CROSSBoard DX86

Preliminary

SODIMM 200 Socket PC

Factsheet

- Extremely compact embedded CPU module in credit card dimensions
- Perfectly suited as central computing unit due to cost optimized design without graphics controller
- Extremely low power dissipation of ca.3-4 Watt max (@600 MHz)
- Optionally extended Temperature Options -20°C up to +85°C (@ 600 MHz)
- Passive cooling meeting the requirements for fanless design (@ 600 MHz)
- Full PC functionality with classical buses like PCI or IDE
- Long term availability of >5 years

Illustration 1: Preliminary illustration of different Flash and RAM configurations

COM Solution based on Vortex86DX - SoC

CROSSBoard is compliant to the X-Board® module specification in fit & functions. The core unit is a 27x27mm sized Vortex86DX SoC by DMP (581-Pin Ball BGA Package). The CPU features a Floating Point Unit(FPU), is x86 compliant and supports clock rates up to 1.0 GHz. Clocked at 600 MHz a fully passive cooled operation is possible resulting in minimal spatial dimensions. Due to the extremely low power consumption it's the ideal solution for mobile embedded devices. A wide portfolio of peripheral interfaces and functions allows various application scenarios. Drivers and software support for current embedded operating systems are available, e.g. DOS, WinCE, WinXP embedded and Linux, that makes a migration of existing software from another x86 architecture easier. The modular concept as a plug-in module enables scaling of performance classes. Due to the featuring of the onboard FLASH drive as a Micro-SD-Card Slot the size of the mass storage can be scaled from 1 GB up to 16 GB.

Alle Daten bei 25°C Umgebungstemperatur, falls nicht anders angegeben. / *All data at nominal input and 25° C ambient temperature, if not marked otherwise.* ■ Alle Daten dienen nur Informationszwecken und sind nicht als zugesicherte Eigenschaften aufzufassen. / *All data for information purposes only, no assured characteristics.* ■ Technische Änderungen ohne vorherige Ankündigung sowie Irrtümer vorbehalten. / *Technical modifications without notice and errors reserved.* ■ Die Informationen auf diesem Datenblatt wurden sorgfältig überprüft und werden als richtig angenommen ; Keine Haftung bei Irrtümern. / *Information in this datasheet has been carefully checked and is believed to be accurate; no responsibility for inaccurancies* ■ Belastung mit Extremwerten über einen längeren Zeitraum kann die Zuverlässigkeit beeinflussen. / *Strain with extreme values for a longer period may affect the reliability.* ■ Toleranz extremer Belastungwerte unterliegt üblichen Schwankungen. / *Tolerance of extreme values is liable to common fluctuations.* ■ Alle Trademarks und Logos sind Eigentum der jeweiligen Unternehmen. / *All trademarks and logos are property of the concerning companies.* © b-plus GmbH Dec-11 – V0.9

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Preliminary

Technical Information

Processor
DMP Vortex86DX 32-Bit x86 SoC
SDRAM
256 / 512 / 1024 MByte DDRII on board @ 300MHz
Cache
16 KB I/D L1 Cache, 256 KB L2 Cache
Micro SD Socket
On board Bootdevice
GPIOs
8x TTL
PCI Interface (max. 3 Devices)
PCI rev. 2.1 32-bit bus @ 33MHz / 3,3V

Serial Interfaces
2x TTL (16C550 compliant) – 1x fully- 1x partially used
USB
3x USB 2.0 Host (OHCI / EHCI 1.0)
Ethernet
1x Fast Ethernet IEEE 802.3u 100 Base-T (R6040)
Harddisk (PATA)
1x EIDE Channel (UDMA100/66/33)
Dimensions
68 x 49 x 8 mm
Power consumption
typ. 3-4 W @ 3,3V / 600 MHz
Operating temperature
0 bis +60°C (@ max. 600 MHz)

Technical Details

Through the first serial Interface (COM1) it is possible to send the command shell messages of the system start operation (Unlockable via software). The 16C550 compliant UARTs are equipped with 16 byte FIFO and support baud rates from 50 to 460,8 kBaud. The USB host controller supports the operating modes LS (Lowspeed / USB 1.1 / 1,5MHz), FS (Fullspeed / USB1.1 / 12 MHz / 64 Byte FIFO) and HS (Highspeed / USB2.0 / 480 MHz / 1kByte FIFO). Further integrated peripheral elements are a watchdog, adjustable from 30,5 µsec up to 512 sec, 2 hardware timers (8254), an integrated RTC (Real Time Clock), as well as a standard speaker output. The SoC implements both, MAC controller and the physical controller (PHY) of the Ethernet interface, thus externally only the transformer and jack have to be activated. Up to 600 MHz you can run the CPU without heatsink (purely passive). The processor features a configurable AMI BIOS (Core 8) in a 2MB internal flash.

In offline operation BIOS settings can be modified, logos can be adopted and the Video BIOS can be substituted. This BIOS supports numerous boot options like system boot via USB (Floppy, CDROM) IDE or SD (SDHC) as well as via Ethernet. The DDR SODIMM 200 socket can be sourced at Tyco (Part no. 1473005-1).

Software Support

According to the SoC manufacturer drivers are available for common OS such as DOS, WindowsXP Embedded, Windows CE, Linux and QNX. For these OS demo images including startup guides are available - In this case these are images for Windows CE6 or Linux for Debian kernel version 2.6.27.9 and X-Linux kernel (Manufacturer DMP) – Special customized drivers – especially for Windows CE - can be provided by b-plus.

Ordering Information

Name	Partno.	Description
CROSSBoard DX86 – *Economic*		600 MHz, 256 MByte SDRAM

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