Intel® StrongARM® SA-1110/SA-1111 Development Platform

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Product Highlights

The SA-1110 reference design provides a comprehensive and feature-rich development environment:

- Small (2.75" x 5") form factor board designed for handheld devices; expansion headers can be sheared-off to further reduce size
- Highly integrated SA-1110 microprocessor features a 100 MHz memory bus and a flexible memory controller that provides high-bandwidth support for SDRAM, SMROM, and variable-latency I/O devices. The 32-bit microprocessor includes the Intel SA-1 core, 16 KB instruction cache, 8 KB write-back data cache and a 512 KB mini-cache for enhanced performance.
- Support for 64 Mb, 128 Mb or 256 Mb SDRAMs in a 54-pin TSOP footprint. System partitioning enables the system to support up to 103 MHz SDRAM
- On-board flash memory support for 64 Mb or 128 Mb socketed fast-page mode 3V Intel® StrataFlash™ memory
- Multiple probe points for access to key signals
- Extremely flexible circuit routing employing complex programmable logic devices (CPLDs) that allow logic to be reconfigured at run time
- Direct support for Sharp 3.9" 320 x 240 reflective TFT color LCD and backlight inverter circuit
- Radio interface supports native CDMA and features adapters for GSM digital radio and Bluetooth wireless connectivity modules
- Multimedia Communications Port (MCP) supports POTs soft modem and mono audio
- Serial Peripheral Interface (SPI) supports high-quality stereo audio capture and playback; stereo headphone and telephone headset jacks, two microphones and one built-in speaker
- USB endpoint supports PC sync and power
- Built-in TV encoder supports NTSC/PAL composite, S-video, RGB
- InViso* micro display interface support for low-power private color viewing
- IrDA port and transceiver capable of transfers up to 4 MB/sec
- DAA phone interface and codec for V.90 soft modem, speaker phone and voice dialing
- 1-cell Lithium ion battery with built-in charger, battery temperature and voltage monitoring and over-discharge battery lockout
- Connections for SMBus smart battery system
- 2 fully buffered Xbus expansion headers for mounting the optional SA-1111 daughter board, or third-party graphics boards

Product Overview

The SA-1110/SA-1111 development platform is designed for fast time-to-market development of handheld, palm-size devices, wireless and tethered Internet appliances. Target applications include smart/3G multimedia phones, PC companions, palm-size devices, internet tablets, vertical application devices, global positioning systems (GPS), handheld game consoles and digital audio products.

The development platform is a modular and flexible multiple board set that includes the SA-1110 development board, an optional SA-1111 companion chip development module in the form of a daughter card, and an optional third-party graphics development board.

The SA-1110 development board may be used as a standalone reference design for a palm-size device. It supports from 32 to 64 MB of 100 MHz SDRAM memory and features 32 MB of page-mode Intel StrataFlash memory, a 3.9-inch low-power color reflective LCD and touch screen, NTSC/PAL video out, IrDA up to 4 MB/sec and support for cell phone modules and a full JTAG debug port. Device interfaces are easily implemented via programmable complex programmable logic devices (CPLDs) on the board.

Product Overview (continued)

Applications for the multiple-board SA-1110 development platform include docking MP3 stereo audio record and playback, MP4 video streaming and playback, handwriting recognition, speech recognition/text-to-speech, Web browsing, VoIP with voice-dialing and speakerphone, TV receiver applications, and many others. System packaging of the SA-1110 development board supports the easy integration of LCD, touch screen, batteries, and an optional front light. The board supports two 140-pin fully buffered expansion (Xbus) headers for the SA-1111 development module and graphics accelerator daughter boards.

The SA-1110 development board and the SA-1111 development module are available from Intel as components of development kits.

Flexible, Scalable Flash Memory Support

The SA-1110 development board features 64 Mb or 128 Mb socketed fast-page mode 3V Intel StrataFlash memory, in 16 MB or 32 MB flash banks.

The SA-1110 development board also supports one Type II Compact Flash (CF) socket, when no daughter boards are present. CF devices can support an Ethernet interface, high-speed modem, wireless 2-way paging and micro disk drives up to 340 MB.

Software

The SA-1110 development board supports a robust software environment:

- Real-time operating systems include Nucleus+*, WindowsCE*, OS-9*, ThreadX*, µCOS*, pSOS*, C Executive*, AMX*, Linux*, MQX/Kernel*, EPOC*, Supertask!*, VXWorks*, JavaOS*, RTXC*, and OSE*.
- Software tools are available from ARM®, Cygnus, Green Hills, ISI, Metaware, Microsoft, Microware, Wind River, and others.

CPLDs for Fast Time-to-Market Designs

The CPLDs can be programmed to provide a variety of hardware functions and are pre-programmed to support sample designs. The in-circuit programmability of the CPLDs enables programming at run-time to support a variety of hardware needs, enabling system developers to tailor the design to their specific application. The ability to quickly port a new hardware application to an existing well-supported platform allows rapid deployment of software development platforms for end-user applications.

Optional SA-1111 Development Module

The optional SA-1111 companion chip development module adds these features:

- Up to 64 MB of expansion SDRAM
- Up to 32 MB of expansion flash memory
- Philips* UDA1341 or AC97 codec
- 10 Base-T Ethernet controller
- USB host port
- 1 PCMCIA and 1 Compact Flash socket
- Matrix keyboard controller
- 5 x 4 keypad for phone or diagnostics
- 2 Comm port connectors
- 2 PS2 ports
- Logic analyzer headers
- 32-bit LED display

SA-1110 Development Platform Third-Party Graphics Accelerators

The SA-1110 Development Board supports the MediaQ* MQ-200 LCD/CRT Graphics Display System. This accelerator supports the following features:

- 2 MB of embedded DRAM
- 128-bit graphics engine
- Display resolutions:
  - 800 x 600 32-bpp for single/dual-scan display (CRT, TFT, S-STN, DSTN)
  - 1024 x 768 16-bpp for single/dual-scan display (CRT, TFT, S-STN, DSTN)
  - 1280 x 1024 8 bpp for CRT display
- Simultaneous and dual-image views on LCD and CRT
- 2D Graphics Acceleration Engine with drivers for Windows powered* systems
- Dual 64 x 64 hardware cursors

The SA-1110 can also be used with Epson's SED 1356 and ITE's 8182 graphics controllers. For more information please contact them directly.

SA-1111 Development Module

The optional SA-1111 Multimedia Development Module is shipped with the following items:

- Matrix keyboard and cable
- 4x5 Keypad and cable
- PCMCIA-to-CF adapter
- 5-volt 2-amp / 3.3-volt 2-amp power supply 110-volt brick
- 5-volt 2-amp / 3.3-volt 2-amp power supply 220-volt brick
- Power supply cable
- PS/2 and RS232 cables
- Assembly hardware
- Documentation

SA-1110/1111 Development Kit

This kit contains both the SA-1110 Development Board and the SA-1111 Development Module.

SA-1110 Development Board

The SA-1110 Development Board is a standalone reference design shipped with the following items:

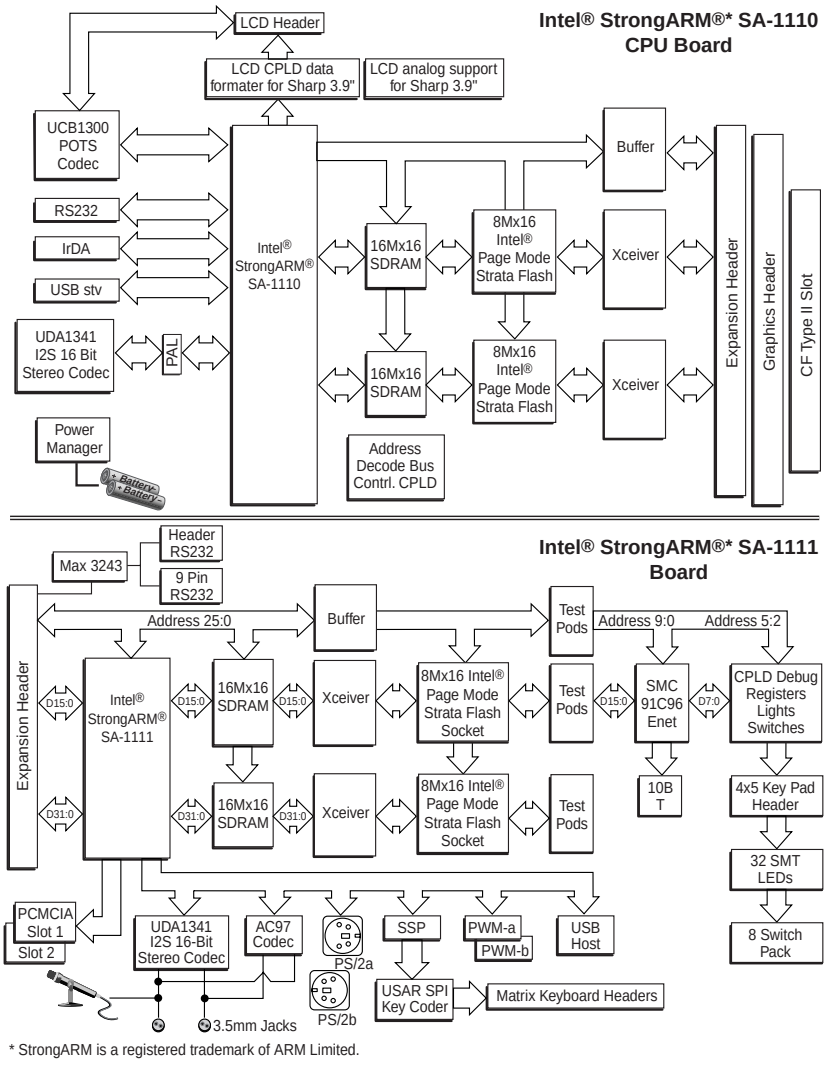
- Sharp 3.9" LCD
- Touch screen
- 2 Electret mics
- Mini speaker
- Stereo headset
- Telephone headset
- Ethernet CF card
- 6-volt 2.5-amp universal input brick
- Battery pack assembly
- Cables assembly hardware
- CD-ROM with drivers, software applications, app notes and documentation
- CD-ROM with 60-day trial ARM software development kit

To Order Now

Contact an authorized Intel distributor for complete ordering details.

- To order the SA-1110 / SA-1111 Development Kit, specify part number SA111XDEVKIT 825204
- To order the SA-1110 Development Board, specify part number SA1110DEVBD 825202
- To order the SA-1111 Development Module, specify part number SA1111DEVMOD 825203

SA-1110/1111 Development Board Block Diagram



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