



i.MX Applications Processor for Multimedia

## i.MX535 Applications Processor

Platform solution for Tablets and Smart Mobile Devices, enabling HD 1080p and Adobe® Flash® 10.1.



### Overview

The i.MX53 family of processors represents Freescale's next generation of advanced multimedia and power-efficient implementation of the ARM Cortex™-A8 core. The first product in this family, the i.MX535, enables hours of full HD 1080p video playback and an amazing Flash 10.1 experience. Full duplex HD 720p video is ready to meet fast-approaching demand for high resolution video phone capability.

With core processing speeds up to 1 GHz as well as a high level of integration, the i.MX535 enables a great user experience at a lower retail price point. An evolution of the i.MX51 family of processors, the i.MX535 maximally re-uses hardware and software components to give your product a performance boost with quick time to market.

### Software Flexibility

Development on the i.MX535 is easier and more flexible with board support packages available for the following operating systems:

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

### Adobe Flash 10.1

Fully-optimized and hardware-accelerated Adobe Flash Player 10.1 leverages the i.MX535 processor's integrated high performance graphics and video, delivering an outstanding video experience while conserving battery life on consumer products running Android, Chromium or Linux Operating Systems.

### Tablets, Smartbooks, Mobile Internet 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
- Smartbooks
- Smart Mobile Devices
- Gaming Devices and Consoles
- Smart Monitors
- Digital Signage
- Telehealth
- Video-enabled IP Phones

## Benefits

- Very high-performance processing and multimedia capabilities.
- Complete hardware and software package provided to enable faster time to market and lower R&D investment.
- Dedicated video and graphics hardware acceleration provides best in class performance for power.
- Adobe Flash 10.1 acceleration. Full 1080p decode. HD 720p ready video conferencing.
- Increased core speed improves web browsing experience.
- Up to 2GB external memory support prepares your end device for cloud computing applications and future OSs and browsers.
- DDR2 and DDR3 ready for greater flexibility in system design.
- Optimized for low power operation to give best performance for battery life.
- More integration lowers your system bill of materials.

## Features

## CPU Complex

- 1 GHz 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 1080p video decoder and HD 720p video encoder hardware engine
- 24-bit primary display support up to WSXGA resolution
- 18-bit secondary display support
- Analog HD 720p 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

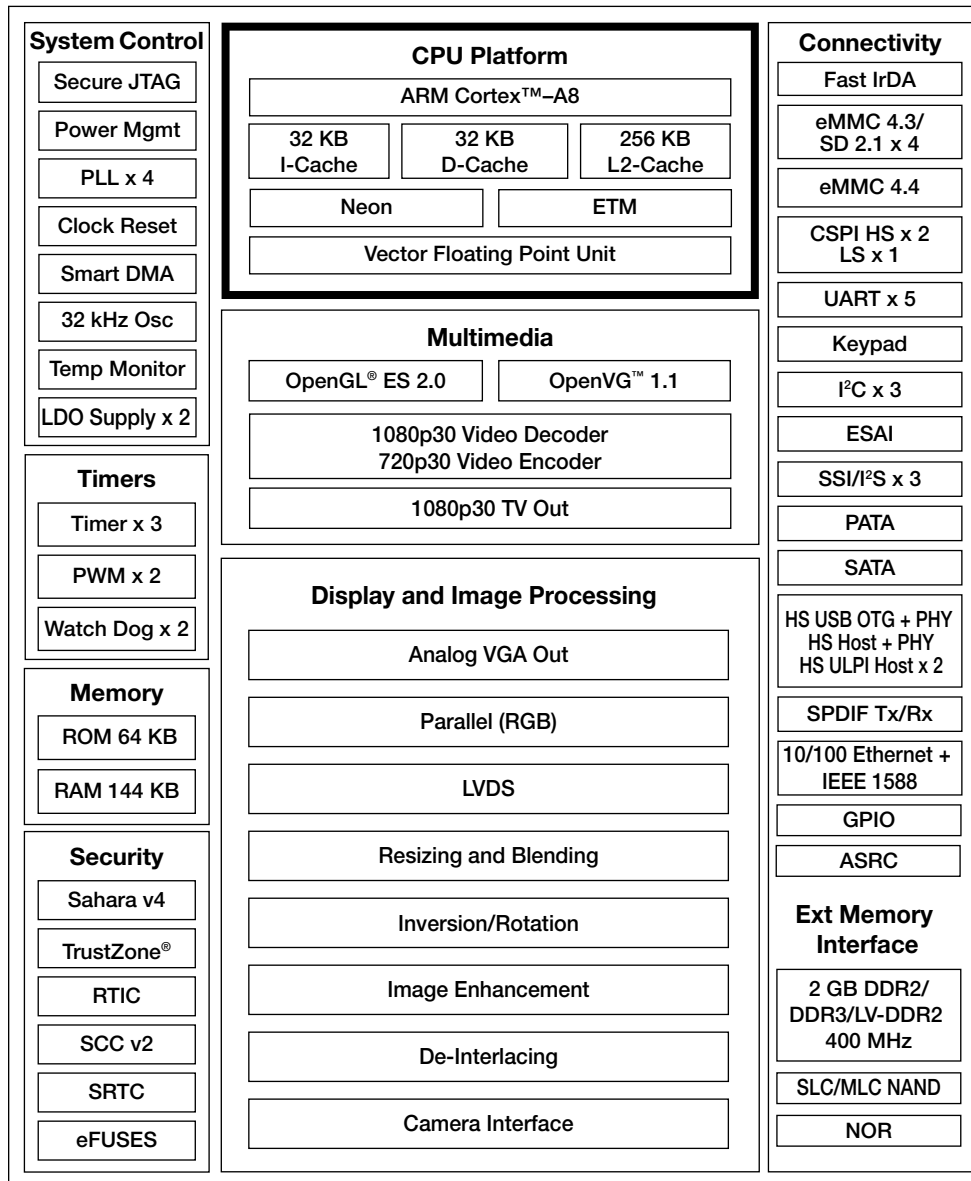
## External Memory Interface

- Up to 2GB DDR2 and DDR3 SDRAM, 16/32-bit, 400 MHz
- SLC/MLC NAND flash, 8/16-bit

## Advanced Power Management

- Multiple independent power domains
- Dynamic voltage and frequency scaling

## i.MX535 Applications Processor



- Proprietary power gating

## Connectivity

- High-Speed USB 2.0 OTG with PHY
- High-Speed USB 2.0 Host with PHY
- Two additional High-Speed USB controllers
- Wide array of serial interfaces, including SDIO, SPI, I<sup>2</sup>C and UART
- I<sup>2</sup>S and S/PDIF audio interfaces
- 10/100 Ethernet controller
- PATA
- SATA

## 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

## General

- 19 mm x 19 mm, 0.8 mm pitch  
TEPBGA-2 package
- 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 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.MX535 processor provides an integrated 3-D graphics processing unit that provides an incredible 33 Mtri/sec and effective 800 Mpix/sec (with overdraw). The 3D unit is used to give a great User experience with accelerated Flash Player 10.1, gaming and advanced User interfaces. In addition, i.MX535 incorporates a 2-D 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 the designer to deliver a feature-rich product at much lower power.

## Increased Security

Because the need for advanced security for mobile and hand-held devices continues to increase, the i.MX535 processor delivers hardware enabled security features that support secure e-commerce, digital rights management (DRM), information encryption, secure boot and secure software downloads.

## 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 world-class support and training. For more information, visit [www.freescale.com/alliances](http://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 Windows Embedded Compact, Linux OS, Android OS, Chromium OS and a number of leading RTOSs such as QNX.

## Availability

Currently available for sampling to high-volume consumer customers and will be available through distribution in early 2011. Freescale will also be announcing additional devices based on the i.MX53 technologies that are targeted towards the general embedded and industrial market.

## Development Can Start Now

There are several options for starting development:

- The i.MX51 EVK ([www.freescale.com/imx51evk](http://www.freescale.com/imx51evk)) uses the same ARM Cortex-A8 CPU as the i.MX535 and is available today.
- Freescale will be releasing an i.MX535 development kit. Contact your local sales representative for availability.

## Learn More:

For current information about Freescale products and documentation, please visit [www.freescale.com](http://www.freescale.com).