

## **AMD Geode™ DBSC1200 development board Platform Users Guide**

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## 1. Short description

The AMD Geode™ DBSC1200 development board consists of two modules:

1. The SC1200-ETX-Board on which all the major parts like SC1200 CPU, memory, Ethernet controller, audio, floppy controller, etc. are mounted.
2. The Baseboard on which the SC1200-ETX-Board will be mounted. The Baseboard is the standard Kontron ETX-Eval-Baseboard which provides most of the interface connectors like PCI, ISA, serial ports, floppy, etc.

## 2. Feature List

### 2.1 SC1200-ETX Board

- **CPU/Chipset** - Geode™ SC1200UCL-266 (481Pin TEPBGA Package)
- **System ROM** – 512 KB Std Parallel Flash
- **System RAM** –144 pin SODIMM Socket & 128 MB SDRAM SODIMM
- **Enhance IDE Interface** – Two IDE channels, 5 V tolerant
- **I/O** – Support for PS2 mouse and keyboard, one serial port and one floppy port
- **USB Interface** – Three USB 1.1 compliant ports
- **PCI Interface** – Support for up to four master PCI - 33Mhz slots. 3.3V only!
- **ISA** – Supported by bridge device, not DMA capable!
- **AC97 Codec**
- **VGA** – Uses SC1200 integrated 2D graphics Accelerator and Display controller
- **Display Devices** – Support for VESA compliant CRT and Active Matrix TFT LCD panels. On-board LVDS transmitter
- **Ethernet** controller onboard
- **Infrared** – IRDA compliant interface
- **Power Supply** – Supports ATX power supply
- **Power Management** – Support for Suspend to RAM
- **CPU** temperature monitoring via 2-wire serial
- Supports 2-wire serial on Baseboard
- On board serial EEPROM storage
  
- **Headers:**
  - **LPC** Bus
  - **VIP** (Video Input Port)
  - **VOP** (Video Output Port)/Parallel TFT
  - **Backlight**
  - **Sub - ISA**

## 2.2 Baseboard

(only supported components listed)

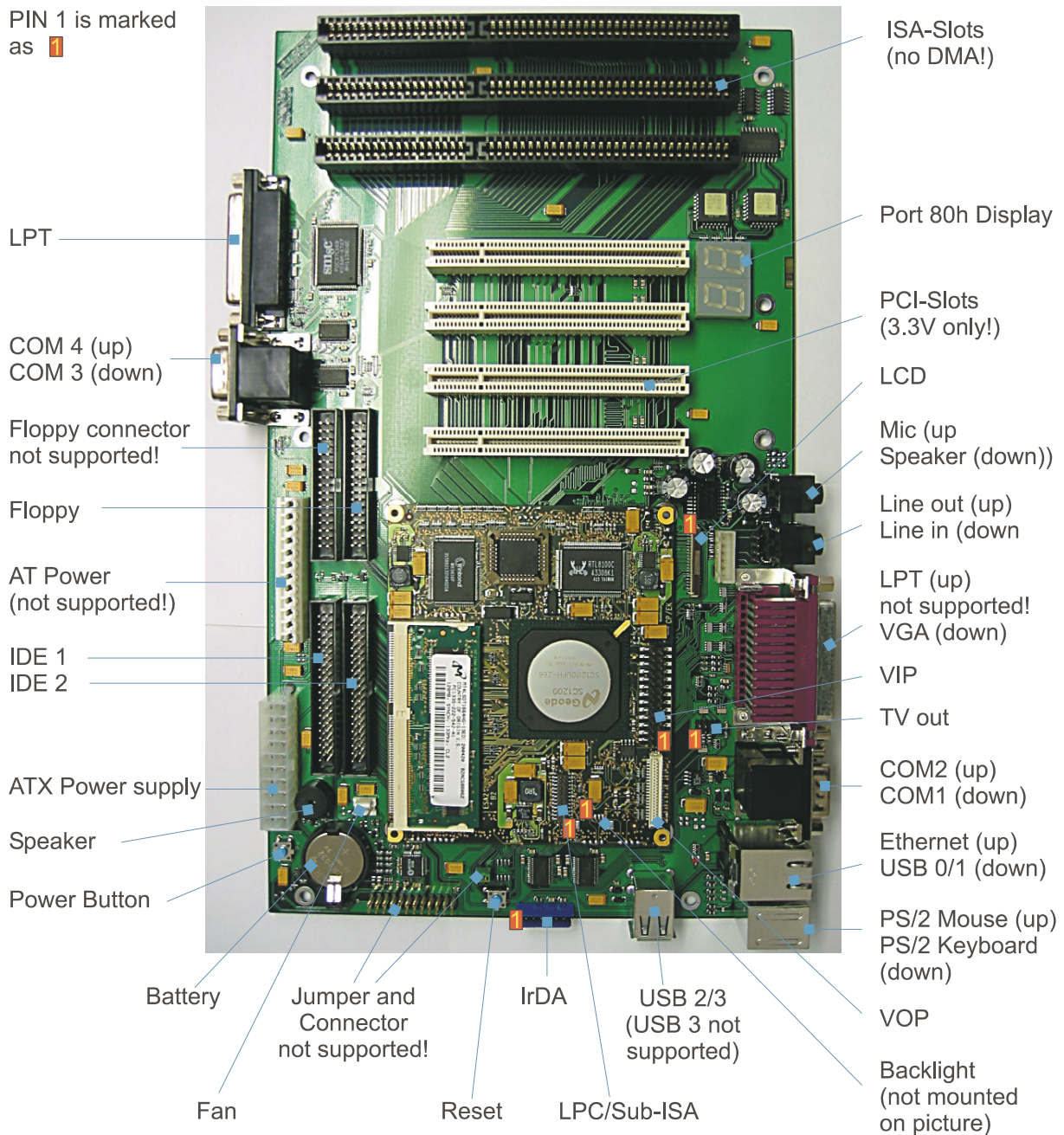
- **Connectors:**
  - **ATX** Power
  - **IDE**, primary and secondary
  - **4 PCI** Slots, 3.3V only!
  - **3 ISA** Slots, not DMA capable!
  - **3 USB** 1.1
  - **PS/2** Mouse and Keyboard
  - **Ethernet**
  - **LCD**
  - **COM** 1-4
  - **LPT**
  - **Floppy**
  - **Line in, Line out, Mic in, Speaker out**
  - **IrDA**
  - **TV** out
- **I/O** controller for 2 additional serial ports and one LPT port
- **Port 80h** Display

## 3. Important Information before operating the DBSC1200 development board

- PCI Bus is 3.3V only, use 3.3V devices only!
- Because of a limitation on the LPC bus, the ISA-Bridge is not able to perform DMA transfers. Use only ISA devices that don't need to perform master transfers!
- Only use ATX Power Supply. AT connector on the Baseboard is not supported!
- For normal operations there is no heatsink required. If the need of a heatsink occurs in case of high CPU temperatures a heatsink must be glued directly on the CPU.
- LPT/Floppy option (Jumper) on the Baseboard is not supported. It's an option only if floppy and LPT are supported by the ETX-Board. The SC1200-ETX-Board just supports floppy only!
- For Mouse and Keyboard connection only connect both to PS/2 or both to USB. Depending on the operating system the combination of PS/2 Keyboard and USB Mouse is sometimes possible but not to be taken for granted. If you want to use this feature, select option "Auto" in BIOS setup.
- When connecting the SC1200-ETX-Board to the Baseboard please note that the Board can only be mounted in one direction. Please refer to the illustration in chapter 4. Make shure that the connectors are connected properly to the Baseboard.
- Pressing the Power Button is required for starting. The DBSC1200 development board has no boot on power up feature.
- Connect Floppy just with a straight non crossed cable!

#### 4. Board Overview and Connector locations

The picture below shows the AMD Geode™ DBSC1200 development board (SC1200-ETX-Board mounted on Baseboard) with the connector locations. PIN 1 of connectors are marked as (1) printed on the board sideways to the connectors or/and as quadratic pad on the bottom of the board. Other connectors have standard pinout.



## 5. Board and Interface description

### 5.1 Power supply

The DBSC1200 development board is powered by a standard ATX-Power supply. The SC1200-ETX-Board is a low power device so any off the shelf standard power supply should work.

### 5.2 ON/OFF switching, Reset

The DBSC1200 development board can be switched on by pressing the power button. A “boot on power up” feature is not implemented.

Also press power button for switching off the board.

Depending on the power management software it could be necessary to press the power button longer than 4 seconds for switching power off.

For restarting just press the reset button.

### 5.3 Memory

The DBSC1200 development board is supplied with a 128 MB SDRAM SODIMM. Up to 512 MB can be used on the platform.

The following memory modules were tested to work on the DBSC1200 development board:

- Kingston KVR133X64SC3L/512
- Kingston KVR133X64SC3L/256
- Kingston KVR133X64SC3L/128
- Transcend 512 144P DIMM=BE M512B
- Transcend 256 144P DIMM=BE 256MB
- Transcend 128 144P DIMM=BE 128MB
- Micron MT 16LSDF6464HG-133D2 512MB 133MHz
- Micron MT 8LSDT3264HG-13EC2 256MB 133MHz
- Micron MT 4LSDT1664HG-13ED1 128MB 133MHz
- Virtium VM466S1723C-GA 128MB

### 5.4 PCI Bus

The DBSC1200 development board provides 4 standard bus master PCI-Slots. Be shure to use only 3.3V PCI cards!

### 5.5 ISA-Bus

3 standard ISA-Slots can be used on the platform.

Because of a limitation on the LPC bus, the ISA-Bridge is not able to perform DMA transfers. Use only ISA devices that don't need to perform master transfers!

### 5.6 IDE

Two 5V tolerant IDE channels (primary and secondary) can be used on the DBSC1200 development board.

### 5.7 Floppy

One standard 3½” Floppy is supported by the platform.

**Attention: Connect Floppy with a straight non crossed cable!**

## 5.8 Mouse and Keyboard

Mouse and Keyboard can be connected either to PS/2 connectors or USB connectors.

Please connect both to PS/2 or both to USB.

Depending on the operating system the combination of PS/2 Keyboard and USB Mouse is sometimes possible but not to be taken for granted. If you want to use this feature, select option “Auto” in BIOS setup.

## 5.9 VGA

Connect CRT to the standard VGA connector. The DBSC1200 development board uses the SC1200 integrated 2D graphics Accelerator and Display controller.

## 5.10 VOP

Video Output Port provides the TFT display data signals from the SC1200. See pinout listing below in this manual.

## 5.11 Backlight

Backlight connector provides signals for connecting 5V backlight inverter. See pinout listing below in this manual.

## 5.12 LCD

LCD connector provides LVDS display data inclusive signals for display on and backlight on. The connector also provides +5V and +12V power.

## 5.13 VIP

Video Input Port contains a standard interface typically connected to a media processor or TV encoder. For further information please refer to the SC1200 datasheet.

See pinout listing below in this manual

## 5.14 TV out

TV out interface of the SC1200 contains CVBS Composite Video output signals. See pinout listing below in this manual.

## 5.15 Sound

The DBSC1200 development board enables the connection for standard stereo Line-in, Line-out, and Speaker-out as well as Mic-in.

## 5.16 Serial ports

The DBSC1200 development board supports 3 full featured RS232 serial ports. That means COM1 from SC1200-ETX-Board and COM3 and 4 from the Baseboard.

COM2 is the SC1200 serial interface and only support 2 wiring serial communications. That means only signals RxD (PIN2) and TxD (PIN3) are supported.

## 5.17 USB

The DBSC1200 development board is equipped with 3 USB 1.1 compliant interfaces (connectors USB0,1 and 2).

### 5.18 Ethernet

10/100 Mbps Fast Ethernet controller allows connection to LAN via standard RJ45 plug.

### 5.19 LPC/Sub-ISA

LPC/Sub-ISA signals of the SC1200 are connected to a Header that allows connection of additional devices.

Please be aware that devices connected to that LPC bus aren't able to perform master cycles (same issue like the ISA-DMA).

The REQ/GNT pair of the SC1200 LPC bus is connected to the onboard I/O controller that supports floppy. For this reason no other device on that bus is able to perform master cycles.

See pinout listing below in this manual.

**Note: Remove resistor R22 (please refer to the schematics) before using the LPC/Sub-ISA connector.**

### 5.20 IrDA

IrDA compliant interface of the SC1200. See pinout listing below in this manual.

### 5.21 Parallel port

Standard LPT parallel port supported by the Baseboard.

**Note: For more detailed Information please refer to the SC1200 datasheet and to the components datasheets supplied with the DBSC1200 development board.**



## 6. Pinout of non standard connectors

Since most of the connectors have standard pinouts this chapter lists only the pinout of the platform specific connectors.

### 6.1 VOP Video Output Port

VOP		
PIN	Signal	Description
1	GND	Ground
2	TFTDCK	TFT Clock
3	GND	Ground
4	HSYNC	Horizontal Sync
5	VSYNC	Vertical Sync
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	TFTD12	Digital RGB data to TFT
10	TFTD13	Digital RGB data to TFT
11	TFTD14	Digital RGB data to TFT
12	GND	Ground
13	TFTD15	Digital RGB data to TFT
14	TFTD16	Digital RGB data to TFT
15	TFTD17	Digital RGB data to TFT
16	GND	Ground
17	GND	Ground
18	GND	Ground
19	TFTD6	Digital RGB data to TFT
20	TFTD7	Digital RGB data to TFT
21	TFTD8	Digital RGB data to TFT
22	GND	Ground
23	TFTD9	Digital RGB data to TFT
24	TFTD10	Digital RGB data to TFT
25	TFTD11	Digital RGB data to TFT
26	GND	Ground
27	GND	Ground
28	GND	Ground
29	TFTD0	Digital RGB data to TFT
30	TFTD1	Digital RGB data to TFT
31	TFTD2	Digital RGB data to TFT
32	GND	Ground
33	TFTD3	Digital RGB data to TFT
34	TFTD4	Digital RGB data to TFT
35	TFTD5	Digital RGB data to TFT
36	GND	Ground
37	TFTDE	TFT data enable
38	NC	not connected
39	TFTVDD	3.3V Panel Power
40	TFTVDD	3.3V Panel Power
41	NC	not connected

## 6.2 VIP Video Input Port

VIP		
PIN	Signal	Description
1	GND	Ground
2	VPD0	Video Port Data
3	GND	Ground
4	VPD1	Video Port Data
5	GND	Ground
6	VPD2	Video Port Data
7	SC-GPIO14	GPIO from SC1200
8	VPD3	Video Port Data
9	SC-GPIO15	GPIO from SC1200
10	VPD4	Video Port Data
11	NC	not connected
12	VPD5	Video Port Data
13	SC-AB2_SCL	I <sup>2</sup> C Clock
14	VPD6	Video Port Data
15	GND	Ground
16	VPD7	Video Port Data
17	GND	Ground
18	VPCKIN	Video Port Clock
19	GND	Ground
20	NC	not connected
21	GND	Ground
22	NC	not connected
23	INTAX/INTBX	PCI Interrupts (jumperable)
24	NC	not connected
25	SC-AB2_SDA	I <sup>2</sup> C Data
26	GND	Ground

## 6.3 Backlight

Backlight		
PIN	Signal	Description
1	VCC5V_ATX	5V panel power
2	VCC5V_ATX	5V panel power
3	GND	Ground
4	GND	Ground
5	TFT_VDDBKL_EN	Backlight enable
6	BRIGHT	Backlight brightness

## 6.4 LPC/Sub-ISA

LPC/Sub-ISA		
PIN	Signal	Description
1	GND	Ground
2	CLK-LPCCHDR	Clock
3	#SC-R	Memory or I/O read
4	#PCI-RST	PCI reset
5	#SC-W	Memory or I/O write
6	#PORST	Power on reset
7	GND	Ground
8	LPC_AD0	LPC data
9	IOCHRDY_GPIO19_#INTC	GPIO from SC1200
10	LPC_AD1	LPC data
11	#TRDE_GPIO00	GPIO from SC1200
12	LPC_AD2	LPC data
13	GND	Ground
14	LPC_AD3	LPC data
15	GPIO20	GPIO from SC1200
16	NC	not connected
17	GPIO17	GPIO from SC1200
18	#LPC-FRAME	LPC Frame
19	GND	Ground
20	LPC-SERIRQ	LPC Serirq
21	GND	Ground
22	SC-SIN1	COM2 RxD
23	GND	Ground
24	SC_SOUT1	COM2 TxD
25	GND	Ground
26	VCC5V_ATX	5V power

**Note:** Remove resistor R22 (please refer to the schematics) before using the LPC/Sub-ISA connector.

## 6.5 LCD

LCD		
PIN	Signal	Description
1	NC	not connected
2	TX0-	LVDS data out
3	TX0+	LVDS data out
4	DIGON	Panel on
5	TX1-	LVDS data out
6	TX1+	LVDS data out
7	NC	not connected
8	TX2-	LVDS data out
9	TX2+	LVDS data out
10	GND	Ground
11	NC	not connected
12	NC	not connected
13	GND	Ground
14	NC	not connected
15	NC	not connected
16	NC	not connected
17	NC	not connected
18	NC	not connected
19	NC	not connected
20	NC	not connected
21	NC	not connected
22	NC	not connected
23	NC	not connected
24	NC	not connected
25	GND	Ground
26	NC	not connected
27	NC	not connected
28	GND	Ground
29	NC	not connected
30	NC	not connected
31	VCC	5V power
32	VCC	5V power
33	VCC	5V power
34	VCC	5V power
35	#BLON	Backlight on
36	GND	Ground
37	GND	Ground
38	+12V	12V power
39	+12V	12V power
40	+12V	12V power

## 6.6 IrDA

IrDA		
PIN	Signal	Description
1	NC	not connected
2	NC	not connected
3	IRTX	transmit
4	GND	Ground
5	IRRX	receive
6	VCC	5V power
7	NC	not connected
8	NC	not connected

## 6.7 TV out

TV out		
PIN	Signal	Description
1	SVY	Video luminance
2	GND	Ground
3	SVC	Video chrominance
4	GND	Ground
5	CVBS	Composite Video
6	GND	Ground
7	NC	not connected
8	GND	Ground

## 7. Document History

date	doc. name	rev.	author	action
03.12.2004	DBSC1200_development_board_10.doc	1.0	R. Lindner	First release