

i.MX50 Applications Processor

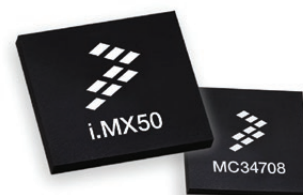
SABRE Platform for eReaders Based on i.MX50 Applications Processor



Overview

Freescale delivers the next installment in the Smart Application Blueprint for Rapid Engineering (SABRE) series of market-focused reference designs: the SABRE platform for eReaders based on the market-leading i.MX508 applications processor. The i.MX508 is the first system-on-a-chip (SoC) designed specifically for eReaders that incorporates a high-performance 800 MHz ARM® Cortex®-A8 core and an integrated display controller certified by E Ink® to drive current and next-generation electronic paper display (EPD) panels.

The SABRE platform for eReaders provides a reference design enabling EPD display, touch control, audio playback as well as the ability to add WLAN, a 3G modem or Bluetooth® technology. Additionally, the SABRE platform for eReaders was designed to facilitate software development with the ultimate goal of faster time to market through the support of both Linux® and Android™ operating systems.



Platform Features

Processor	<ul style="list-style-type: none"> • 800 MHz Cortex-A8 core-based Freescale i.MX50 applications processor
Power Management	<ul style="list-style-type: none"> • Freescale MC34708 PMIC
Memory	<ul style="list-style-type: none"> • 512 MB Double Data Rate2 Mobile (LPDDR2) DRAM memory • Socket for raw NAND flash (48-TSOP) • Footprint for managed NAND (eMMC/eSD) • SPI flash • Two Secure Digital (SD)/multimedia card (MMC) sockets
Display Board	<ul style="list-style-type: none"> • E Ink electronic paper display (EPD) board • MMA8450QT three-axis digital accelerometer
Audio	<ul style="list-style-type: none"> • Freescale SGT5000 audio codec • Audio HP jack • External speaker connection • Microphone
Connectivity	<ul style="list-style-type: none"> • USB host connectors • Micro USB OTG connector • Ethernet (10/100T) connector • SIM card socket • Mini PCIe connector
Debug	<ul style="list-style-type: none"> • JTAG connector • One console UART

Freescale's Integrated EPD Hardware Controller

The integrated EPD controller is a hardware implementation of the external E Ink EPD controller which is used in most eReaders on the market today. The integrated EPD controller removes the cost of the external hardware controller and its associated memory. By removing this cost, customers can bring a Cortex-A8 core-based i.MX508 solution to market at lower costs than existing solutions. Freescale's E Ink EPD controller takes advantage of the enhanced pixel processing pipeline (ePxP) unit inside the i.MX508 for post rendering activities such as color space conversion, combine and rotate.

The EPD controller supports many features required for next-generation eReaders such as:

- EPD TFT resolutions of 2048 x 1536 at 106 Hz refresh rate or 4096 x 4096 at 20 Hz
- Up to 5-bit pixel grayscale representation
- Color EPDs from E Ink
- Up to 16 concurrent updates with partial update support
- Automatic collision handling when used in conjunction with the i.MX driver

With features such as these, an eReader can be developed that allows for faster updates, crisper response times and an overall better user experience.

Efficient Performance with Low Power

eReaders require a different processing model than most portable systems. The eReader benefits from very quick image processing and updating of the panel in order to go into suspend state as fast as possible. With this approach battery life can be extended extensively, up to a month, compared to many portable devices. The SABRE platform for eReaders is based on the low-power i.MX508 applications processor, which has multiple processing units to speed up performance including an Cortex-A8 core, a vector floating point unit, a 2D graphics accelerator and an ARM NEON™ SIMD media accelerator. The 2D acceleration is provided by an OpenVG™ 1.1 hardware accelerator which renders text, lines and images for applications such as scrolling text and maps.

The Freescale MMA8450QT three-axis digital accelerometer is used to detect motion and orientation. Like much of our broad sensor portfolio, this sensor provides energy efficiency through architectural optimization and exceptional duty cycling.

The Freescale MC34708 power management IC (PMIC) integrates a variety of discrete functions into a single device, helping to reduce the size and weight of the eReader while extending battery life through innovative power management and control features.

Software and Tools

The SABRE platform for tablets comes pre-installed with a Linux operating system flashed on an SD card. Freescale also offers an Android board support package (BSP) available through our website. More information is available at freescale.com/iMX50tools.

Ordering Information

Part Number	Description	MSRP (USD)
MCIMX50SABRE	SABRE platform for eReaders based on i.MX50	\$998

SABRE Platform



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

Freescale, the Freescale logo and the Energy Efficient Solutions logo are trademarks of Freescale Semiconductor, Inc., Reg. U.S. Pat. & Tm. Off. All other product or service names are the property of their respective owners. ARM and Cortex are registered trademarks of ARM Limited (or its subsidiaries) in the EU and/or elsewhere. All rights reserved. NEON is a trademark of ARM Limited (or its subsidiaries) in the EU and/or elsewhere. All rights reserved. © 2011, 2014 Freescale Semiconductor, Inc.

Document Number: IMX50ERDRFS REV 1