

Marvell's PXA920 Family of SoCs

	PXA918	PXA920	PXA920H
Target market	entry-level smart devices (a lower-cost yet high performance solution for multimedia-centric handsets)	multimedia-centric handsets	mid- and high-end smart devices (to provide higher performance solution for multimedia-centric handsets)
Silicon technology	55 nm	55 nm	55 nm
Clock frequency	624MHz	806 MHz	1GHz
Dhrystone performance	870 DMIPS	1130 DMIPS	1400 DMIPS
Memory interface	LPDDR1	LPDDR1	LPDDR2
3D graphics performance	up to 8Mtriangle/s and 150Mpixel/s fill rate	up to 10M triangles/s sustained (20M triangles/s peak at 50% cull rate) and 200M pixels/s fill rate	up to 12Mtriangle/s sustained and 250Mpixel/s fill rate
Video playback performance	D1 at 30 fps for H.264, WMV, MPEG-4, H.263	720p at 30 fps for H.264, WMV, MPEG-4, H.263	720p at 30 fps for H.264, WMV, MPEG-4, H.263
Video capture performance	D1 at 24 fps for H.264, WMV, MPEG-4, H.263	D1 at 30 fps for H.264, WMV, MPEG-4, H.263	D1 at 30 fps for H.264, WMV, MPEG-4, H.263
Product overview/[features]	PXA918 Communication Processor	PXA920/ PXA920H Communication Processor	PXA920/ PXA920H Communication Processor
Announced/first mentioned:	June 28, 2011:* ZTE Launch Signals New Era of TD-SCDMA Smart Devices in China Powered by Marvell's Industry-First Single Chip Solutions (the ZTE U802 with PXA918)	Sept 8, 2009:* Marvell Empowers Mass Market TD-SCDMA OPhones with PXA920 Chipset	Sept 25, 2011:* Marvell Showcases 16 China Mobile TD-SCDMA Smartphones from Leading Global OEMs at PT/EXPO Comm China 2011
Product documentation	PXA918 Platform Brief [Sept 16, 2011]	PXA920 Platform Brief [Sept 21, 2011]	PXA920H Platform Brief [Sept 16, 2011]
Showcase products	Huawei T8300	<ul style="list-style-type: none"> - now shipping in more than 10 devices - ZTE Selects Marvell PXA920 for Four New TD-SCDMA Smart Devices - Marvell PXA920 Powers ASUS TD-SCDMA Smartphone - Marvell's Kinoma open-source software platform is an elegant and flexible foundation for today's smartphones. Now a featured component in the ASUS T10 and T20 phones, Kinoma enables a personalized, easy-to-use application experience. 	

* Between 2009 and 2011 Marvell was marketing the PXA920 SoC under the Pantheon brand name:

- [Marvell Drives \\$99 Smartphones to Market With New Pantheon Platform](#) [Feb 12, 2010]
- [Marvell Affirms Significant Progress in TD-SCDMA Mobile Phone Chipset at Mobile World Congress 2010](#) [Feb 15, 2011]
- [Marvell Breaks New Ground for Smartphones and Tablets: High Performance, Gigahertz-Class, Scalable Mobile Platforms Delivering 1080p Full-HD Encode and Decode, Advanced 3D Graphics and Ultra Low-Power Supporting Full Adobe Flash, Android, Windows Mobile, and Other Leading Operating Systems](#) [Feb 16, 2010]

Family overview (common descriptions from the platform briefs):

The Marvell® PXA920 family communication platform is an advanced, highly integrated 3G platform for multimedia-centric handsets. The PXA920 family platform solutions incorporate the performance of Marvell's mobile application processor with Marvell's mature and proven **3.5G** technology to provide **low-cost Linux™ and Android™ handset platforms**. The combination of Marvell's advanced, high-performance, low-power application processor technology with Time Division Synchronous Code Division Multiple Access (**TD-SCDMA**)/Time Division High Speed Packet Access (**TD-HSPA**)/ Enhanced Data for GSM Environment (**EDGE**) communication support for next-generation cellular services **enable breakthrough end-user experiences** for imaging, HD video, music, games, and other popular handset applications.

With Marvell's 3G technology, seamless wireless connectivity, application processing, and support for next generation cellular data services — the new PXA920 family-powered smartphones offer exceptional performance for browsing, instant live video, access to personal music, 3D gaming, and other popular handset applications at attractive price points. The PXA920 family supports Android and other major mobile operating systems (OS).

Family Features and Benefits (common descriptions from the platform briefs):

Features	Benefits
Cellular Modem Solution	<ul style="list-style-type: none">• Integrated 3.5G modem and stack compliant with world's leading carriers• 3G/WLAN/BT Coexistence Enables support for IMS, VoIP and other advanced carrier services• Fully integrated platform solution validated via extensive IOT, GCF, and field trial testing in China and Shipping in WW networks
Tri-core, Shared Memory Hardware Architecture – Dedicated Modem and Applications Processor Cores – Shared External Memory Interface	<ul style="list-style-type: none">• Enables reuse of a common application processor software stack across multiple air interfaces and cellular networks• Prevents unwanted performance interactions/dependencies between AP and modem subsystems• Protects cellular network from application processor security threats• High-performance internal memory architecture enables sharing of external memory without the cost/space burden for independent flash and DDR• High performance, efficient inter-processor communication interface between AP and modem using shared external DDR
Modem processors – Modem RISC Core – Modem DSP Core	<ul style="list-style-type: none">• Marvell-designed ARM9 with packet processing accelerators and L1/L2 caches• Micro-Signal Architecture VLIW DSP core with L1/L2 caches
CPU processor	<ul style="list-style-type: none">• Marvell CPU Technology with ARMv5 core, ARMv5 ISA compliant with GPS instruction set extensions, and Wireless MMX2 and L1 cache• L2 Cache• Internal SRAM• Internal Boot ROM - Secure Boot ROM supports boot from NAND• Mobile Security through Secure Boot, Root Key Protection, Secure JTAG re-enablement; supports multiple life cycle states which protect processor secrets
Multimedia – Video – 3D – Audio – Imaging – Display	<ul style="list-style-type: none">• Video Playback ...; Video Capture ...• 3D Graphics capability; Supports industry standard APIs.• Marvell's unique Audio Accelerator Subsystem offers low power audio playback via audio streaming• Image Sensor support for primary and secondary smart image sensors with MIPI CSI-2 and parallel interfaces; Supports one MIPI-CSI2 serial interface• LCD Controller supports parallel LCD displays over an 8/16/18-bit parallel smart panel interface or a 16/18/24bit parallel active matrix interface with sync signals; Primary/secondary display supports up to 4 simultaneous overlays with base + rotation scaling
DMA Controller Interface	Interface with companion chips configured as VLIO devices using flow through mode DMA transfers