Marvell PXA1088 Quad-Core WCDMA/TD-SCDMA Communication Processor
Quad-Cortex A7, High-Performance, Low-Power, Low-Cost

PRODUCT OVERVIEW

The Marvell® PXA1088 is a highly integrated quad-core application and communications mobile System-on-Chip (SoC) that provides high-performance, low-power mobile computing; support for all global broadband 3G standards, enabling seamless global roaming; and the latest wireless connectivity technology. Marvell’s PXA1088 is the industry’s most advanced single-chip solution to feature a quad-core processor with support for field-proven 3G cellular modems, including High Speed Packet Access Plus (HSPA+), Time Division High Speed Packet Access Plus (TD-HSPA+) and Enhanced Data for GSM Environment (EDGE).

The Marvell PXA1088 solution incorporates the performance of a quad-core ARM Cortex-A7 with Marvell’s mature and proven WCDMA and TD-SCDMA modem technology to provide a low-cost 3G platform for both smartphones and tablets. The advanced application processor technology of the PXA1088 enables a breakthrough end user experience for multimedia and gaming applications with universal connectivity. Marvell’s complete mobile platform solution includes the Avastar® 88W8777 WLAN + Bluetooth 4.0 + FM single-chip SoC and the 88L2000 GNSS Hybrid Location Processor, and an integrated power management and audio codec IC.

Marvell’s PXA1088 is backward pin-to-pin compatible with its dual-core single-chip unified 3G platform, the PXA988/PXA986, enabling device partners to upgrade their next-generation mobile devices to quad-core without additional design cost.

BLOCK DIAGRAM

Fig 1. Marvell PXA1088 Quad-Core WCDMA/TD-SCDMA Smartphone Platform

FEATURES AND BENEFITS

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<th>SPECIAL FEATURES</th>
<th>BENEFITS</th>
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<tr>
<td>WCDMA/TD-SCDMA 3G Cellular Modem Solution</td>
<td>• Evolution of proven Marvell WCDMA and TD-SCDMA solutions, integrated on leading carrier products, shipping in high volume</td>
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<td>• Marvell PXA1088 high-performance WCDMA/TD-SCDMA platform features:</td>
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<td>- WCDMA HSPA+ (21Mbps), Release 7</td>
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<td>- TD-SCDMA HSPA+ (4.2Mbps), Release 8</td>
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<td>- TD-HSDPA, Release 7</td>
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<td>- Class 12 EDGE support</td>
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<td>• Fully integrated cellular platform solution with extensive IOT, GCF and carrier field trial testing</td>
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FEATUERS AND BENEFITS continued

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| • Dedicated Modem and Application Processor Subsystems  
  - Shared memory hardware architecture  
  - Shared external memory interface | • 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 and space burden for independent Flash and DDR  
• High-performance, efficient inter-processor communication interface between AP and modem, using shared external DDR |

| • Efficient, Proven Modem Processors  
  - Modem RISC core  
  - Modem DSP core | • Marvell-designed ARM9 with packet processing accelerators and L1/L2 caches  
• Micro Signal Architecture VLIW DSP core with L1/L2 caches |

| • Quad ARM Cortex A7MP Application Processor Subsystem | • A high-performance quad-core ARM Cortex A7 for low-power applications, with high-performance for browsing and Java applets  
• NEON™ engine for broad support of media codecs  
• High-performance memory support for LPDDR2-SDRAM, NAND and eMMC; secure boot from NAND and eMMC  
• Support mobile security features, including secure boot, root key protection and Widevine Level 1 support |

| • Full HW-Supported Multimedia Suite  
  - Video decode and encode  
  - 3D graphics  
  - Audio  
  - Imaging  
  - Display | • Video decode: 1080p 30 fps/720p 60 fps, with support for H.263, H.264 HP, MPEG-4, MPEG 2, DivX/XviD, AVS and RV  
• Video capture: 1080p 30 fps/720p 30 fps, with support for H.263, H.264 and MPEG-4  
• MJPEG encode and decode, maximum resolution 8192x8192  
• 3D graphics capability up to 96 Mtriangles/s peak rate and 1.56 Gpixels/s peak fill rate; integrated 2D accelerator; supports industry standard APIs, OpenGL ES 2.0/1.1 and Open VG 1.1  
• Low-power audio playback with direct streaming from external source to internal SRAM  
• Imaging sensor support for primary and secondary sensors with one CSI-4 port, up to 4 data lanes (1Gb/s per lane)  
• Integrated ISP supports up to 12 Mpixel sensor  
• LCD controller supports 1 MIPI DSI port (4 lanes) with up to 720p resolution  
• Up to 4 simultaneous overlays |

APPLICATIONS

This highly integrated handset platform features the PXA1088 single-chip applications and baseband processor, with a Marvell integrated power management and audio companion IC, and Marvell 802.11n WLAN/BT/FM.