MXC275-30

Overview

The MXC architecture completely rethinks how a mobile phone chipset platform is designed, providing a 50 percent reduction in design complexity. It is the first architecture for manufacturers to cost-effectively build full featured smartphones with high value applications for the mass market at favorable price and cost points. This unlocks trapped value for suppliers, carriers, developers and consumers alike. The MXC architecture unites digital signal processing, applications processing and multiple connectivity systems into one highly integrated nucleus. This simpler approach removes layers of architectural redundancy, lowers memory requirements and decreases development and manufacturing costs. The MXC275-30 Platform was the first iteration of the MXC architectural vision, a complete solution for EDGE-based smartphones and feature phones.

Freescale's MXC275-30 is the first platform with a true single core modem processor. The single core processor at the heart of the MXC275 platform combines a StarCore™ SC140e DSP operating at up to 208 MHz and an ARM1136™ applications processor core operating at up to 532 MHz. The single core modem performs all of the signaling protocol layers (L1, L2 and L3) for 2.5G and 2.75G standards including GSM, GPRS and EDGE Class 12.

Need for Increased Integration

Early generation analog cell phones consisted of a discrete single microcontroller (MCU) core. The move from analog to digital technology drove the need for a digital signal processor (DSP) core to be added to the architecture. Traditionally, dual core baseband architectures were not designed to support the feature requirements of converged devices such as smartphones. As a result, today's architectures require the addition of a discrete application processor to the discrete dual core cellular baseband IC, and each processor requires its own memory system of RAM and Flash.

Support for additional wireless networking, such as Wi-Fi® and Bluetooth™ wireless technology, requires additional modules for each function. These include radio transceivers, digital basebands, RAM and Flash within the module. This approach yields a system architecture with at least three or as many as six CPUs, each with its own dedicated memory system, peripherals, clock generator, reset circuit, interrupt controller, debug support and interprocessor communications software.

MXC: First Single Core Modem

The MXC architecture is not a rehashing of these existing architectures, but a rethinking of smart mobile technology. It brings together, in a single core, the communications processing functions and essential building blocks found in our Innovative Convergence™ cellular platforms, our local connectivity RF technologies and our i.MX application processors.

This applications processing technology is integrated into the chip with a shared memory system and shared peripherals. This eliminates the need for an external, additional applications processor, thus reducing cost. This shared memory approach enables more efficient interprocessor communication, resulting in higher performance, exceptional power management and reduced complexity.

Although combined, there is strict separation between the communications and applications processing. This clean separation of modem and applications processing dramatically reduces complexity and simplifies software development. It also helps to reduce part count, size and system costs, while enhancing multimedia and communications processing performance. This separation gives manufacturers complete scalability and flexibility across their portfolios—making it possible to increase functionality, decrease development time and free up critical engineering resources.

freescale™ semiconductor

Platform Benefits

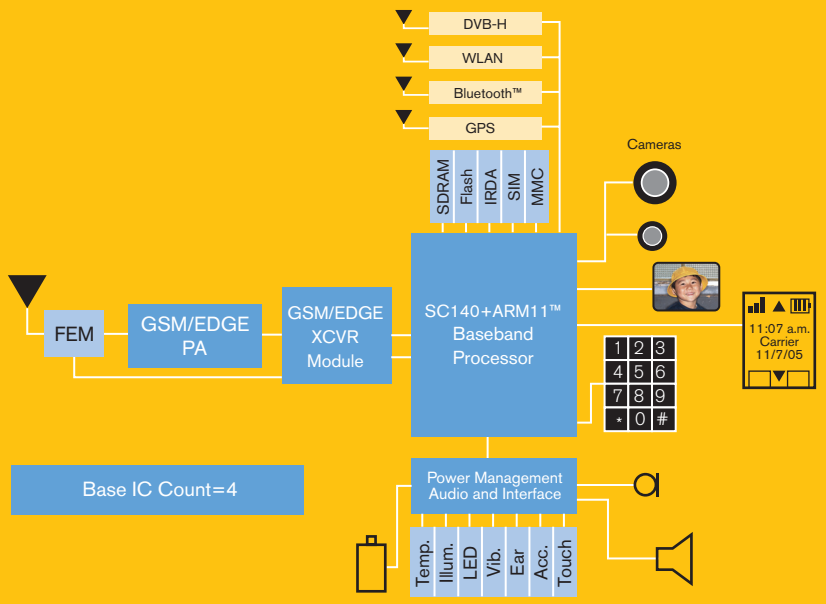
> The capability to converge all protocol processing into a single core drives the entire range of global cellular and local connectivity protocols—potentially eliminating as many as six processor cores and substantially dropping part count and complexity

> An integrated applications processing function allows developers to write once and port their applications to any other device, using a consistent processing core

> Shared memory systems and reduced interprocessor communication systems free up processing capability—reducing part count and streamlining communication

> Hardware acceleration and memory caching techniques dramatically cut power consumption

MXC275-30 MOBILE EXTREME CONVERGENCE PLATFORM



Platform Features

> StarCore™ SC140 DSP up to 208 MHz

> ARM11™ applications processor up to 532 MHz

> Quad-band GSM 850/900/1800/1900 MHz

> GERAN data rates (max)—DL 236 Kbps, UL 118 Kbps

> GPRS/EGPRS (EDGE) slot up to Class 12 (4d/4u)

> Support of DTM Class 5-11

> Octal speech

> DigRF interface support

> AMR-NB, HR, FR and EFR vocoders

> Hardware Encryption of A5/1, A5/2, A5/3 and A5/4

> Optimized for open operating systems (OSs) like Linux® and Symbian™ without the addition of any processor or accelerator

> Hardware acceleration for GPRS ciphering algorithm GEA/1, GEA/2, GEA/3 and GEA/4

> Single Antenna Interference Cancellation (SAIC) for GMSK

> Secure boot

> Run-Time Integrity Checker (RTIC)

> Integrated imaging processing unit (IPU) video accelerator

> Wireless connectivity features

- A-GPS (network assisted) interface support
- Bluetooth interface support
- WLAN 802.11a/b/g interface support
- DVB-H interface support

Key Multimedia Features

> Video Playback

- MPEG-4 Decode, CIF 30 fps, 384 Kbps
- H.264 Decode, CIF 30 fps, 384 Kbps
- WMV9 Decode, QCIF 30 fps, 384 Kbps

> Video Capture

- MPEG-4 Encode CIF 30 fps, 384 Kbps
- H. 264 Encode QCIF 15 fps, 128 Kbps

> Video Conferencing

- MPEG-4 CIF 30 fps
- H.263 & MPEG-4 CIF 30 fps decode, QCIF 15 fps encode

> Audio Codecs

- AMR-NB, AMR-WB, AAC, AAC+, MP3 and MIDI

> Other Capabilities

- Push to talk
- See what I see

For more information on our Mobile Extreme Convergence vision, the MXC architecture and our wireless portfolio, including a list of specific MXC architecture features, visit us at **www.freescale.com/mxc**.

Learn More: For more information about Freescale products, please visit **www.freescale.com**.

ARM POWERED

Document Number: MXC27530FS
REV 0

freescale semiconductor