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Fact Sheet

Introducing the Next-Generation Intel® Atom™ Processor-based Platform (Intel® Atom™ Processor Z6xx Series and Platform Controller Hub MP20)

Intel Corporation's next-generation Intel® Atom™ processor Z6xx family, along with the new Platform Controller Hub (PCH) MP20, deliver significant power savings while increasing performance[6] and maintaining software and Internet compatibility. The platform, previously codenamed "Moorestown," is designed for scalability across a range of computing devices, including high-end smartphones, tablets and other mobile handheld products.

The Intel Atom processor Z6xx series, previously codenamed "Lincroft," integrates a 45nm[1, 2] Intel Atom processor core (512K L2 cache, L1 24K Data and 32K Instruction Cache), 3-D graphics and video encode/decode, as well as memory and display controllers into a highly integrated system-on-chip (SoC). The Intel PCH MP20, previously codenamed "Langwell," integrates a range of I/O blocks such as NAND controller, low-power audio engine, high-resolution camera, USB OTG, security blocks and wireless, in addition to incorporating several board level functions. Additionally, the platform is accompanied by a dedicated Mixed Signal IC (MSIC), codenamed "Briertown," and supports a range of software platforms including Android*, Moblin* v2.1 and MeeGo*.

The platform implements a range of architecture, design and process techniques to deliver high performance at dramatically lower power levels. Amongst the many techniques, Intel implemented a new, fine grain OS power management approach that makes it possible to achieve low power while delivering industry-leading levels of performance and Internet compatibility.

Key features and capabilities of the Intel Atom Z6xx processors, the Intel Platform Controller Hub MP20, the MSIC and supported software platforms are summarized below:

Intel® Atom™ Processor Z6xx Family (formerly codenamed "Lincroft" SoC)

- **SKUs –** Intel is introducing the Intel Atom processor Z6xx series to support the high-performance requirements of the target market segments: up to 1.5 GHz for handhelds/smartphones and up to 1.9 GHz for tablets.
- **Intel® GMA 600 Graphics –** Integrated power-optimized 2-D/3-D graphics with up to 400MHz graphics core frequency, support for OpenGL* ES2.0, Open GL 2.1, and OpenVG* 1.1, and hardware-accelerated[7] HD video[7] decode (MPEG4 part 2, H.264, WMV & VC1) and encode (MPEG4 part2, H.264). Supports internal display up to 1366 x 768 LVDS or 1024 x 600 MIPI.
- **Integrated Memory Controller and LPDDR1/DDR2 Support –** An integrated 32-bit single channel memory controller offers fast memory read/write performance through efficient pre-fetching algorithms, low latency and high memory bandwidth. The Intel® Atom™ Processor Z6xx family includes support for LPDDR1 200MHz (400MT/s) up to 1GB or faster, DDR2 400MHz (800MT/s) memory technology up to 2GB.

- **Intel® Burst Performance Technology (Intel® BPT) –** Enables the processor to dynamically burst to higher performance for very short intervals of time, making it possible to provide on-demand, higher performance in small device form factors without impacting thermal design power.
- **Intel® Hyper-Threading Technology (Intel® HT Technology)[3] –** Hyper-threading Technology provides performance and support for multithreaded applications, helping to deliver increased performance and system responsiveness in today's multitasking environments by enabling the processor to execute two instruction threads in parallel. Examples include fast Web page downloads, multi-tasking and multi-windowing capabilities.
- **Intel® Smart Idle Technology (Intel SIT) –** Enables the CPU core and the rest of the SoC to switch off while the operating system remains in the "ON" state (S0). The technique takes full advantage of clock and distributed power gating across the 19 SoC power islands.
- **Ultra Small Form Factor Package** - New Flip Chip Molded Ball Grid Array (FCMBA3) package (13.8x13.8x1.1mm) which enables pocketable smartphone designs and tablet form factors.
- **Green technology** - Manufactured with lead-free and halogen-free component packages.[1,2]

Intel® Platform Controller Hub MP20 (formerly codenamed "Langwell")

- **Intel® Smart Power Technology (Intel SPT) –** Provides the infrastructure that enables the next-generation OS/software managed, usage model-based power management architecture. This fine-grained platform power management technique manages the idle and active power states across all aspects of the system and aggressively applies power and clock gating through the SoC's power islands and system rails.
- **Intel® Smart & Secure Technology[4] (Intel S&ST) –** A complete hardware and software security architecture for smartphones, handhelds and tablets. It provides crypto acceleration, is compliant with industry standards (AES, DES, 3DES, RSA, ECC, SHA-1/2, DRM), supports 1,000 bits of OTP, and enables Secure Boot. These capabilities enable a highly smart and secure solution across hardware and software.
- **Intel® Smart Sound Technology[5] (Intel SST) –** Uses a high-quality (24-bit) audio DSP which enables voice processing and supports a wide range of audio CODECs (MP3, AAC-LC, HE-AAC v1 & v2, WMA9, PCM). This technology enables ultra-low power consumption, providing extended battery life for mobile applications.
- **Universal Serial Bus (USB)* & USB On-The-Go (OTG)** - Hi-speed USB provides fast performance with a design data rate of up to 480 megabits per second (Mbps). USB OTG provides a cost-effective solution for a handheld device to communicate with such CE devices as a camera, printer or portable hard disk drive. USB OTG devices can have both USB-host and peripheral controller functions on one chip, making it possible for the chip to act as a USB host or a USB peripheral.

Mixed Signal IC (MSIC) (formerly codenamed "Briertown")

- **Highly Integrated Solution** – The MSIC integrates power delivery, battery charging and a range of analog and digital components such as audio codecs, touch screen controller, sensors, LDOs, DC-DC and GPIOs. This integration results in minimizing the part count for the platform and enabling a lower power, lower cost solution.
- **Aggressive Power Gating** – The MSIC plays an integral role in delivering a low-power platform by enabling power gating through a series of voltage rails to the Intel Atom processor and PCH. By shutting down transistors when not in use, power leakage goes down and battery life goes up. The MSIC also enables faster transitions in and out of power states, allowing for more frequent and longer residency in ultra-low-power saving states.
- **Multiple Sources** – Intel has worked with industry leading MSIC suppliers including Freescale*, Maxim* and Renesas* to deliver a compatible solution for use by system manufacturers.

Wireless Connectivity Options

- **Always Connected** – The platform supports a multitude of ways to connect – Wi-Fi, 3G, and WiMAX – and in conjunction with the ultra-low-platform idle power makes it possible to enable Always Connected usage models.
- **Range of Optimized Solutions** – Intel has worked with a number of third parties to support a range of wireless solutions for the platform. For 3G connectivity, ST-Ericsson's* M340* discrete solution provides data+voice connectivity while Ericsson's* C3607w* module enables data connectivity solutions. Additionally, Intel has enabled Marvell* 8688* for Wi-Fi solutions and Infineon* Hammerhead 2* for GPS solutions.
- **Advanced Technology** – Intel has worked with ISVs such as SNR Labs* to support advanced connection management features including QOE based seamless handover from 3G to Wi-Fi and vice versa. In addition, Intel has worked with Rx Networks* to support advanced GPS solutions on the platform.

Support for Range of Software Platforms

- **Port of Choice –** Consistent with Intel's long-standing port of choice strategy, the new Intel Atom processor-based platform supports a range of software including Android*, Moblin* v2.1 and MeeGo*.
- **Android* –** As a founding member of the Open Handheld Alliance (OHA), Intel has worked with Google* over the past few years and is providing support for the Android platform at launch. The performance characteristics of the Intel Atom processor Z6xx Series are reflected across Android* implementations, making it a compelling platform for a range of handheld devices.
- **Moblin 2.1/ MeeGo 1.0 –** The Intel Atom processor-based platform has been optimized to deliver the best performance and Internet experience at dramatically low power levels with the Moblin 2.1 software platform. With the recent merger of Moblin and Nokia's Maemo* platform, the new Intel Atom processor-based platform also supports the MeeGo software solution.
- **Software Ecosystem Momentum –** Intel is working with leading industry players to support a breadth of middleware and applications. Key middleware support includes runtimes such as Adobe* Flash, AIR*, and Microsoft* Silverlight*, media frameworks and players including Fluendo* GStreamer* and Real Networks* Helix*, Discretix* DRM including WM-DRM, OMA Video and Audio, Redbend* device management, SNRLabs* Connection Manager, and full telephony framework. Additionally, a number of ISVs are delivering optimized applications and rich user interfaces. These cover the breadth of usage models: entertainment (such as Scalado* for managing high- resolution photos, Aricent* video suite, Axel* Fuugo* Internet TV, World of Warcraft* via Crossover*); information (such as NDrive* 3-D navigation); communication (such as Vidyo* multi-point video conferencing, Skype* VoIP) and productivity.

1 Intel 45nm product is manufactured on a lead-free process. Lead-free per EU RoHS Directive (2002/95/EC, Annex A). Some RoHS exemptions may apply to other components used in the product package.

2 Applies to components containing flame retardants & PVC only. Halogens are below 900 PPM bromine, 900 PPM chlorine, and 1500 PPM combined bromine and chlorine.

3 Intel® Hyper-Threading Technology requires a device with an Intel processor supporting Hyper-Threading Technology and an HT Technology-enabled platform controller hub, firmware and operating system. Performance will vary depending on the specific hardware and software used.

4 No computer system can provide absolute security under all conditions. A highly versatile crypto security engine is integrated within Intel platform controller hub MP20 which with appropriate software, enhances platform security capabilities. May require additional third-party software. Certain functionality may not be offered by some ISVs or

service providers. Certain functionality may not be available in all countries. Intel assumes no liability for lost or stolen data and/or systems or any other damages resulting thereof.

5 Intel® Smart Audio Technology requires a system with an appropriate Intel platform controller hub and may require additional third-party software or CODECs and the necessary drivers installed. System sound quality will vary depending on actual implementation, controller, CODEC, drivers and speakers.

6 Performance tests and ratings are measured using specific systems and/or components and reflect approximate performance of Intel products as measured by those tests. Any difference in system hardware, software, or configuration may affect actual performance. Buyers should consult other sources of information to evaluate performance of systems or components they are considering purchasing. For more information on performance tests and performance of Intel products, visit www.intel.com/performance/resources/limits.htm.

7 May require additional third-party software/ players and CODECs to enable H/W video acceleration

8 Frequencies represented by the new Intel Atom processor, up to1.5GHz for smartphones and up to 1.9GHz for tablets, are the highest frequencies offered for these segments in the industry.

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