SBC6300X Single Board Computer

- **ARM926EJ-S Single-board Computer based upon Atmel AT91SAM9263**
- **Flexible Design with a Controller Board Mounted on an Expansion Board**
- **8 UARTs, 2 Ethernet, USB, CAN, LCD, Touch Screen, SD, Keyboard, Audio,…**
- **Support Linux2.6 and WinCE 6.0 OS**

Embest SBC6300X Single Board Computer

Description

The SBC6300X Single Board Computer from Embest is based on an Atmel AT91SAM9263 MCU with 32-bit ARM instruction set and complete embedded software environment. It has a flexible design with a tiny controller board **Mini6300** mounted directly on an expansion board through two 0.8mm 100pin Free Height (FH) surface-mount connectors.

The CPU board of SBC6300X has the ARM9 processor and memory on board. The expansion board has extended features of AT91SAM9263 and offers various hardware interfaces including 8 UARTs, 2 Ethernet ports, USB Host and Device, CAN, TWI, LCD, Touch Screen, Keyboard, SD card, Jtag, Audio and etc. Embest offers Windows CE 6.0 BSP and Linux 2.6.24 BSP for this board. Users can develop with Microsoft eVC or linux tool chain, which can get your products to market quickly.

The rich industrial bus interface resources of this sing board computer makes it ideal for embedded applications requiring wide operating temperature ranges, and flexible I/O connectivity. It can be used in many application fields, such as medical equipment, industrial field control, smart instrumentation, industrial control devices, monitoring, automotive electronics and other fields.

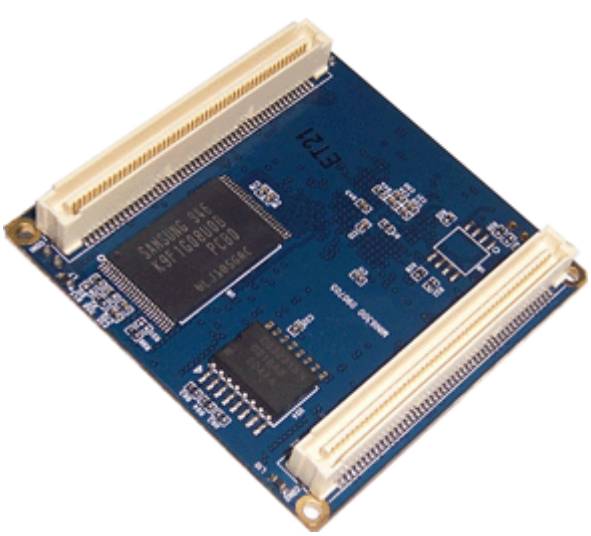
Hardware Features

The Atmel AT91SAM9263 is an ARM926EJ-S based High-performance 32-bit RISC Microcontroller with Thumb extensions, 16KB Data Cache, 16KB Instruction Cache, Write Buffer, max clock speed 240 MHz, 128KB ROM, 80KB SRAM Bus Matrix, Dual External Bus Interface, DMA Controller, Twenty Peripheral DMA Controller Channels, LCD Controller, 2D Graphics Accelerator, Image Sensor Interface, USB 2.0 Full Speed Host Double Port, USB 2.0 Full Speed Device Port, Ethernet MAC 10/100 Base T, System Controller, Reset Controller, Shutdown Controller, Clock Generator, Power Management Controller, Advanced Interrupt Controller, Debug Unit, Periodic Interval Timer, Watchdog Timer, Two Real-Time Timers, Five 32-bit PIO Controllers, CAN Controller, Two Multimedia Card Interface, Two Synchronous Serial Controllers, AC97 Controller, Three USARTs, Two Serial Peripheral Interface, Three-channel 16-bit Timer/Counter, Four-channel 16-bit PWM Controller, Two-wire Interface, JTAG Boundary Scan.

The SBC6300X exposes full features of the Atmel AT91SAM9263 microcontroller. This board is characterized as follows:

- Dimensions: CPU board: 52mm x 52mm
  Expansion Board: 150mm x 143.5mm
- Working temperature: -10~70 Celsius
- Power supply: +12V

CPU board **Mini6300**

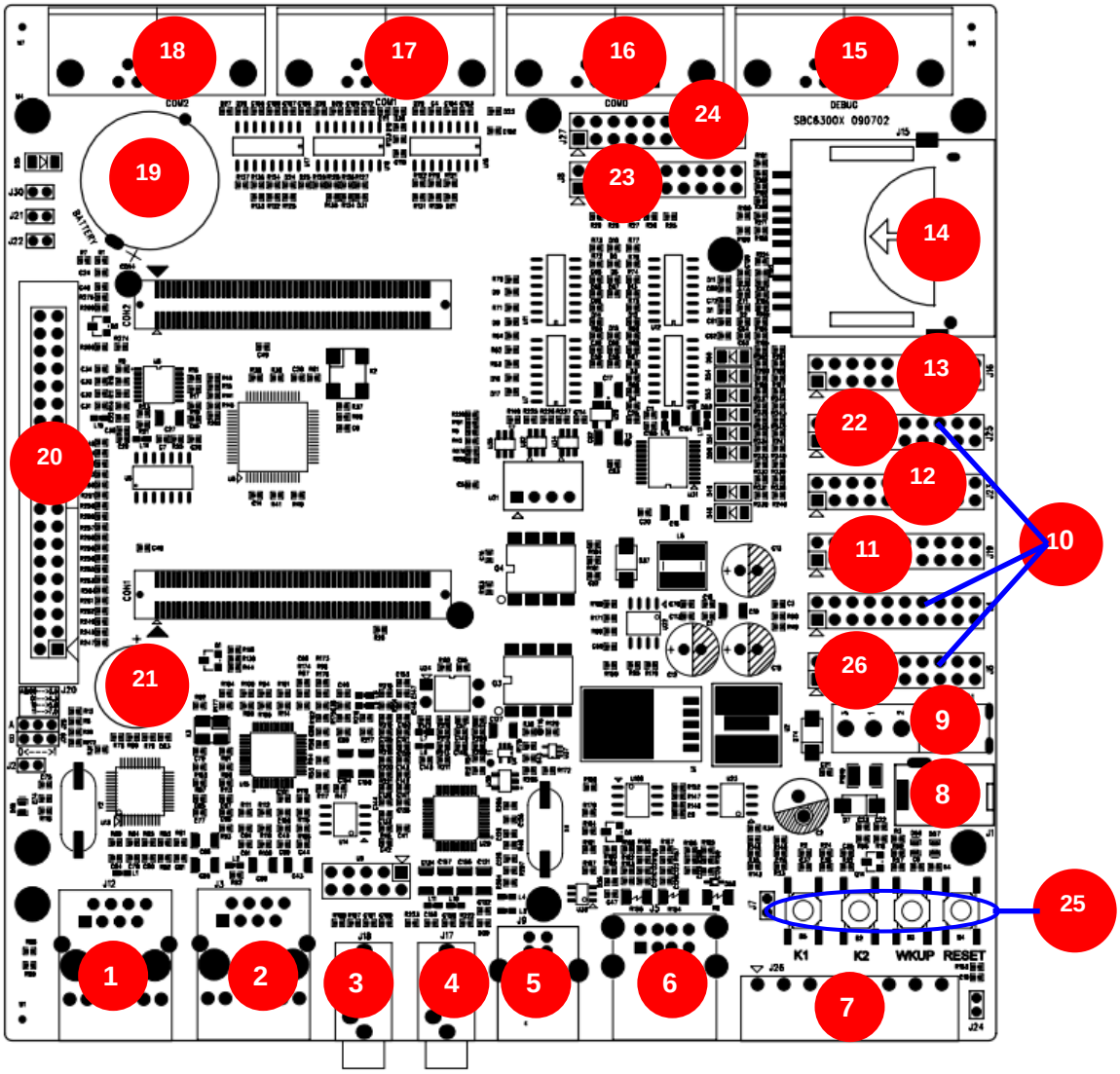


- Atmel AT91SAM9263 (ARM926EJ-S core with MMU capable of 200 MHz operation)
- 64Mbyte SDRAM
- 128Mbyte Nand Flash
- 2Kbit EEPROM
- One LED indicator
- 0.8mm, 100pin Free Height (FH) surface-mount connectors for connecting with expansion board

Expansion Board

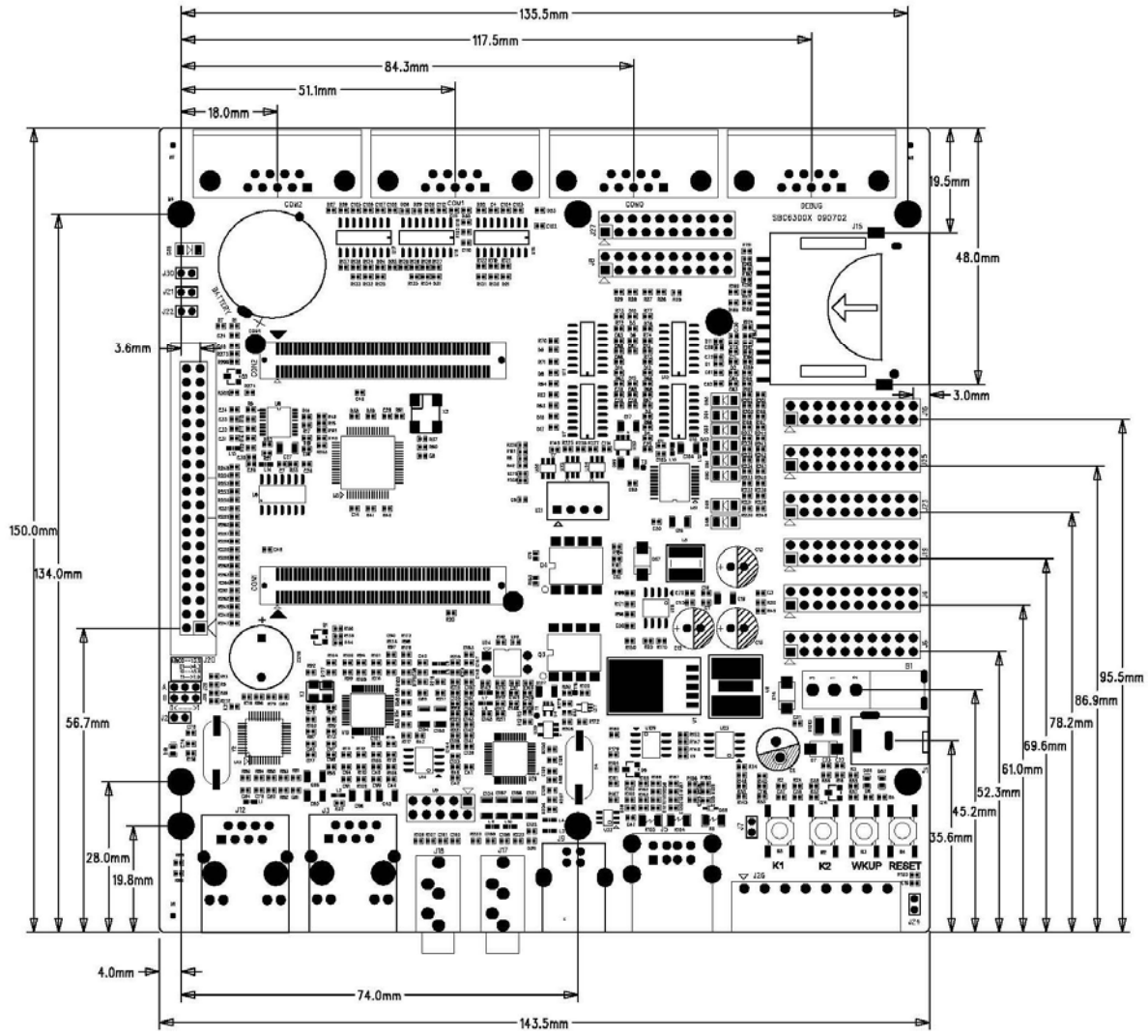
- 40pin (2*20pin, 2.54mm) LCD interface (STN or TFT, support resolution up to 2048 x 2048, Embest provides 3.5”/4.3”/5.6”/7”LCD for options)
- Touch panel (4-wire resistive) interface
- Two 10/100M Ethernet interfaces (One is from MCU internal controller and One is extended through DM9000)
- Eight Serial ports (Debug: 3-wire RS232/TTL, COM0: 5-wire RS232/TTL, COM1: 5-wire RS232/TTL, COM2: 3-wire RS232/TTL/half-duplex RS485, EXT_COM1/2/3/4: 5-wire RS232)
- Two USB2.0 full-speed host and One USB2.0 full-speed device
- One CAN2.0 interface
- TWI interface
- 6 x 6 keyboard interface (can be used as 12 independent IOs)
- Audio Input/Output
- 8-channel 12-bit ADC
- RTC (battery backed)
- One standard 20-pin JTAG interface
- One SD card slot (SDIO mode, support hot plugging)
- Buzzer
- Keys (2 for GPIO, 1 for Wakeup and 1 for Reset)
- 20pin Panel interface (Reset & Wakeup & IO & Switch)
- 41 GPIOs (can multiplex with interfaces including ISI, 4 PWM, 1SDIO and 1 SPI1)

Layout Diagram



No.	Function	No.	Function
1	NET1 (DM9000)	14	SD card
2	NET0	15	Debug
3	Audio Input (Mic)	16	COM0
4	Audio Output (earphone)	17	COM1
5	USB Device	18	COM2
6	Two USB Host	19	Battery
7	CAN	20	LCD/Touch Screen
8	Power (+12V)	21	Buzzer
9	Power On/Off	22	TWI
10	41 GPIOs (Multiplex function: SPI1, PWM, SDIO0, ISI)	23	Jtag
11	ADC	24	TTL (Debug/COM0/COM1/COM2)
12	EXT_COM (4RS232)	25	Keys
13	Keyboard	26	Panel

Dimension

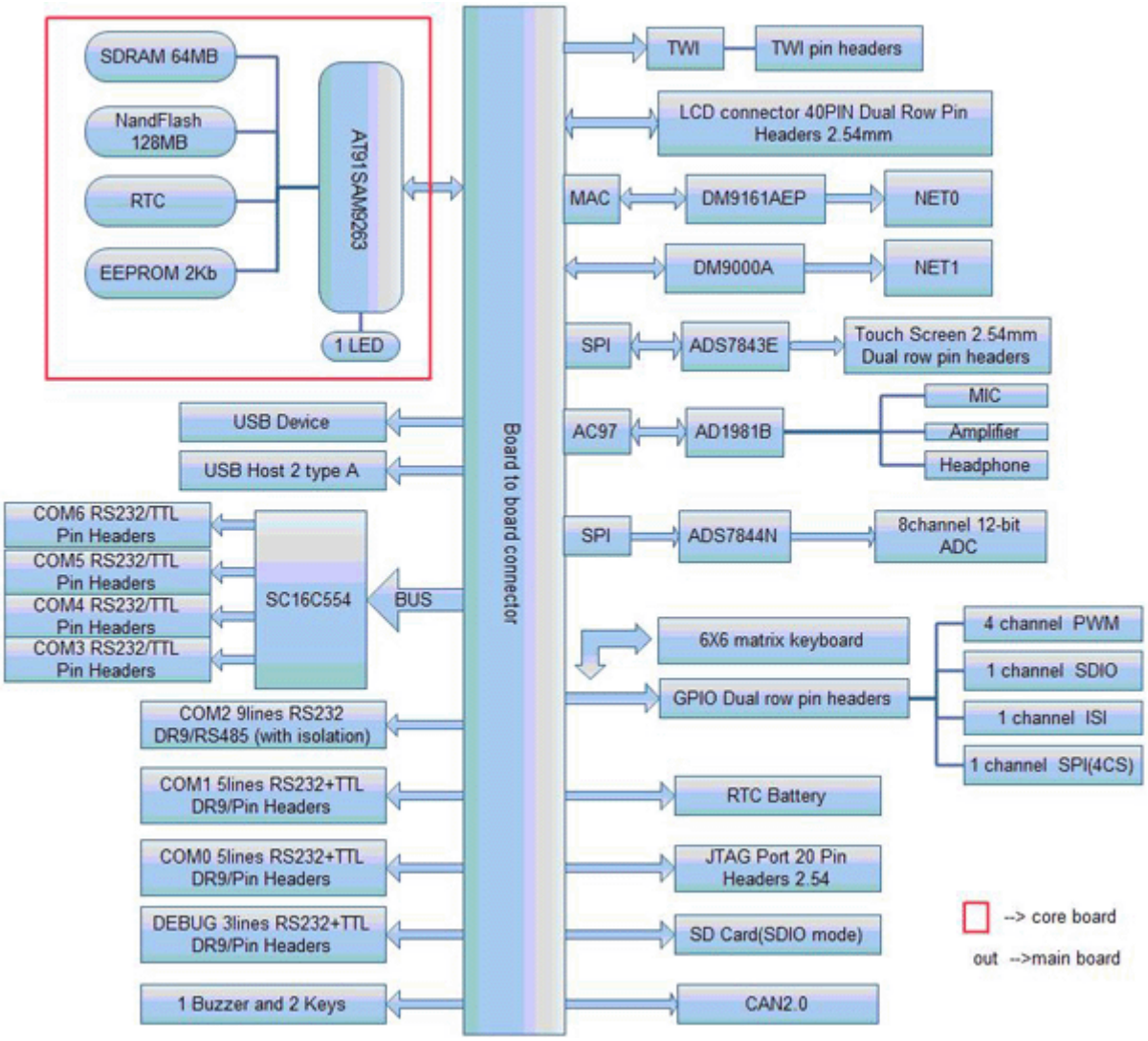

135.5mm
117.5mm
84.3mm
51.1mm
18.0mm
19.5mm
48.0mm
3.0mm
3.6mm
150.0mm
134.0mm
56.7mm
28.0mm
19.8mm
95.5mm
86.9mm
78.2mm
69.6mm
61.0mm
52.3mm
45.2mm
35.6mm
K1
K2
WKUP
RESET
4.0mm
74.0mm
143.5mm

Software

OS	Item	Feature	Description
Linux	BIOS	bootstrap	Nand Flash
		u-boot	Nand Flash
			Support downloading/programming kernel and file system through Ethernet.
	Kernel	Linux 2.6.24	Support ROM/CRAM/EXT2/EXT3/FAT/NFS/ JFFS2/YAFFS2 file systems
	Drivers	Serial	CPU itself has 3-channel serial ports and 1-channel debug port
			4 RS232 serial ports extended through SC16C554
		RTC	RTC driver
		NET	Two 10/100M Ethernet interfaces driver
		LCD	TFT LCD driver (Support 320x240, 480x272, 680x480 and 800x480 resolution)
		Touch Screen	Touch screen controller ads7843 driver
		Audio	Audio input and output driver
		USB Host	USB host driver
		USB Device	USB device driver
		Buzzer	Buzzer driver
		Keypad	GPIO 6*6 keyboard driver
		CAN	CAN driver
		LED	LED driver
		GPIO	GPIO driver
		Watchdog	Watchdog driver
		ADC	8-channel 12-bit ADC driver
		SD	SD card driver
	Web Server	Web server	Apache

WinCE	Bootloader	firstboot	Nand Flash
		Eboot	Nand Flash
			Support downloading/updating image through Ethernet
	Driver	Serial	CPU itself has 3-channel serial ports and 1-channel debug port
			4 RS232 serial ports extended through SC16C554
		RTC	RTC driver
		NET	Two 10/100M Ethernet interfaces driver
		LCD	TFT LCD driver (Support 320x240, 480x272, 680x480 and 800x480 resolution)
		Touch screen	Touch screen controller ads7843 driver
		USB Host	USB host driver
		USB Device	USB device driver
		Buzzer	Buzzer driver
		Keypad	6*6 GPIO keyboard interface
		LED	LED driver
		GPIO	GPIO driver
		Watchdog	Watchdog driver
		CAN	CAN driver
		Audio	Audio input and output driver
		ADC	8-channel 12-bit ADC driver
		SD	SD card driver
	EVC test program		Provide EVC test program for each driver module..

Function Block Diagram



Order Information

Order No.	T6010088 (Standard Configuration)
Item	Embest SBC6300X Single Board Computer
Hardware	• One SBC6300X Single Board Computer • One USB cable • One Serial cable • One Ethernet cable • One 12V Power adapter • One CD-ROM
Software and Documents	• Documents (user manual, Datasheet) • WinCE.net 6.0 BSP • Linux 2.6.24 BSP
Options	• LCD module 3.5inch 240*320 • LCD module 4.3inch 480*272 • LCD module 5.6inch 640*480 • LCD module 7inch 800*480
Price	Please contact Embest for information

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