

Freescale Communicator Introducing Freescale's i.MX28 ARM9™ Family

Intelligent integration, unmatched

Communicator Finalization Date: August 3, 2010

Launch Date: Sept 27, 2010



Product Summary

Product Overview Highlights

The new i.MX28 processor family reaches new levels of integration in **ARM9** devices, with **on-chip display, power management and connectivity features**. Easy-to-use tools and software help you design differentiated industrial, automotive and consumer products in less time.

Product Specification Highlights

- On-chip power management eliminates external voltage regulator and ~20 discrete components (save \$2+); Powers other devices in the system; Charge batteries
- Integrated dual 10/100 Ethernet (1588 hardware time stamping) with L2 switch
- Integrated CAN Controller, USB PHY, SD
- WVGA LCD controller with touch screen
- Memory encryption to protect against IP cloning
- Various derivatives to support different feature sets
- Included in Freescale's longevity program to provide supply stability to customers

Targeted Applications

- Smart Energy Gateways/Meters
- HMI (Appliances, Building Control, Security Panels, Printers, Automation)
- Industrial Control
- Portable Medical
- Media Gateways/Accessories
- Automotive Infotainment (Audio connectivity, CAN Gateways)

Development Tools Summary

Freescale offers a feature-rich evaluation kit (EVK) demonstrating the capabilities of the MCIMX28 running embedded Linux and Windows Embedded CE 6.0. The evaluation kit includes support for DDR2, SDIO, USB, CAN, Ethernet and a connector for an add-on 4.3" landscape touchscreen WVGA TFT LCD module. There is one EVK to support both Linux and Windows Embedded CE 6.0 – the kit includes 2 SD cards (one for each BSP) and is configured to boot from SD card. The kit also includes a DVD with "Getting Started" tutorial videos, weblinks to useful information and a Virtual Machine Image (VMWare) for Linux with development tools installed and configured for the i.MX28.

Reference Platform – Home Energy Gateway

The i.MX28 is the main processor in a reference platform developed by Freescale for a home energy gateway (HEG). The HEG reference platform along with an ecosystem of partners is designed to jumpstart customer developments in the areas of demand response, smart management and monitoring of energy consumption in houses and buildings. The cost and size optimized reference platform uses the i.MX28 and supports a full set of connectivity interfaces (Zigbee, Wi-Fi b/g, USB, Ethernet, Sub-GHz ISM radio). Freescale provides schematics, bill of material, design documents and Linux and Windows Embedded Compact 7.0 BSPs at no cost which will be available on www.freescale.com on September 22, 2010. A variety of partners help support this reference platform such as Adeneo for BSP customization/support and board manufacturing (Q4 2010) and Allgo Embedded, Windows Silverlight and QNX (TBD) for HMIs.

Migration Information Summary

The i.MX283 provides a migration option for customers using the i.MX233 but need expanded features such as integrated Ethernet MAC, support for DDR2 and a second USB port.

Product Launch Date: September 27, 2010



Product Overview

The i.MX28 family of multimedia applications processors is the latest extension of Freescale's ARM9™ product portfolio. The i.MX28 integrates display, power management, networking and connectivity features unmatched in ARM9-based devices, reducing system cost and complexity for cost sensitive applications. With optimized performance and power consumption the ultra low power of the i.MX28 is a perfect fit for portable equipment that need to be battery operated and/or fanless. Additionally, many applications require rich user interfaces with high color displays for presented information and user interaction, the i.MX28 delivers this capability with the LCD touch screen controller. Simply said the i.MX28 has all the advantages of ARM plus the enablement you need to design differentiated industrial, automotive and consumer products in less time.

Product Specifications of the i.MX28 Family

► Key Features and Advantages

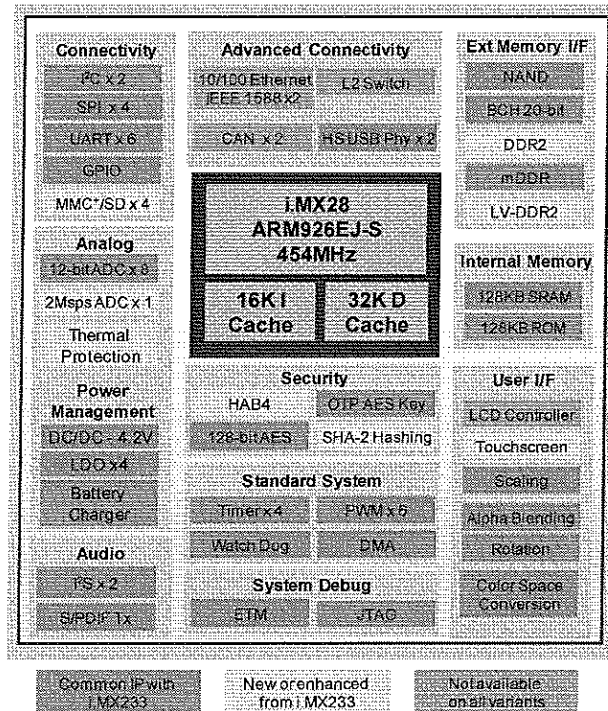
- 454MHz ARM926EJ-S core w/ 32KB Cache
- PMU with high efficiency on-chip DC/DC, supports Li-Ion batteries
- 10/100 Dual IEEE 1588 Ethernet with RMIII support and L2 Switch
- Dual CAN interfaces
- LCD Controller with Touchscreen
- NAND support – SLC/MLC and eMMC 4.4 managed
- Hardware BCH (up to 20-bit correction)
- 200 MHz 16-bit DDR2, LV-DDR2, mDDR external memory support
- Dual High speed USB with embedded PHY
- Up to 8 General purpose 12-bit ADC channels and single 2 Msps ADC channel
- LCD Controller with Touchscreen
- Temperature sensor for thermal protection
- Multiple connectivity ports (UARTs, SSP, SDIO, SPI, I2C, I2S)
- Family of products supporting various feature sets

► Package and Temperature

- 289 BGA 14x14mm .8mm
- -40C to +85C (Industrial, Automotive)
- -20C to +70C (Consumer)

► Availability:

- Alpha Samples: Now
- Production: early Oct 2010 (consumer), end Oct 2010 (industrial)



Industrial and Consumer

Feature	i.MX283	i.MX286	i.MX287
On-chip RAM	128KB	128KB	128KB
Memory Interface	NAND Flash, DDR2, mDDR, LV-DDR2	NAND Flash, DDR2, mDDR, LV-DDR2	NAND Flash, DDR2, mDDR, LV-DDR2
LCD Interface	24-bit, WVGA (800 x 480) 8 overlays, alpha blending, scaling, rotation, color space conversion	24-bit, WVGA (800 x 480) 8 overlays, alpha blending, scaling, rotation, color space conversion	24-bit, WVGA (800 x 480) 8 overlays, alpha blending, scaling, rotation, color space conversion
Touchscreen	Yes	Yes	Yes
Ethernet	X1	X1	x2
L2 Switch	-	-	Yes
CAN	-	x2	X2
12-bit ADC	x3	x5	X8
High Speed ADC	X1	X1	x1
USB2.0	OTG HS with HS PHY x1 HS Host with HS PHY x1	OTG HS with HS PHY x1 HS Host with HS PHY x1	OTG HS with HS PHY x1 HS Host with HS PHY x1
SDIO	x3	x3	x4
SPI	x3	X3	x4
UART	x3	x3	x6
PWM	x3	x3	x6
Security	Y	Y	Y
S/PDIF Tx	-	Y	Y
Package	14x14 0.8mm 289 BGA	14x14 0.8mm 289 BGA	14x14 0.8mm 289 BGA

Automotive

Feature	i.MX281	i.MX285
On-chip RAM	128KB	128KB
Memory Interface	NAND Flash, 16-bit 150MHz DDR2, mDDR	NAND Flash, 16-bit 200 MHz, DDR2, mDDR, LV-DDR2
LCD Interface	-	Yes
Touchscreen	-	Yes
Ethernet	x1	x1
CAN	x2	x2
12-bit ADC	x5	x5
High Speed ADC	x1	x1
USB2.0	OTG HS with HS PHY x1 HS Host with HS PHY x1	OTG HS with HS PHY x1 HS Host with HS PHY x1
SDIO	x4	x4
SPI	x4	x4
UART	x3	x3
PWM	x3	x3
S/PDIF Tx	Yes	Yes
Package	14x14 0.8mm 289 BGA	14x14 0.8mm 289 BGA

Target Applications

- Industrial
 - HUMAN MACHINE INTERFACE (HMI)
 - METERING
 - HVAC
 - BUILDING AUTOMATION
 - ROBOTICS
 - SCALE, MULTIMETERS
 - MULTIFUNCTION PRINTERS
 - SCANNERS
 - POINT OF SALE TERMINALS
 - HANDHELD COMPUTERS, PDA
 - INDUSTRIAL – OTHER
 - SECURITY SYSTEMS – OTHER
 - OTHER TEST – MEASUREMENT
 - MILITARY/AEROSPACE – OTHER
 - HOME ENERGY GATEWAY – Please use this category for ALL oppty's related to the Home Energy Gateway Ref Design
- Automotive
 - TELEMATICS
 - AUTOMOTIVE – OTHER
- Medical
 - PATIENT MONITORING
- Consumer
 - PRINTERS AND SCANNERS
 - MULTIFUNCTION PRINTERS
 - HOME AV COMPONENTS
 - HOME CONNECTED DEVICES
 - REMOTE CONTROLS_HOME AV
 - OTHER HOME AUDIO_VIDEO
 - MULTIMEDIA DEVICES
 - REMOTE CONTROL_ACCESS
 - HUMAN INTERFACE DEVICES
 - OTHER PC_PERIPHERALS
 - LOW END PORTABLE PLAYERS
 - PND_PERSONAL NAVIGATION
 - EBOOKS_EDICTIONARIES
 - PHOTO BOOKS_PHOTOFRAMES
 - OTHER PERSONAL MULTIMEDIA
- Wireless
 - ENTRY TIER DEVICES
 - VOIP PHONE
 - OTHER WIRELESS HANDSET

Suggested Stocking Chart

<i>Part Number*</i>	<i>Package</i>	<i>Suggested Resale*</i>	<i>Qualified Parts Availability Date*</i>	<i>Suggested Stocking Quantity*</i>
<i>PCIMX287CJM4B</i>	<i>289 BGA</i>	<i>\$9.90</i>	<i>October 26, 2010 PC stocking available end of August.</i>	<i>152 Units</i>
<i>MCIMX287CVM4B</i>	<i>289 BGA</i>	<i>\$9.90</i>	<i>October 26, 2010</i>	<i>2*152 Units</i>
<i>MCIMX286DVM4B</i>	<i>289 BGA</i>	<i>\$7.34</i>	<i>October 8, 2010</i>	<i>2*152 Units</i>
<i>MCIMX28EVK</i>	<i>Development Tool</i>	<i>\$399</i>	<i>Sept 27, 2010</i>	<i>10</i>
<i>MCIMX28LCD</i>	<i>Development Tool</i>	<i>\$199</i>	<i>Sept 27, 2010</i>	<i>10</i>

*Items that must be included in the chart. You may change column titles if they do not have an asterisk by the heading – however, please ensure the chart contains only the information required. Please highlight the parent device and mention it first (distributors need this information so that their customers can begin their designs even if the derivatives are not available immediately for prototype work.

Because of an order from the United States International Trade Commission, BGA-packaged product lines and part numbers indicated here currently are not available from Freescale for import or sale in the United States prior to September 2010: MC IMX28 Part Numbers

Product Specification Chart

Freescale Support Ecosystem

Development Tools

- MCIMX28EVK Evaluation Board
 - Basic Description: i.MX28 Evaluation Kit
 - Availability: Sept. 27, 2010
 - Pricing: \$399 Resale
 - Purchasing Information:
 - Recommended stocking quantities: 10
- MCIMX28LCD
 - Basic Description: Add-on LCD Module – 4.3" touchscreen WVGA TFT LCD
 - Availability: Sept 27, 2010
 - Pricing: \$199 Resale
 - Purchasing Information:
 - Recommended stocking quantities: 10
- Tools/Probes/STAGs/JTAGs - None

Software

- Operating Systems
 - Basic Description: Linux, Windows Embedded CE 6.0
 - Availability: September 27, 2010
 - Pricing: No cost
 - Purchasing Information: Free, simple download from external web (www.freescale.com/imx28evk)
- Software Codecs
 - Basic Description: Multimedia codecs
 - Video Decoders: MPEG-4, H.264
 - Audio Decoders: MP3, WMA10 M0a/M0b, AAC
 - Availability: September 27, 2010
 - Pricing: No cost
 - Purchasing Information: Free, simple download from external web (www.freescale.com/imx28evk)
- Software Stack
 - Basic Description: IXXAT's IEEE 1588 Stack
 - Availability: September 27, 2010
 - Pricing: No cost
 - Purchasing Information: Provided as demo binary code. For actual implementation, please consult IXXAT (see below in Third Party Vendors Support Ecosystem)

Third-Party Vendors Support Ecosystem

Development Tools

- Innovate Solutions Evaluation Board
 - Basic Description: Low cost open source development board
 - Availability: September 27, 2010 (boards, software, board schematics and documentation)
 - Pricing:
 - Base card + WLAN module - \$149
 - Base card + 4.3" TFT LCD Display - \$199
 - WLAN module - \$24
 - Purchasing Information: www.innovatesolutions.net, www.farnell.com
- Abatron
 - Basic Description: JTAG Probe



- Availability: TBD
- Pricing: Call for Pricing
- Purchasing Information: www.abatron.ch
- ARM Realview & RVI
 - Basic Description: Linux and IDE Toolchain Trace/JTAG Probe
 - Availability: Now
 - Pricing: Call for pricing
 - Purchasing Information: www.ARM.com
- CodeSourcery
 - Basic Description: IDE Toolchain
 - Availability: Sept 27, 2010
 - Pricing: Pro Version \$2799, Standard Version \$1599, Personal Ed \$399, Academic Version \$99 per license.
 - Purchasing Information: www.Codesourcery.com
- IAR
 - Basic Description: IDE Toolchain
 - Availability: Q4 2010
 - Pricing: Call for pricing
 - Purchasing Information: www.IAR.com
- Lauterbach TRACE32
 - Basic Description: JTAG Probe
 - Availability: Sept 27, 2010
 - Pricing: Call for pricing
 - Purchasing Information: www.lauterbach.com
- Macraigor Systems USBWiggler, USB2Demon
 - Basic Description: JTAG Probe
 - Availability: September 27, 2010
 - Pricing: USBWiggler - \$150, USB2Demon - \$750
 - Purchasing Information: www.macraigor.com
- Segger J Link
 - Basic Description: JTAG Probe
 - Availability: October 2010
 - Pricing: \$299
 - Purchasing Information: www.Segger.com
- TimeSys
 - Basic Description: IDE Tool Chain
 - Availability: Q4 2010
 - Pricing: TBD
 - Purchasing Information: TBD

Software

- Operating Systems - Allgo Embedded
 - Basic Description: Android OS
 - Availability: Q4 2010
 - Pricing: Contact Allgo for various options, aji@allgosystems.com
 - Purchasing Information: www.allgosystems.com
- Operating Systems – MQX
 - Under consideration
- Software Stacks - IXXAT
 - Basic description: IEEE 1588 Hardware Time-Stamping Stack
 - Availability: September 27, 2010
 - Pricing: Consult IXXAT
 - Purchasing information: www.ixxat.com

Modules



- Digi
 - Basic Description: System on Module (SOM)
 - Availability: In planning
 - Pricing: Q4 2010
 - Purchasing Information: TBD
- Karo
 - Basic Description: System on Module (SOM)
 - Availability: October 2010
 - Pricing: SRP: €59 for SOM, €699 for Starter Kit V
 - Purchasing Information: www.karo-electronics.de
- SECO
 - Basic Description: System on Module (SOM) with Q7 support
 - Availability: Q4 2010
 - Pricing: TBD
 - Purchasing Information: TBD
- TQ Systems
 - Basic Description: System on Module (SOM)
 - Availability: Q4 2010
 - Pricing: TBD
 - Purchasing Information: TBD

Migration Information

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Available Documentation

Document Type	Document Name
Reference Manuals	i.MX28 Reference Manual i.MX28 Family Reference Manual
Datasheets	i.MX28 Consumer & Industrial Datasheet i.MX28 Automotive Datasheet
Application Notes	i.MX28 Power Management Unit Application Note i.MX25-iMX23-iMX28 Comparison App Note
Errata	i.MX28 Errata
Evaluation System	MCIMX28EVK Quick Start Guide MCIMX28EVK Linux BSP Reference Manual MCIMX28EVK Linux BSP User's Guide MCIMX28EVK Linux BSP Release Notes MCIMX28EVK Linux MM Codecs Release Notes Linux Multimedia Framework User Guide MCIMX28EVK WinCE BSP Reference Manual MCIMX28EVK WinCE BSP User's Guide MCIMX28EVK WinCE BSP Release Notes MCIMX28EVK WinCE MM Codecs Release Notes
White Papers	
Fact Sheets	i.MX28 Fact Sheet, i.MX28 Automotive Fact Sheet, i.MX28 EVK Fact Sheet

Most of the documentation for this product can be found within the product summary page on www.freescale.com/imx28 or through www.freescale.com/imxtools (website will go live on Sept 27, 2010)

For more information on the part numbers, please check CIA at
<http://www.freescale.com/go/190163550> - overview presentation
<http://www.freescale.com/go/218818860> - technical information

or contact Sujata Neidig at sujata.neidig@freescale.com with any questions.

