i.MX Applications Processor for Multimedia

i.MX535 Applications Processor

Enabling 1080p HD and cost-saving integration in tablets and smart mobile devices

Overview

The i.MX53 family of processors represents our next generation of advanced multimedia and power-efficient implementation of the ARM® Cortex™-A8 core. With core processing speeds up to 1.2 GHz, i.MX535 processors are optimized for both performance and power to meet the demands of high-end, advanced applications requiring mobility and a long battery life. 1080p HD video decode and HD video encode, two dedicated graphics cores, multiple display and connectivity options, and a high level of integration make these processors ideal for smart mobile devices.

Software Flexibility

Development on the i.MX535 is made easy with a range of Freescale-provided board support packages (BSPs) optimized for multimedia performance and low-power operation. BSPs are available for the following operating systems:

- Android™
- Windows® Embedded Compact 7
- Linux®

Tablets and Smart Mobile Devices

i.MX535 applications processors balance the performance, power consumption, connectivity and multimedia capabilities necessary to drive the latest consumer products. These processors are ideal for products that require advanced user interfaces, sophisticated video processing, multiple connectivity options and a high level of system integration. These features are the building blocks to power the next great applications at an approachable price target.

Target Applications

- Tablets
- Smart mobile devices
- Gaming devices and consoles
- Smart monitors
- Digital signage
- Telehealth
- Video-enabled IP phones

Benefits

- Ultra-fast processing and high-performance multimedia capabilities
- Complete hardware and software package provided to enable faster time to market and lower R&D investment
- Dedicated video and independent 2D/3D graphics hardware acceleration engines provides best-in-class performance for power
- Increased core speed improves Web browsing experience
- Up to 2 GB external memory support prepares your end device for cloud computing applications and future OSs and browsers
- LP-DDR2, LV-DDR2, DDR2-800 and DDR3-800 SDRAM ready for greater design flexibility
- Optimized for low-power operation to give best performance for battery life
- Smartly integrated i.MX53 offers more on chip, including LVDS, USB PHYs, Ethernet and SATA, reducing the need for external components and passing on significant BOM savings

Features

CPU Complex

- Up to 1.2 GHz ARM Cortex-A8
- 32 KB instruction and data caches
- Unified 256 KB L2 cache
- NEON SIMD media accelerator
- Vector floating point coprocessor

Multimedia

- Independent OpenGL® ES 2.0 and OpenVG™ 1.1 hardware accelerators
- Multi-format 1080p HD video decoder and 720p HD video encoder hardware engine
- 24-bit primary display support up to WSXGA resolution
- 18-bit secondary display support
- Analog 720p HD 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 combines four planes and hardware cursor
- Display quality enhancement includes color correction, gamut mapping and gamma correction

External Memory Interface

- Up to 2 GB LP-DDR2, LV-DDR2, DDR2 and DDR3 SDRAM, 16/32-bit
- SLC/MLC NAND flash, 8/16-bit

Advanced Power Management

- Multiple independent power domains
- Dynamic voltage and frequency scaling

Connectivity

- High-Speed USB 2.0 OTG with PHY
- High-Speed USB 2.0 host with PHY
- Two additional High-Speed USB 2.0 controllers
- Integrated LVDS display interface
- Wide array of serial interfaces, including SDIO, SPI, I²C and UART
- I²S and S/PDIF audio interfaces
- 10/100 Ethernet controller
- PATA
- SATA controller and PHY up to 1.5 Gbps

Security

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

Package

- 19 mm x 19 mm, 0.8 mm pitch TEBGA
- Consumer temperature grades available

Multimedia Powerhouse

The multimedia performance of the i.MX53 processor is boosted by a multi-standard hardware video codec, autonomous image processing HD unit, NEON SIMD, accelerometer, vector floating point coprocessor and a programmable smart DMA controller. Powerful 3D graphics acceleration is the key to mobile game designs. i.MX535 processors provide an integrated 3D graphics processing unit that provides an incredible 33 Mtri/sec and effective 800 Mpix/sec (with overdraw). The 3D unit provides an exceptional user experience with accelerated Flash Player 10.x, gaming and advanced user interfaces. In addition, i.MX535 processors incorporate a 2D graphics processing unit to accelerate the windowing system and fonts.

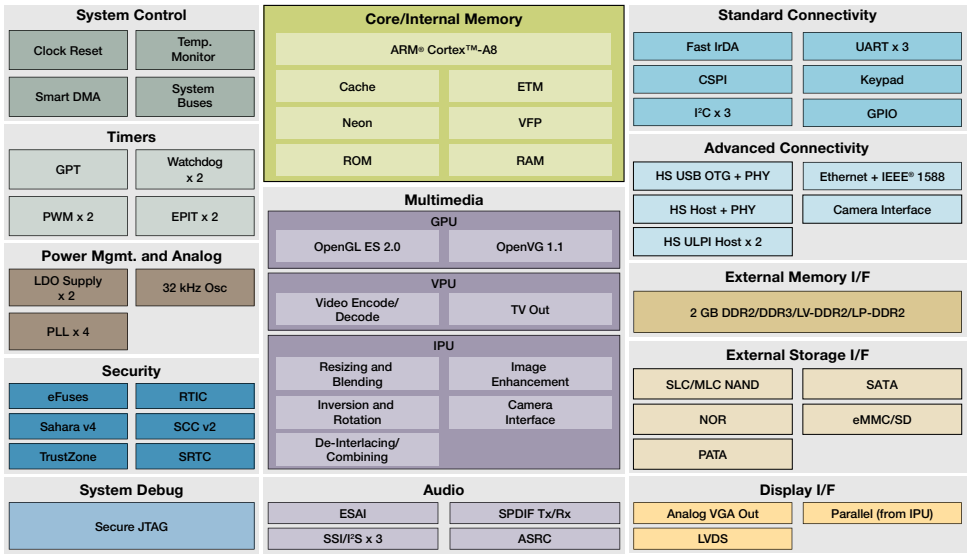
Smart Speed™ Technology

Advanced power management features used throughout the i.MX53 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 you to deliver a feature-rich product at much lower power.

Increased Security

As the need for advanced security for mobile and hand-held devices continues to increase, i.MX535 processors deliver hardware enabled security features that support secure e-commerce, digital rights management, information encryption, secure boot and secure software downloads.

i.MX535 Block Diagram



Ordering Information

Part Number	Description	MSRP (USD)
MCIMX53SMD	SABRE platform for tablets	$1499
MCIMX53-START	i.MX53 Quick Start development board	$149
MCIMXHDMICARD	24-bit HDMI output port	$49
MCIMX-LVDS1	10.1” 1024 x 768 LVDS panel with capacitive touch screen	$499
MCIMX28LCD	4.3” 800 x 480 WGA with four-wire touch screen	$199

Get Started Today

The i.MX53 Quick Start board is a $149 open source development platform that supports the features of the i.MX53 applications processor and includes support for a VGA display as well as optional add-on boards to support LVDS, LCD and HDMI displays.

For more information,visit **freescale.com/iMXQuickStart**.

The Smart Application Blueprint for Rapid Engineering (SABRE) platform for tablets based on i.MX53 is the latest in a series of premiere, market-focused reference designs engineered to introduce designers to advanced multimedia and connectivity applications on the i.MX53 applications processor. Designed with a tablet look and feel, the SABRE platform can be targeted towards any mobile device requiring low power and an amazing user experience.

For more information, visit **freescale.com/iMXSABRE**.

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For current information about the i/MX53 family, visit freescale.com/iMX53

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