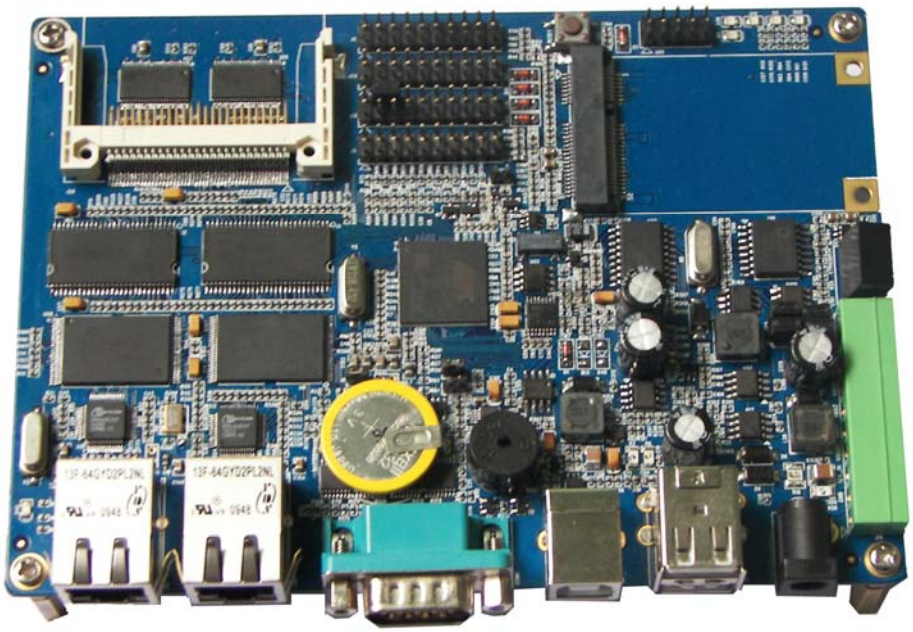
# SBC6020 Single Board Computer

- Compact Single Board Computer based on 400MHz Atmel AT91SAM9G20 ARM926EJ-STM Microcontroller
- A Variety of Interface Peripherals including Seven Serial Ports, Dual Ethernet Ports, USB Host/Device, CAN, CF Card Slot, ADC, JTAG, Mini-PCI…
- Ready-to-Run Linux2.6.30 System



Embest SBC6020 Single Board Computer

## *Description*

Embest SBC6020 Single Board Computer is based on the Atmel AT91SAM9G20 microprocessor which contains an ARM9 core with built-in Ethernet MAC and seven Serial ports, targeted for high performance embedded industrial applications with high constraints on power consumption.

Embest SBC6020 Single Board Computer exposes all features of the AT91SAM9G20 microprocessor and supports many standard interfaces and peripheral devices including USB Host/Device, Ethernet, CAN, SPI, Serial ports, CF card slot, ADC, JTAG, GPIO, Mini-PCI interface and more over. The Mini-PCI interface has integrated SDIO, SPI, UART and USB signals. Customer can attach 3G module, GPS module, GPRS/GSM module, WiFi/Bluetooth module and other Mini-PCI devices to this interface.

The board is capable of supporting Linux 2.6.30 open-source operating system. The system can boot from either Nand Flash or Nor Flash. It is pre-installed with the U-Boot boot loader. Embest provides all drivers in source code and together with user manual and some other tools and documents to help customer immediately start with their code development.

It is an already device which can be used directly by customers for their embedded applications. Embest also offers customer design service based on the SBC6020 board according to customer's requirement. Whether you need to reduce, add or modify to existing hardware, Embest will help customers with expert competence and year-long experience.

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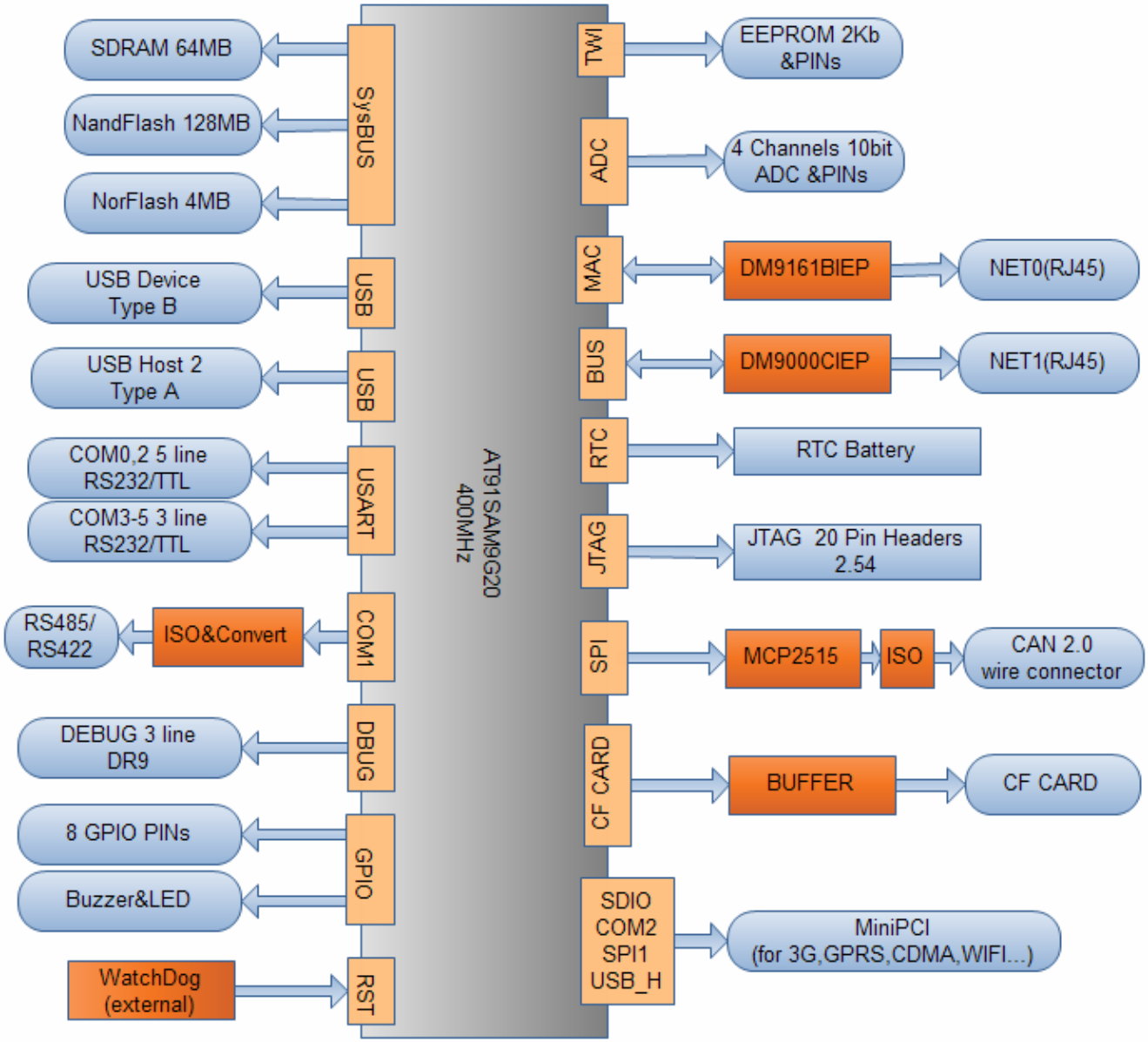
## *Hardware Features*

The AT91SAM9G20 is based on the ARM926EJ-S processor, with a clock speed of 400MHz. It features 32K byte instruction and 32K byte data cache memories, two 16K-byte blocks of SRAM and 64K bytes of ROM with single cycle access at maximum processor or bus speed, together with an external bus interface with controllers for SDRAM and static memories including NAND Flash and CompactFlash. Its extensive peripheral set includes USB Full Speed Host and Device interfaces, a 10/100 Base T Ethernet MAC, Image Sensor Interface, Multimedia Card Interface (MCI), Synchronous Serial Controllers (SSC), USARTs, Master/Slave Serial Peripheral Interfaces (SPI), two three-channel 16-bit Timer Counters (TC), a Two Wire Interface (TWI) and four-channel 10-bit ADC. Three 32-bit Parallel I/O Controllers multiplex the pins to/from these peripherals in order to reduce the device pin count, and peripheral DMA channels maximize the data throughput between these interfaces and the on- and off-chip memories.

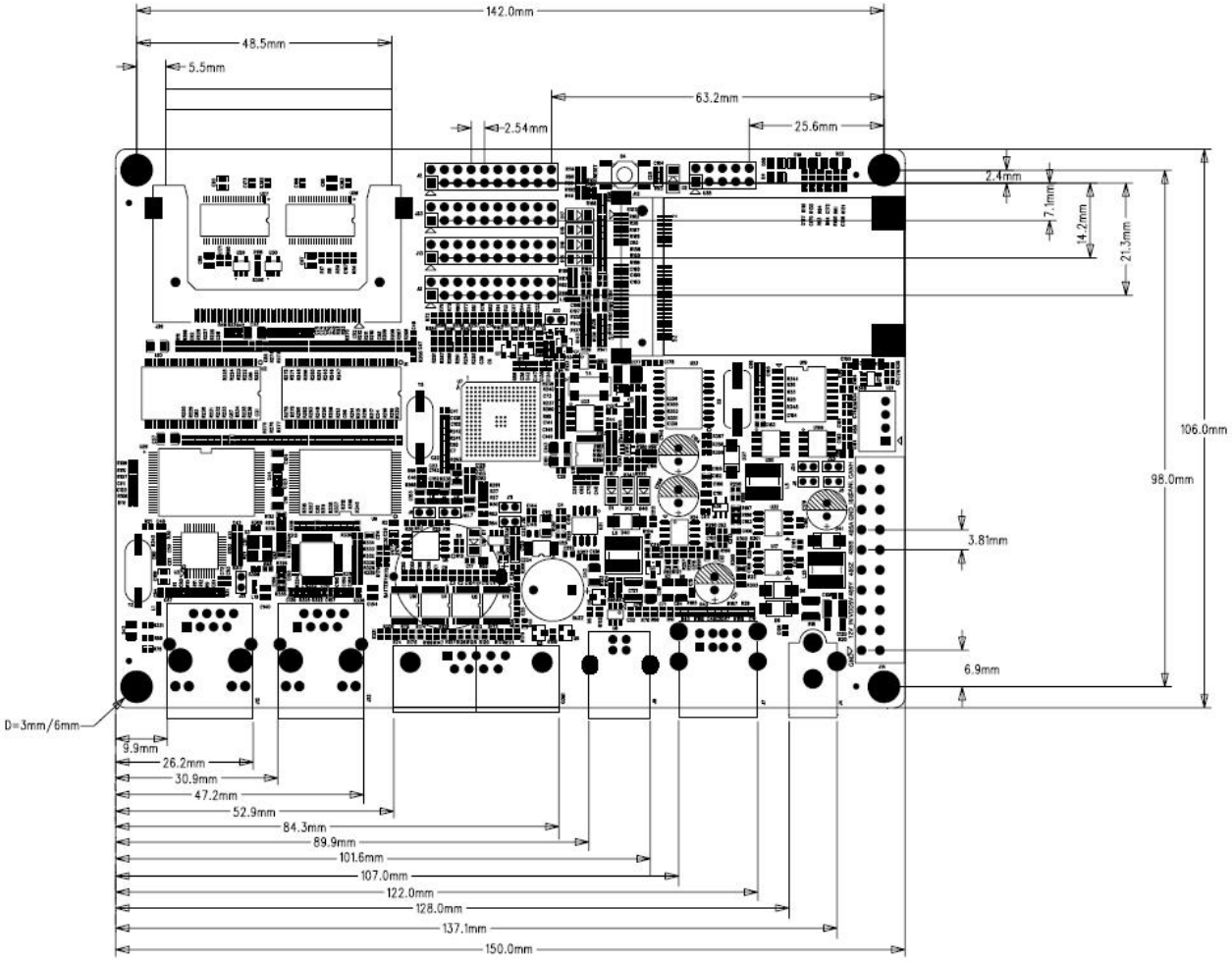
The SBC6020 board is integrated with AT91SAM9G20 microcontroller, Nand Flash, Nor Flash, EEPROM and SDRAM and various other peripheral interfaces. This board is characterized as follows:

- Dimensions: 150mm x 106mm
- Power supply: +12V
- Working temperature: -10~70°C
- Processor: Atmel AT91SAM9G20 (ARM926EJ-S core with MMU capable of 400MHz operation)
- 64Mbyte SDRAM
- 128Mbyte Nand Flash (support up to 256Mbyte, bootable)
- 4Mbyte Nor Flash (bootable)
- 2Kbit EEPROM
- 2 10M/100M Ethernet ports
- 7 serial ports (Debug: 3-wire RS232 serial port, COM0: 5-wire RS232/TTL serial port, COM1: 5-wire RS485 serial port, COM2: 5-wire RS232/TTL serial port, COM3/4/5: 3-wire RS232/TTL serial port)
- 2 USB2.0 full-speed (12 Mbits/S) Host ports
- 1 USB2.0 full-speed (12Mbits/S) Device port
- 1-channel CAN2.0 Bus
- 4-channel 10-bit ADC
- RTC (battery backed)
- CF card socket
- Mini-PCI interface (SDIO, SPI, COM2 and USB Host are led out through this interface)
- Buzzer
- LEDs
- 1 Reset button
- Watchdog timer
- 8 GPIOs (can be used as 4*4 keyboard or independent IOs)
- 20-pin JTAG interface

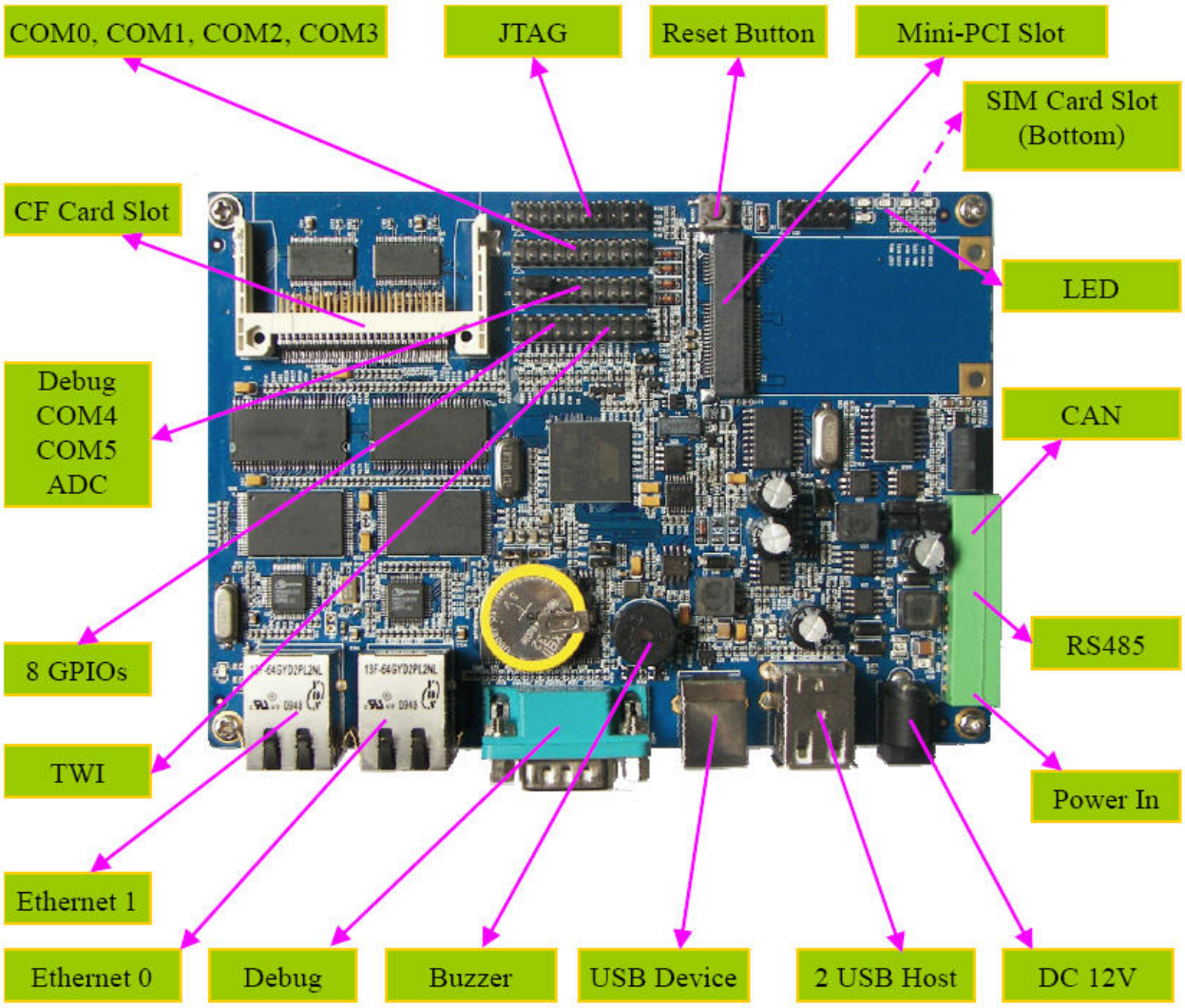
## *Function Block Diagram*



## *Dimension*


142.0mm
48.5mm
5.5mm
63.2mm
2.54mm
25.6mm
2.4mm
7.1mm
14.2mm
21.3mm
106.0mm
98.0mm
3.81mm
6.9mm
D=3mm/6mm
9.9mm
26.2mm
30.9mm
47.2mm
52.9mm
84.3mm
89.9mm
101.6mm
107.0mm
122.0mm
128.0mm
137.1mm
150.0mm

## *Interfaces and Connectors*



## *Software*

| OS | Item | Features | Description |
|---|---|---|---|
| Linux | Startup code | Version | u-boot 1.3.4 |
| | | Boot up mode | Support booting from NandFlash or Nor Flash |
| | | Download mode | Support downloading kernel from Ethernet or SAM-BA |
| | Kernel | Version | Linux 2.6.30 |
| | | File system | ROM/CRAM/EXT2/RAMDISK/YAFFS2/FAT32 |
| | | LED | LED driver |
| | | Serial | Serial ports drivers |
| | | RTC | Hardware clock driver, save system clock |
| | | Ethernet | 10/100M Ethernet (DM9000) driver |
| | | Ethernet | 10/100M Ethernet (from CPU internal) driver |
| | | RS485 | RS485 serial port driver |
| | | CAN | CAN driver |
| | | Buzzer | Buzzer driver |
| | | MMC/SD | MMC mode driver |
| | | USB host | USB host driver, can support USB device hot plug |
| | | USB device | USB device driver |
| | | Keypad | 4*4 keyboard driver |
| | | EEPROM | Provide EEPROM read and write driver |
| | | GPIO | Provide driver |
| | | COMPACTFLASH CARD | CF Card driver |
| | | Watchdog | Watchdog driver |
| | File system | Format | yaffs2 file system, can be read and written |
| | Network protocol and applications | TCP/IP | Complete TCP/IP protocol |
| | System configuration and service | Network Ping | Ping command, used in checking system |
| | Basic command | Ifconfig, route, inetd | Used for Network configuration and service programs |
| | | Linux command | cat, chmod, discard, echo, flashwrite, flashfsd, free, genhtml, init, kill, loader, Ls, mkdir, mount, ps, reboot, rm, smanaged, sysconf, yes, insmod, lsmod, rmmod |

## *Order Information*

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|---|---|
| Order No. | T6010100 |
| Item | Embest SBC6020 Single Board Computer |
| Configuration | ● SBC6020 board<br>● 1 serial cable<br>● 1 net cable<br>● 1 USB cable<br>● 12V power adapter<br>● 1 CD with product reference |

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