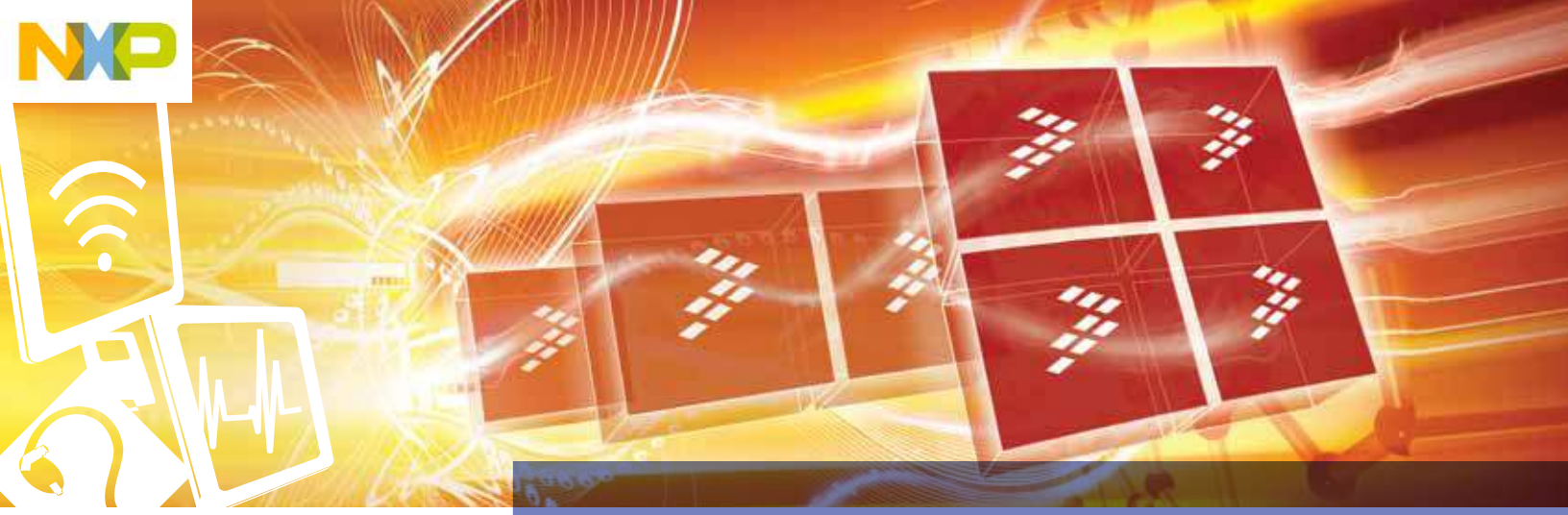


i.MX Applications Processors

i.MX50 Family of Applications Processors

Target Applications

- eReaders
- Portable navigation devices
- Outdoor and digital signage
- Patient/client monitoring
- Home and office automation
- DECT phones

Streamlined Performance

Overview

From the family that introduced the market-leading i.MX508 applications processor for eReaders, the expanded i.MX50 family is the latest addition to Freescale's ARM® Cortex™-A8 product portfolio. The i.MX502, i.MX503 and i.MX507 derivatives are targeted toward a variety of portable applications and offer support for electronic paper display (EPD) in addition to LCD. Along with its companion Freescale MC34708 power management IC (PMIC), the i.MX50 family delivers a low-power, streamlined solution for customers seeking ARM Cortex-A8 performance levels with flexible design features.

Electronic Paper Displays

The i.MX50 family consists of the first ARM based device with an integrated EPD hardware interface.

EPDs offer the following advantages:

- High resolution from any angle
- Sunlight readability
- Mimics the appearance of ink on paper
- Flexible
- Light weight
- Durable
- Extremely low power
- Replaces paper in many applications

i.MX50 Key Features

- ARM Cortex-A8 800 MHz performance at 1.0V with NEON™ coprocessor
- Enhanced LCD controller interface supporting up to 1400 x 1050 resolution
- EPD controller for E Ink® panels
- Enhanced pixel processing pipeline (ePxP) to handle post display frame pre-processing in hardware with minimal memory overhead
- OpenVG™ 2-D graphics acceleration for enhanced User Interfaces (UIs)
- LP-DDR2 DRAM support for next-generation, low-power and high-speed memories, in addition to mDDR and DDR2
- Support for SD, SDIO and MMC based media
- Static bus interface (WEIM) to support NOR and other memory mapped devices
- Dual full duplex I²S interfaces for audio connectivity
- Three I²C interfaces and three SPI interfaces for peripheral control
- RAW NAND flash support with up to 32-bit ECC-level protection
- Dual USB controller and PHYs (OTG/Host)
- 10/100 Ethernet
- Advanced security features such as high-assurance boot, DRM support and AES encryption/decryption

Benefits

Optimized Performance

The i.MX50 is built around the ARM Cortex-A8 core running 800 MHz with a NEON coprocessor and 256 KB of L2 cache. With OpenVG and ePxP hardware, customers can benefit from enhanced 2-D graphics and image processing with little CPU overhead. The 266 MHz memory bus bandwidth allows for faster throughput and memory transfers, improving overall system performance.

Design Flexibility

The i.MX50 family supports both LCD and EPD displays to allow customers the flexibility in designing their system. The supported memories include

mDDR, DDR2, LP-DDR2, SD/MMC and raw-NAND with up to 32-bit ECC. Connectivity features like dual USB with PHY and Fast Ethernet controller allow customers to connect to the interfaces they need.

Power Efficiency

The Freescale MC34708 PMIC is optimized for use with the i.MX50 and helps maximize power efficiency and battery life while supporting higher levels of integration to minimize board space and cost. The MC34708 provides dual phase switchers for the i.MX50 core and memory, and USB/UART/audio switching for the mini/micro USB connector which reduces the connector count for a more compact design. A switching charger with dual inputs enables faster charging from a current limited source, such as USB and the dual path enables power on even when the battery has died. The MC34708 supports the universal charging standard to enable the selection of the optimal charging profile for the given charger source.

Freescale PMICs are exclusively designed to work with our i.MX processor family, providing optimized feature sets for specific applications. Freescale's proven combined solutions are available as reference designs with full board support packages (BSPs) and backed by integrated technical support to offer quality solutions that get our customers to market faster.

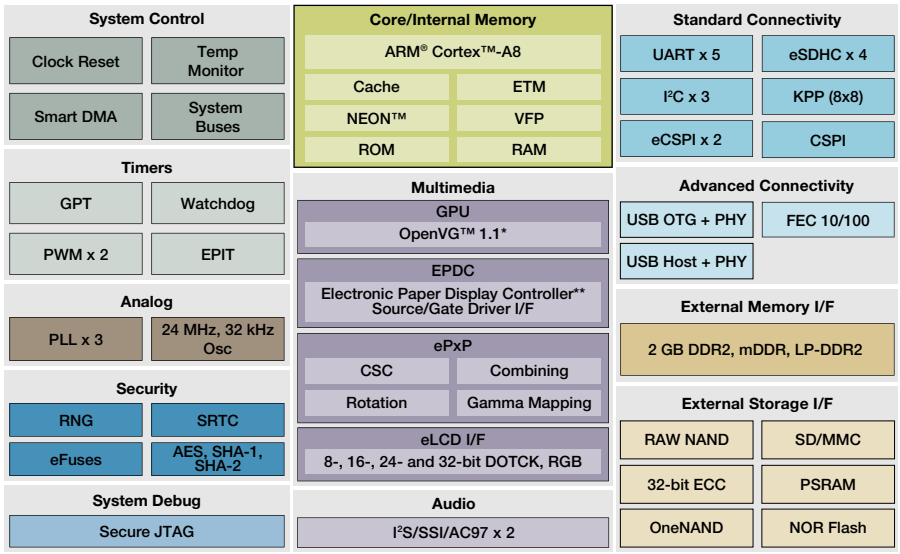
The i.MX50 family also includes power saving modes and techniques such as state retention power gating (SRPG) and dynamic voltage frequency scaling (DVFS) and has five independent power domains to allow for low power modes. The i.MX50 solution provides the performance today's customers need, while maintaining low power consumption.

Simplified Development

The i.MX50 family is supported with Freescale hardware and software tools. The i.MX50 EVK is the main development board that customers can use to develop, debug, and demonstrate their next-generation product based on the i.MX50 and MC34708. With a comprehensive software suite, including Linux® and Android™ BSPs, customers can jump start their design and reduce time to market. Visit **freescale.com/iMX50EVK** for more information on this development platform.

Additionally, Freescale also offers the Smart Application Blueprint for Rapid Engineering (SABRE) platform for eReaders. More information on this reference design can be found at **freescale.com/iMXSABRE**.

i.MX50 Block Diagram



*i.MX503 and i.MX508 Only **i.MX507 and i.MX508 Only

Family Comparison

Feature	i.MX502	i.MX503	i.MX507	i.MX508
LCD I/F	Y	Y	Y	Y
EPD Controller	N	N	Y	Y
OpenVG	N	Y	N	Y
Ethernet	Y	Y	Y	Y
.8mm package	Y	Y	Y	Y
.5mm package	N	N	N	Y
Part Numbers	MCIMX502CVM8B	MCIMX503CVM8B	MCIMX507CVM8B	MCIMX508CVK8B
				MCIMX508CVM8B

Ordering Information

Part Number	Description	MSRP (USD)
MCIMX50EVK	i.MX50 Evaluation Kit (EVK)	$499
MCIMX28LCD	LCD board (4.3" WVGA touch screen)	$199
MX50EBOOKDC1	EPD board	$499
MCIMX50SABRE	SABRE platform for eReaders	$998

For current information about Freescale products and documentation, please visit freescale.com/iMX50. Join fellow i.MX developers online at imxcommunity.org—an active community of open source developers.

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