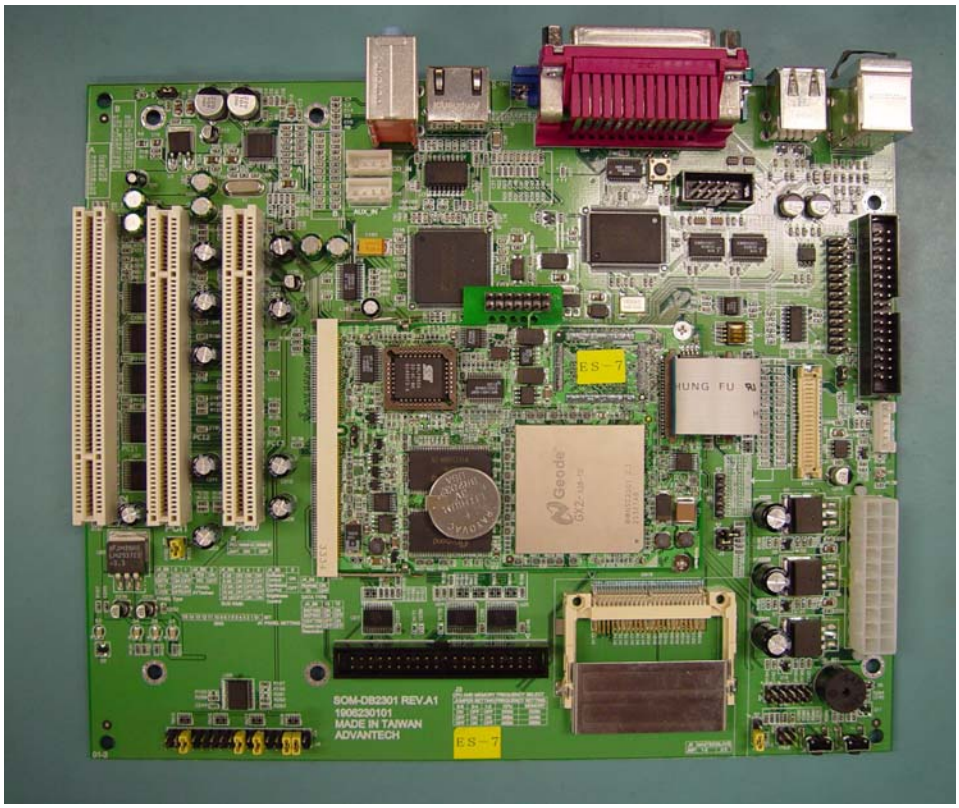
AMD Geode™ GX DB533 Development Board Overview



1.0 General Description

The AMD Geode™ GX DB533 is designed around the AMD Geode™ GX 533@1.1 processor* and the AMD Geode CS5535 companion device. This board enables a developer to write and test code, and simulate hardware for mobile, thin client, and general embedded applications in a stable and reusable system. The system could be used in the final product without modification.

This platform consists of two boards: the CPU module board and base board. The two-board configuration enables customers to quickly develop a wider range of products targeted at different applications. Initial development can be with the base board and one of the available CPU module boards (Geode GX DB533-TC for CRT interface or Geode GX DB533-TT for TFT interface). If desired, the customer can develop their own base board for use with either of the CPU module boards.

This design uses Advantech's SOM 144 method of interconnection. The Geode GX DB533 kit can be purchased from AMD (i.e., -TC and -TT) while the boards can be individually purchased from Advantech. Contact your local Advantech representative for additional information.

BIOS is provided by Insyde Software's XpressROM (preprogrammed device installed) and General Software's Embedded BIOS (preprogrammed device in kit).

The primary functions of the AMD Geode GX DB533 are:

- Development and validation of software:
  - — Application software for design concept
  - — BIOS firmware validation
- Development of hardware-based products:
  - — Design development and emulation
  - — Proof-of-concept
  - — Embedded product
- Evaluation of on-board silicon:
  - — Geode GX 533@1.1 processor*
  - — Geode CS5535 companion device

*This processor operates at 400 MHz. Model numbers reflect performance as described here: http://www.amd.com/connectivitysolutions/geodegxbenchmark.

2.0 Features

Processor, Chipset, and Supporting Chips

- AMD Geode™ GX 533@1.1 processor
- AMD Geode™ CS5535 companion device
- 128 MB DDR (Double Data Rate) SDRAM
- AC97 codec
- National Semiconductor PC87364 LPC SuperI/O
- National Semiconductor DP83816 LAN controller
- 2 Mbit FWH (Firmware Hub) boot Flash ROM in a 32-pin PLCC socket
- Alternate Advantech configuration supports different SIO (SuperI/O) and LAN (Local Area Network) on CPU module.

Standard Connectors, Configurations, and Interfaces

- Three PCI slots (see *AMD Geode™ GX DB533 Development Board User's Guide* for operational details):
  - Two 3.3V, 66 MHz capable
  - One 33 MHz, 5V tolerant
- One ATA-5 (UltraDMA 66) IDE interface (supports two devices)
- One CompactFlash connector (on IDE)
- Two USB v1.1 port connectors (standard plug)
- Individual PS/2 keyboard and mouse connectors (from SIO)
- FDD (Floppy Disk Drive) connector (from SIO)
- DB-9 RS232 serial connector (from SIO)
- 10-pin header for RS232 (from SIO)
- DB-25 LPT (Line Printer Terminal) connector (from SIO)
- VGA analog monitor (non-operational in TFT configuration)
- LCD header (for LCD panel or LVDS module) (non operational in CRT configuration)
- Backlight inverter power connector
- Brightness control via software (2-wire serial interface) or hardware (variable resistor)
  - LCD panel configuration selection jumper
- Infrared header
- Audio:
  - Mic In, Line In, Line out
  - CD In and Aux in
- 2x13 header for LPC (Low Pin Count) interface
- LEDs for UDMA, HDD, Power and 3.3VSB
- PC buzzer
- RJ-45 Ethernet connector

Memory and Flash Configurations

- 128 MB DDR SDRAM (four 16MBx16 soldered down)
- BootROM options:
  - 3.3V FWH 2 Mbit sector-erase (from LPC interface)
  - LPC ROM (off of LPC)
  - NOR Flash (off of IDE)
- Embedded EEPROM for storing system parameters and boot options
- Real-time clock with 242 bytes of bank-selectable CMOS memory

Software Support

- Operating System support:
  - Linux 2.4
  - Windows® CE 4.2
  - Windows XPe
- Firmware: XpressROM
  - Provides standard BIOS functionality
  - AMD's VSA2 (Virtual System Architecture™) technology for legacy functions:
    - Power management
    - 16-bit audio
  - Legacy USB support
  - Stored in FlashROM
  - Pre-boot execution environment integration code
- Embedded BIOS
  - Available from General Software, Inc., www.gensw.com, tel. (800) 850-5755
  - Pre-programmed PLCC supplied with kit
  - Full industry-standard BIOS functionality
  - Premium features
  - Firmbase 32-bit SMM operating environment
  - Support for all industry-standard Operating Systems (OS)

Mechanical

- FlexATX form-factor (229 mm x 191 mm)
- Soft On/Off, Sleep, Reset controls

Power, Management, and Control Options

- Standard ATX I/O
- On-board regulators for the Geode GX processor and Geode CS5535 companion device core, V_{MEM} and VREF
- Support for Suspend-to-RAM
- National Semiconductor LM82 for CPU temperature monitoring

Standard Interfaces

- IrDA-compliant interface
- IDE and CompactFlash support
- Two-port OHCI (Open Host Controller Interface) USB implementation
- AC97 v2.1 compliant audio
- VGA DDC2 support up to 1600x1200x8 bpp

Test Connectors, Configurations, and Interfaces

- FS2/JTAG header for Geode GX processor and Geode CS5535 companion device (Daisy Chain mode)

3.0 System Architecture

The CPU module board is offered with either a CRT interface (-TC) or a TFT interface (-TT). The base board is equipped to handle either interface.

Figure 3-1 is a block diagram of the CPU module board showing both the CRT and TFT interfaces. Figure 3-2 on page 5 provides a block diagram of the base board and illustrates how it connects with the CPU module board.

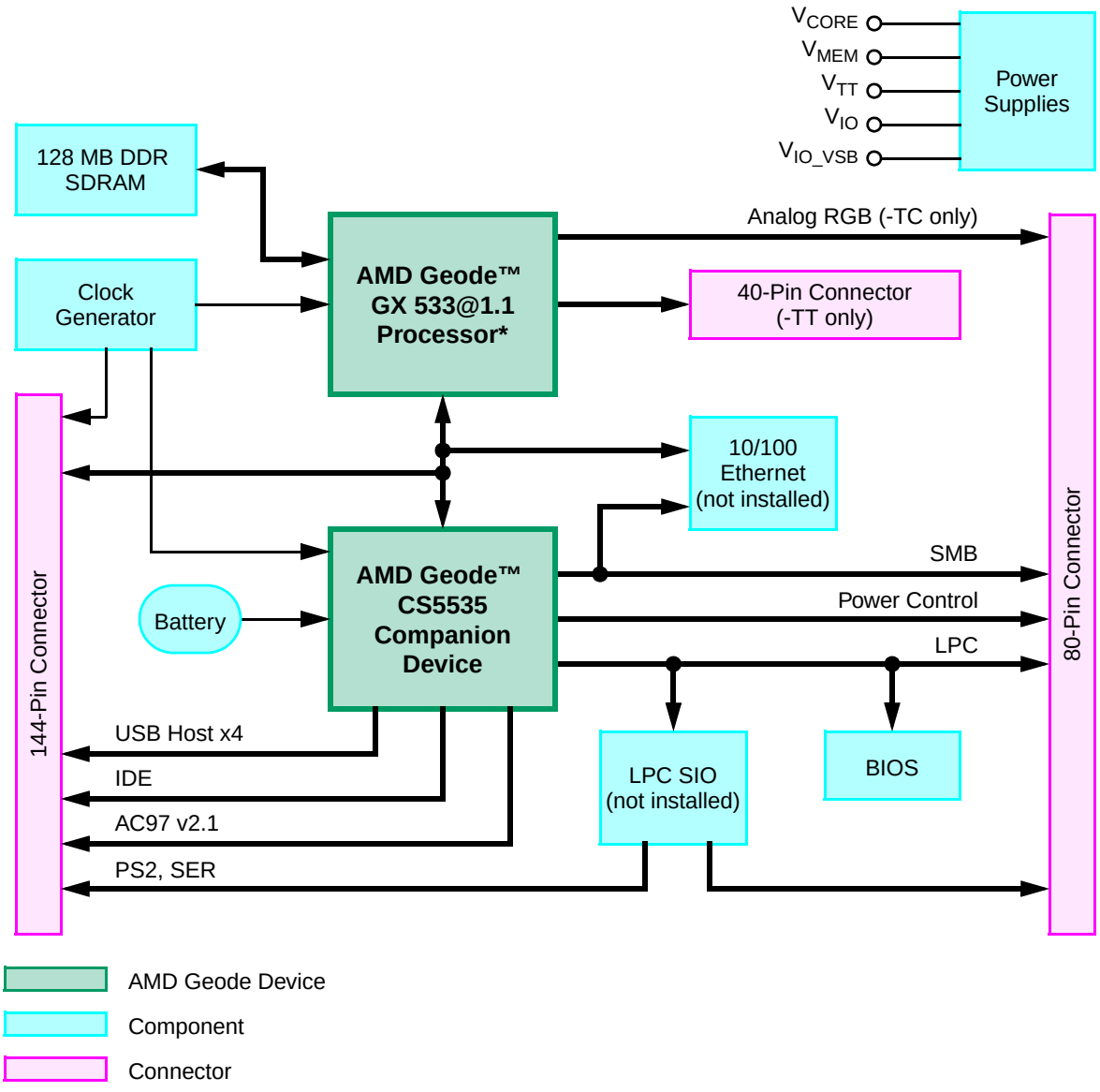


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Figure 3-1. CPU Module Board Block Diagram

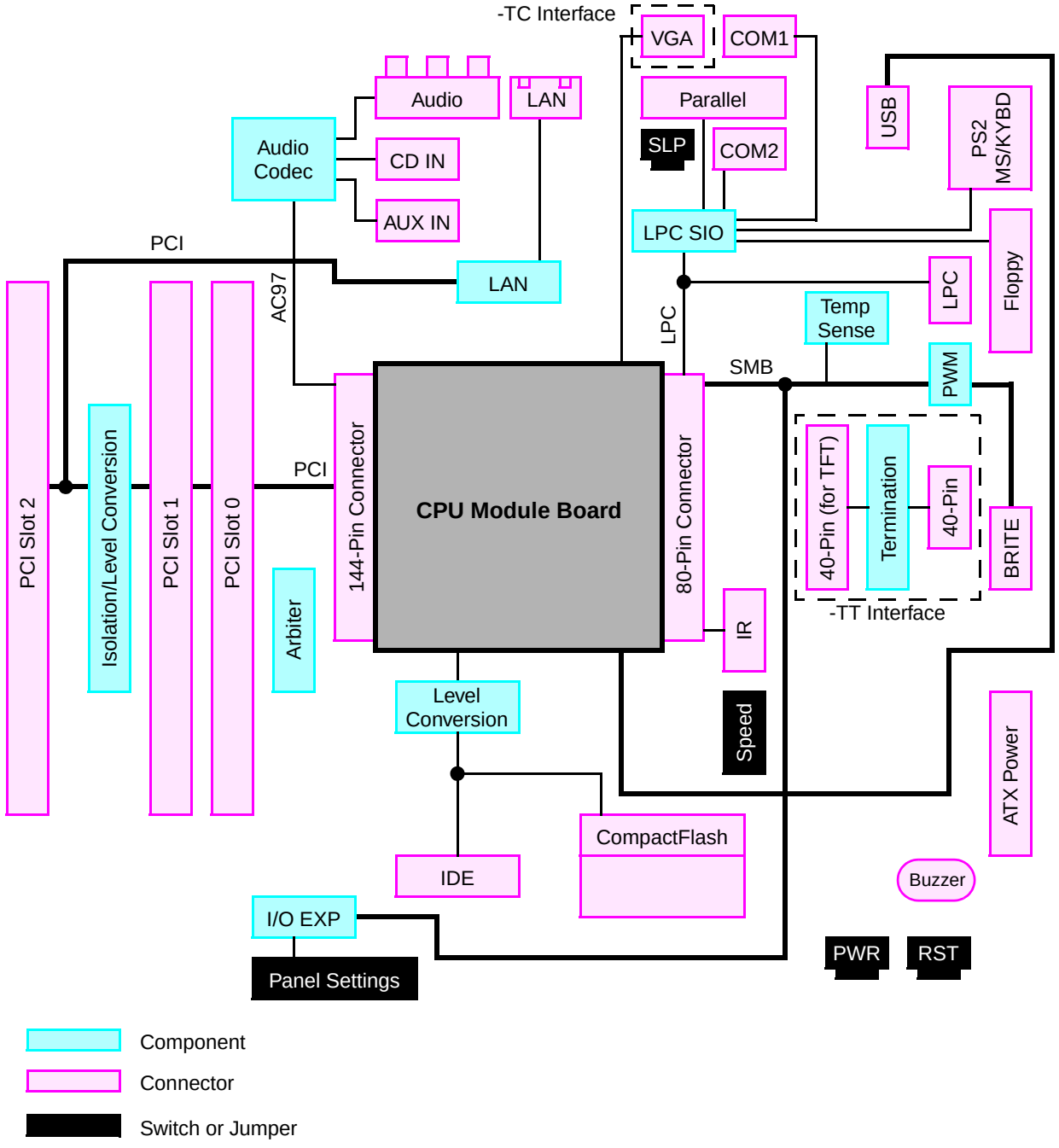

Figure 3-2. Base Board Block Diagram

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www.amd.com

One AMD Place
P.O. Box 3453,
Sunnyvale, CA 94088-3453 USA
Tel: 408-732-2400 or 800-538-8450
TWX: 910-339-9280
TELEX: 34-6306

TECHNICAL SUPPORT
USA & Canada: 800-222-9323 or 408-749-5703
USA & Canada: PC Microprocessor: 408-749-3060

Latin America Email: spanish.support@amd.com
Argentina: 001-800-200-1111, after tone 800-859-4478
Chile: 800-532-853
Mexico: 95-800-222-9323

Europe & UK: +44–0-1276-803299
Fax: +44–0-1276-803298
France: 0800-908-621
Germany: +49–89-450-53199
Italy: 800-877224
Europe Email: euro.tech@amd.com

Far East Fax: 852-2956-0588
Japan Fax: 81-3-3346-7848

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