on digital displays.
- Small form factor and industrial temperature operating capabilities are ideal for the design of compact retail devices and a range of environmental conditions.

Intel Celeron processor and Intel Atom processor E3800 product families include built-in hardware security enhancements that provide data encryption for securing

transaction or personal data and providing greater malware protection "below the OS" in retail devices:

- Intel® Advanced Encryption Standard Instructions (Intel® AES-NI) acceleration<sup>2</sup> provides faster endpoint data encryption to protect transactional and personal data.
- Intel® Virtualization Technology (Intel® VT-x) combined with McAfee Deep Defender\* technology provides the ability to search, detect and clean "below the OS" malware attacks.
- Secure Boot enhances security and boosts consumer confidence in retail devices by preventing unauthorized software from running during the boot sequence.

 SECURITY	<ul style="list-style-type: none"> <li>▪ Intel® AES-NI instruction support<sup>2</sup></li> <li>▪ McAfee Embedded Control*</li> </ul>
 2-D GRAPHICS	<ul style="list-style-type: none"> <li>▪ Faster CPU</li> <li>▪ Faster GPU(Execution Units) enables responsive POS applications</li> </ul>
 3-D GRAPHICS	<ul style="list-style-type: none"> <li>▪ DirectX*</li> <li>▪ OpenGL* 4.0</li> </ul>
 VIDEO	<ul style="list-style-type: none"> <li>▪ Full HD video decode support</li> </ul>
 EXTENDED TEMP	<ul style="list-style-type: none"> <li>▪ Intel® Atom™ processor E3800 SKU temp range: -40C to 110C<sup>1</sup></li> </ul>

**Table 2.** Transactional retail features of the Intel Celeron processor and Intel Atom processor E3800 product families.

 VIDEO	<ul style="list-style-type: none"> <li>▪ 10+ number of simultaneous Full HD decode streams</li> </ul>
 REMOTE VIDEO MANAGEMENT	<ul style="list-style-type: none"> <li>▪ Supports Intel® Retail Client Manager</li> </ul>
 3-D GRAPHICS	<ul style="list-style-type: none"> <li>▪ DirectX*</li> <li>▪ OpenGL* 4.0</li> </ul>
 EXTENDED TEMP	<ul style="list-style-type: none"> <li>▪ Intel® Atom™ processor E3800 SKU temp range: -40C to 110C</li> </ul>

**Table 3.** Key features of the Intel Celeron processor and Intel Atom processor E3800 product families in entry-level visual retail systems.

# White Paper

## Intelligent Systems

### Intel® Celeron® Processor and Intel® Atom™ Processor E3800 Product Families

Remote video content management is an essential capability of visual retail systems, from POS terminals to intelligent digital signage. The Intel Celeron processor and Intel Atom processor E3800 product families support Intel® Retail Client Manager (Intel® RCM), the intelligent software solution that enables users to reach targeted audience segments with the right message, at the right time, by delivering digital content to every screen. Intel RCM lets you remotely manage marketing campaigns in near real-time, launch customized content on-the-fly and quickly deliver a richer brand experience.

## Conclusion

With improved media and graphics, small form factor, extended temperature operation, built-in security, and responsive compute performance, the Intel Celeron processor and Intel Atom processor E3800 product families are poised to bring richer user experiences to a new generation of entry retail devices.

## For more information

**Intel® Media SDK:** <http://software.intel.com/en-us/vsource/tools/media-sdk>

**Intel® Retail Client Manager:** <http://intel.com/rcm>



<sup>1</sup>Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Go to: [http://www.intel.com/products/processor\\_number](http://www.intel.com/products/processor_number) for details

<sup>1</sup>Not available in all SKUs.

<sup>2</sup>Intel® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. 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>.

Drivers available at: [downloadcenter.intel.com](http://downloadcenter.intel.com).

Performance 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>.

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