

Intel® ATOM™ Z5xxP and Z5xxPT

Low-Power Intel® Architecture Processor with Larger Footprint Package

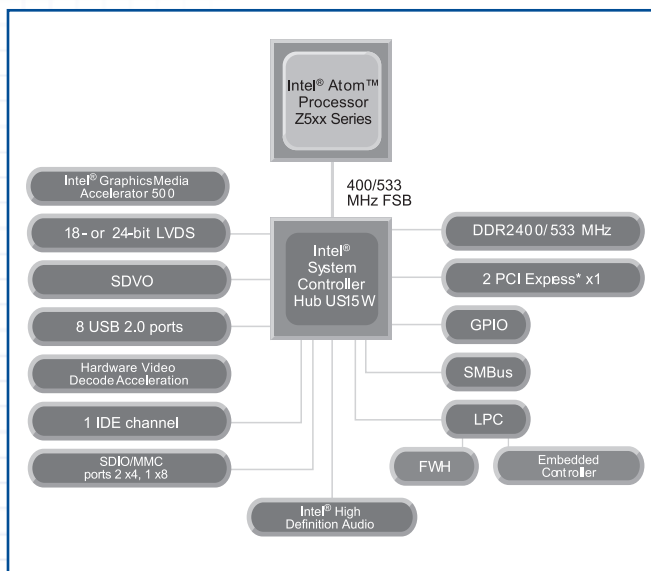
The Intel® Atom™ processor Z5xxP and PT series provides a variety of design options with 2.0 or 2.2 watts Thermal Design Power (TDP), 22 mm x 22 mm package and industrial as well as commercial temperature ranges. Based on 45 nm Intel® architecture, these processors implement enhanced power management techniques, making them ideal for thermally constrained and fanless embedded applications. These processors include embedded lifecycle support and remain software-compatible with previous 32-bit Intel architecture and complementary silicon.

These single-core processors are validated with the Intel® System Controller Hub US15WP and US15WPT available in a 37.5 mm x 37.5 mm package, which integrates the Intel® Graphics Media Accelerator 500, memory controller, Intel® High Definition Audio2 along with extensive I/O capabilities, such as USB 2.0, GPIO, PATA, LPC, and PCI Express.* It also offers a choice of both industrial and commercial temperature ranges.

Applications

- In-vehicle infotainment
- Industrial control and automation
- Gaming systems
- Medical devices
- Media phones, portable information systems
- Transaction solutions (Kiosks, POS terminals)

Typical Block Diagram



Features

Z5xxP and Z5xxPT

- In-order execution core helps save power
- On die L1 cache: 32 KB instruction, 24 KB data
- On die L2 cache: 512 KB, eight-way with dynamic cache sizing
- 400 MHz and 533 MHz front side bus
- Supports hyper-threading technology
- Intel® streaming SIMD extensions 2 and 3 and supplemental streaming SIMD extensions 3
- Enhanced Intel SpeedStep® technology
- Execute disable bit for enhanced security

SCH US15W

- Intel® graphics media accelerator 500
- Hardware video decoder for H.264, MPEG2, VC1, and WMV9
- 18- or 24-bit LVDS and SDVO video outputs
- Eight USB 2.0 ports
- One PATA hard disk interface
- Three SDIO 1.1 or MMC 4.0 ports, 2 x 4-bit and 1 x 8-bit
- Supports 1 GB 400/533 MHz DDR2 RAM
- Two PCI Express x1 ports
- Intel® high-definition audio

Video

Full hardware acceleration of H.264, MPEG2, MPEG4, VC1, and WMV9 is supported, eliminating the need for software decode and off-loading the processor.

Audio

Intel high definition audio supports up to four audio streams (up to 16 channels each), 32-bit sample depth, and sample rates to 192 KHz.

Interfaces

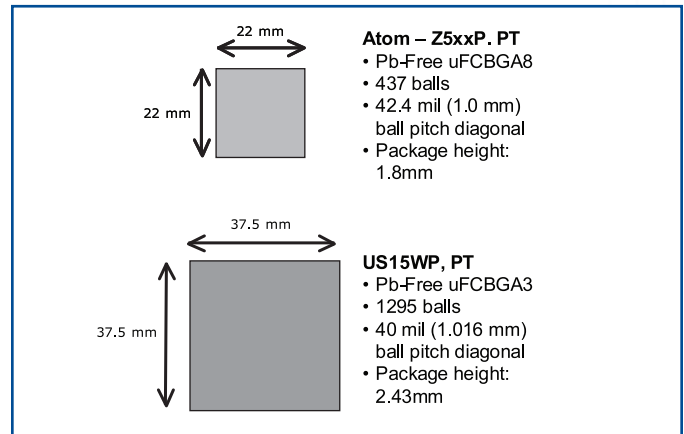
Supports eight USB 2.0 ports, and three Secure Digital I/O 1.1 and Multimedia Card Controller 4.0 ports. The LPC 1.1 bus enables firmware hub, embedded controller and other legacy devices. A single-channel PATA interface supports two devices (master/slave), and two x1 ports support PCI Express Base Specification Revision 1.0a.

Enhanced Package

The larger footprint version features a 22 mm x 22 mm package with 1.0 mm ball pitch. It is ideal for designs without small space restrictions and/or with an industrial temperature range requirement. In addition to its power management capabilities, an integrated heat spreader further contributes to its value for thermally constrained, fanless applications.

Because the automotive and transportation industries require that components be qualified for a -40°C to +85°C temperature range, the industrial temperature option is critical for many embedded in-vehicle infotainment system designs in consumer and commercial vehicles. This option is also important for industrial control and automation applications, often found in factories with unconstrained thermal environments.

Package Dimensions



Operating System/BIOS Support

	Contact
Operating System	
Microsoft Windows XP Embedded SP2*	Intel provides drivers
Microsoft Windows XP SP2*	Intel provides drivers
Microsoft Windows WEPOS SP2*	Intel provides drivers
Microsoft Windows Embedded CE 6.0*	Adeneo, BSQUARE, WiPro
QNX Neutrino*	QNX Software Systems
Fedora-based Linux*	Red Hat Global Engineering Services (GES)
Red Flag Linux*	Red Flag Software
VxWorks 6.6*	Wind River
Wind River Linux* Platform for Infotainment	Wind River
MontaVista Linux* Professional Edition	MontaVista Software
BIOS	American Megatrends, Inc.; Insyde Software; Phoenix Technologies, including AwardCore*

Product Offering

Product Name	Product Number	Core Speed	Front-Side Bus	Thermal Design Power ¹	Support for HT Technology	Tjunction	Package	Chipset Pairing
Small Form Factor Options with Commercial Temperature Option (0°C to +70°C)								
Intel® Atom™ processor Z530 ^Δ	AC80566UE025DW	1.60 GHz	CMOS, 533 MHz, 32-bit address	2.2 watts	Yes	90°C	441-ball, Lead-Free USFFBGA, 13 mm x 14 mm	Intel® SCH US15W
Intel® Atom™ processor Z510 ^Δ	AC80566UC005DE	1.10 GHz	CMOS, 400 MHz, 32-bit address	2.0 watts	No	90°C	441-ball, Lead-Free USFFBGA, 13 mm x 14 mm	Intel® SCH US15W
Large Form Factor Options with Commercial Temperature Option (0°C to +70°C)								
Intel® Atom™ processor Z530P ^Δ	CH80566EE025DW	1.60 GHz	CMOS, 533 MHz, 32-bit address	2.2 watts	Yes	90°C	437-ball, Lead-Free FCBGA, 22 mm x 22 mm	Intel® SCH US15WP
Intel® Atom™ processor Z510P ^Δ	CH80566EC005DW	1.10 GHz	CMOS, 400 MHz, 32-bit address	2.2 watts	Yes	90°C	437-ball, Lead-Free FCBGA, 22 mm x 22 mm	Intel® SCH US15WP
Large Form Factor with Industrial Temperature Options (-40°C to +85°C)								
Intel® Atom™ processor Z520PT ^Δ	CH80566EE014DT	1.33 GHz	CMOS, 533 MHz, 32-bit address	2.2 watts	Yes	110°C	437-ball, Lead-Free FCBGA, 22 mm x 22 mm	Intel® SCH US15WPT
Intel® Atom™ processor Z510PT ^Δ	CH80566EC005DT	1.10 GHz	CMOS, 400 MHz, 32-bit address	2.2 watts	Yes	110°C	437-ball, Lead-Free FCBGA, 22 mm x 22 mm	Intel® SCH US15WPT

*Other names and brands may be claimed as the property of others.

¹The TDP specification should be used to design the processor thermal solution. TDP is not the maximum theoretical power the processor can generate.

^Δ Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

For more information, such as datasheets and app notes, visit www.arrow.com/arrowedge.