Intel® StrongARM® SA-1100 Microprocessor Evaluation Platform

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Product Overview

The Intel® StrongARM® SA-1100 Evaluation Platform simplifies the quick time-to-market development of both hardware and software. In addition to providing developers with a flexible design verification vehicle for the SA-1100 microprocessor, it provides a development environment that enables software testing prior to the availability of hardware systems. The platform simplifies code generation and benchmarking, simulation of processors and memory, and fast and efficient debugging.

The board includes the SA-1100 processor, onboard memory (SRAM, DRAM, Flash, and ROM), LCD panels, touch screen, keyboard, audio accessories (telephone jack, microphone, and speaker), PCMCIA connector, serial I/O interfaces (including a USB port, IrDA infrared support, SDLC port, and two UART ports) and logic analyzer connectors.

The SA-1100 Developers Kit enables designers to flexibly select portions of the board and use them with SA-1100 schematics to accelerate product designs. The kit is complete with detailed, royalty-free application examples.

Product Highlights

The Platform at-a-Glance: High-performance Low-Power StrongARM SA-1100 Microprocessor

The SA-1100 microprocessor is a high-performance, low-power integrated processor configured to run at speeds ranging from 133 MHz to 200 MHz. The SA-1100 packaging is a 208-pin TQFP. It is attached to the board via a ZIF socket.

Memory System

The SA-1100 evaluation board also uses both SRAM and DRAM on the same board, and the selection is switch-controllable.

- The platform features a total of 16 MB of 60 ns. EDO DRAM configured in 4 banks of 4 MB each, with a data bandwidth of approximately 100 MB/s
- The board includes 512 KB of SRAM
- On-board ROM consists of flash memory with the WE# signal tied high

Flexible PCMCIA Configurations

The PCMCIA implementation on the SA-1100 evaluation board provides optimum flexibility while supporting one- or two-socket PCMCIA configurations. The PCMCIA portion of the logic supports the voltage switching required for 3.3-V and 5-V cards as well as “hot insertion” of cards with power on.

A low-power CPLD supports most of the Boolean logic required by a dual-socket implementation. The CPLD also provides an additional level of protection by controlling drive-enables to and from the PCMCIA cards. The board also includes a dual PCMCIA socket, card cage, and power controllers for the card and socket interface.

External Register

An external register controls the application of 12V and 5V to the PCMCIA card and monitors the voltage sense pins.

Clocks

The SA-1100 microprocessor uses the 32.768-kHz crystal, 3.6874-MHz crystal, oscillators, and coax connectors to pulse generators. The SA-1100 evaluation board can also accept clock sources from test equipment such as clock generators.

Product Highlights (continued)

LCD Panels

The SA-1100 Evaluation Board is designed to operate with two different LCD panels: Kyocera KCS3224ASTT-X1 and Sharp LQ64D341. Boards are shipped with the Kyocera passive color display panel. A Sharp panel connector is provided for the functional testing of the SA-1100 when driving TFT panels.

Audio

The SA-1100 Evaluation Board includes a telephone jack and a direct access arrangement (DAA) approved for North America and Japan, a microphone, and a speaker.

For debugging purposes, the board includes a 7-segment LED, along with two discrete LEDs that indicate board and software status. Two footprints on the board allow either a Philips UCB1200 or Cirrus CS4271 to interface to the speaker, telecommunication functions, touch screen, and the microphone.

Touch Screen

The SA-1100 evaluation board touch-screen panel is used for data input. It is connected to either the UCB1200 or the CS4271.

Keyboard Interface

The SPI protocol on the SA-1100 interfaces to a USAR Systems UR5HCSPI-06-FB keyboard controller on the SA-1100 Evaluation Board. The controller then interprets input from the Fujitsu FKB1406 keyboard.

Serial I/O Interfaces

The following types of serial I/O interfaces are available:

- A USB "device" port, with supporting circuitry
- IrDA support provided by a TFDS6000D dual-speed IrDA transceiver (115 kb/s or 4 Mb/s)
- A synchronous data link controller (SDLC) port configuring AppleTalk,* GeoPort,* or differential RS-422 type interface
- Two universal asynchronous receiver-transmitter (UART) ports support computer-to-computer connections only (no modem)

Evaluation Logic

Six logic analyzer connectors are provided for observing all SA-1100 signals. Software is provided to facilitate the connection of a Tektronix TLA 711 Logic Analyzer to the logic analyzer connectors on the SA-1100.

Hardware Requirements

The following equipment is required to use the SA-1100 Evaluation Platform:

- A computer running a terminal emulator or ARM® tool debugger (not included)
- A null modem cable (included)
- A power supply (included)

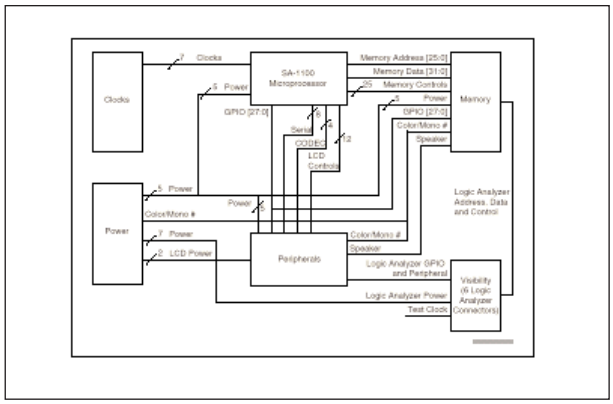
Software

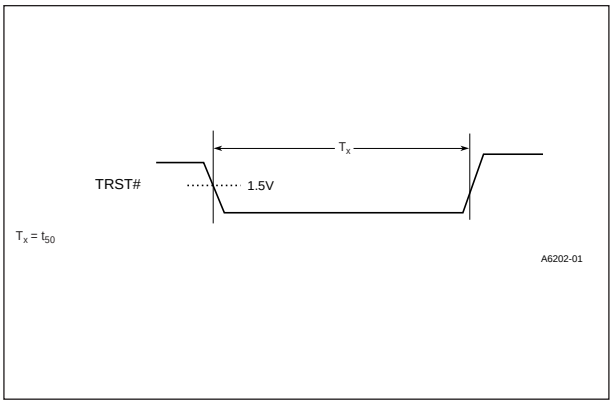
An ARM software developer's toolkit (SDT) (containing source code and tool debugger) or a third-party tool ported to the StrongARM CPU is required to test the SA-1100 platform.

The SA-1100 Evaluation Platform supports a robust software environment:

- Real-time operating systems include Nucleus+, Chorus OS, Inferno, WinCE, OS-9, ThreadX, µCOS, pSOS, C Executive, AMX, Linux, MQX/Kernel, EPOC32, Supertask!, VXWorks, JavaOS, RTXC, and OSE
- Software tools are available from ARM, Cygnus, Green Hills, ISI, Metaware, Microsoft, Microware, Wind River, and others

System Block Diagram





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- To order the SA-1100 Evaluation Platform, specify part number DE-1S110-0A
- To order the ARM tool debugger, specify part number QR-21BB1-11

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