i.MX515 Applications Processor

Overview

The i.MX515 integrated applications processors are part of a growing family of multimedia-focused products offering high-performance processing optimized for low power consumption.

The i.MX515 processor features Freescale's advanced and power-efficient implementation of the ARM Cortex™-A8 core, which operates at speeds up to 800 MHz.

Features

CPU Complex

- 800 MHz ARM Cortex-A8 CPU
- 32 KB instruction and data caches
- Unified 256 KB L2 cache
- NEON SIMD media accelerator
- Vector floating point coprocessor

Multimedia

- OpenGL ES 2.0 and OpenVG 1.1 hardware accelerators
- Multi-format HD 720p video decoder and D1 video encoder hardware engine
- 24-bit primary display support up to WXGA resolution
- 18-bit secondary display support
- Analog HD720p component TV output
- High-quality hardware video de-interlacing
- Image and video resize, inversion and rotation hardware
- Alpha blending and color space conversion
- Video/graphics combining: four planes plus hardware cursor
- Display quality enhancement: color correction, gamut mapping and gamma correction

External Memory Interface

- mDDR and DDR2 SDRAM, 16/32-bit, 200 MHz
- SLC/MLC NAND flash, 8/16-bit

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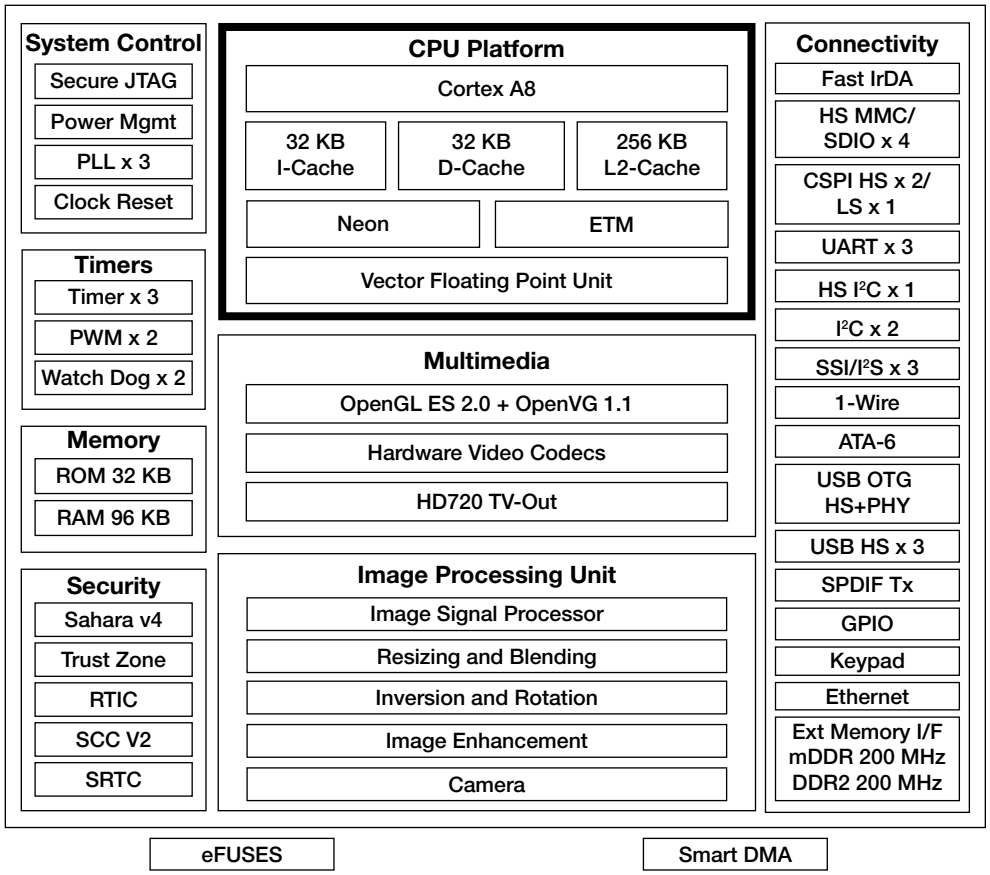

Advanced Power Management

- Multiple independent power domains
- Dynamic voltage and frequency scaling
- Dynamic process and temperature compensation
- Proprietary power gating

Connectivity

- High-Speed USB OTG with PHY
- Three additional High-Speed USB controllers
- Wide array of serial interfaces, including SDIO, SPI, I^2C and UART
- I^2S and S/PDIF audio interfaces
- 10/100 Ethernet controller
- P-ATA

Security

- Security controller, including secure RAM and security monitor
- Secure high assurance boot, JTAG controller and real-time clock
- Cipher and random number generator accelerators
- Run-time integrity checker
- Universal unique identification
- Tamper detection

General

- 19 mm x 19 mm, 0.8 mm pitch MAPBGA package
- -20ºC to +85ºC ambient temperature range
- Automotive temperature grade also available

Benefits

- Very high performance processing and multimedia capabilities
- High level of integration reduces overall system BOM
- Hardware acceleration enables very low power consumption for video and graphics

Netbook/MID Application Processor

i.MX515 processor boosts the capabilities of netbooks and mobile Internet devices with its blazing 800 MHz performance, enabling these devices to deliver a "full-Internet" experience. With Freescale's dynamic voltage and frequency scaling (DVFS), the same core that runs at 800 MHz can scale down to 200 MHz at reduced voltage. This results in significant power reduction for lower MIPS applications.

Multimedia Powerhouse

The multimedia performances of the i.MX515 processor is boosted by a Multi-Standard Hardware Video Codec, Autonomous Image Processing HD Unit (including Image Signal Processor), NEON SIMD, accelerometer and Vector Floating Point coprocessor, and a programmable Smart DMA (SDMA) controller.

Powerful Graphics Acceleration

3-D graphics are the key to mobile game designs. The i.MX515 processor provides an integrated 3-D graphics processing unit that provides an incredible 27 Mtri/sec and effective 664 Mpix/sec (with overdraw). In addition, i.MX515 incorporates a 2-D graphics processing unit to accelerate Adobe® Flash® and OS-windowing system functions.

Smart Speed™ Technology

Advanced power management features used throughout the i.MX515 processor enable a rich suite of multimedia features and peripherals while maintaining minimum system power consumption in both active and low-power modes. Smart Speed technology enables the designer to deliver a feature-rich product at much lower power consumption than competing products.

Increased Security

Because the need for advanced security for mobile devices continues to increase, the i.MX515 processor delivers hardware-enabled security features that support secure e-commerce, digital rights management (DRM), information encryption, secure boot and secure software downloads.

Interface Flexibility

The i.MX515 supports connection to all popular types of external memories: Mobile DDR and DDR2, SDRAM, NOR flash, PSRAM, cellular RAM, NAND flash (MLC and SLC) and OneNAND. Designers seeking to provide products that deliver a rich multimedia experience will find a full suite of on-chip peripherals: LCD controller and CMOS sensor interface, High-Speed USB On-The-Go, three High-Speed USB hosts, multiple expansion card ports (High-Speed MMC/SDIO Host and others), Fast Ethernet controller and a variety of additional interfaces (UART, I^2C, I^2S serial audio, and SIM card and more).

Freescale Alliance Program

Tap into a powerful ecosystem of Freescale technology alliances for building smarter, better connected solutions. Intended to help you shorten your design cycle and get your products to market faster, these technology alliances provide you with access to rich design tools and peripherals, as well as support and training. For more information, visit **www.freescale.com/alliances**.

The i.MX Processor Family

Freescale's i.MX family of applications processors delivers power to the people who demand it—designers like you, and users who crave it for their mobile devices. Designers love the amazing performance i.MX processors achieve at low clock speeds, and the high degree of integration that shortens design times. Consumers love the lifelike video and 3-D graphics reproduction, quick response and long, long play times for hours of work or entertainment use. Freescale gives you the power of choice to address all of your embedded designs, for the automotive, consumer, industrial and general-purpose markets. The i.MX family supports a range of platforms such as those based on Microsoft Windows® CE and Mobile, Linux® OS, and a number of leading RTOSs. To learn more, visit **www.freescale.com/imx**.

Learn More: For current information about Freescale products and documentation, please visit **www.freescale.com/imx515**.

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