

SBC6410 Hardware Manual



Boardcon Technology Limited
www.boardcon.com

1. Introduction

1.1. About this Manual

This manual is intended to provide the user with an overview of the board and benefits, complete features specifications, and set up procedures. It contains important safety information as well.

1.2. Feedback and Update to this Manual

To help our customers make the most of our products, we are continually making additional and updated resources available on the Boardcon website (www.boardcon.com , www.armdesigner.com).

These include manuals, application notes, programming examples, and updated software and hardware. Check in periodically to see what's new!

When we are prioritizing work on these updated resources, feedback from customers is the number one influence, If you have questions, comments, or concerns about your product or project, please no hesitate to contact us at support@armdesigner.com.

1.3. Limited Warranty

Boardcon warrants this product to be free of defects in material and workmanship for a period of one year from date of buy. During this warranty period Boardcon will repair or replace the defective unit in accordance with the following process:

A copy of the original invoice must be included when returning the defective unit to Boardcon. This limited warranty does not cover damages resulting from lightning or other power surges, misuse, abuse, abnormal conditions of operation, or attempts to alter or modify the function of the product.

This warranty is limited to the repair or replacement of the defective unit .In no event shall Boardcon be liable or responsible for any loss or damages, including but not limited to any lost profits, incidental or consequential damages, loss of business, or anticipatory profits arising from the use or inability to use this products.

Repairs make after the expiration of the warranty period are subject to a repair charge and the cost of return shipping. Please contact Boardcon to arrange for any repair service and to obtain repair charge information.

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1 SBC6410 Introduction

1.1 Summary

The Embedded Computer SBC6410 is based on Samsung S3C6410 - an advanced ARM11 CPU for running operating system and application code, and for dedicated video processing. Low voltage Mobile DDR enables very low power consumption in regular operation and in standby. For embedded applications, the SBC6410 provides a general purpose local bus, 100M Ethernet, serial ports, I/O lines and other essential functions, while integrated WiFi interface implement industry standard wireless connectivity. The small size and low power consumption of the SBC6410 allows its integration into hand-held and mobile devices, while its low price makes it an ideal selection for cost-sensitive applications. It is able to support Android, Ubuntu, Linux and WinCE6.0 embedded OS. The SBC6410 embedded SBC delivers a price / performance ratio significantly better than that of any other platform.

1.2 S3C6410 Features

To reduce total system cost and enhance overall functionality, the S3C6410X includes many hardware peripherals such as a Camera Interface, TFT 24-bit true color LCD controller, System Manager (power management & etc.), 4-channel UART, 32-channel DMA, 5-channel 32bit Timers with 2PWM output, General Purpose I/O Ports, I2S-Bus interface, I2C-BUS interface, USB Host, USB OTG Device operating at high speed (480Mbps), 3-channel SD/MMC Host Controller and PLLs for clock generation. Features:

- The ARM1176JZF-S based CPU subsystem with Java acceleration engine and 16KB/16KB I/D Cache and 16KB/16KB I/D TCM.
- 533MHz at 1.1V and 667MHz at 1.2 V respectively.
- 8-bit ITU 601/656 Camera interface up to 4M pixel for scaled and 16M pixel for unscaled resolution.
- Multi Format Codec provides encoding and decoding of MPEG-4/H.263/H.264 up to 30fps@SD and decoding of VC1 video up to 30fps@SD.
- 2D graphics acceleration with BitBlit and rotation.
- 3D graphics acceleration with 4M triangles/s @133Mhz (Transform only)
- AC-97 audio codec interface and PCM serial audio interface.
- 1/2/4bpp Palletized or 16bpp/24bpp Non-Palletized Color-TFT
- I2S and I2C interface support.
- Dedicated IrDA port for FIR, MIR and SIR.
- Flexibly configurable GPIOs.
- Port USB 2.0 OTG supporting high speed as Device (480Mbps, on-chip transceiver).
- Port USB 1.1 Host supporting full speed (12Mbps, on-chip transceiver).
- SD/MMC/SDIO/CE-ATAHost Controller
- Real time clock, PLL, timer with PWM and watch dog timer.
- 32 channel DMA controller.
- Support 8x8 key matrix.
- Advanced power management for mobile applications.

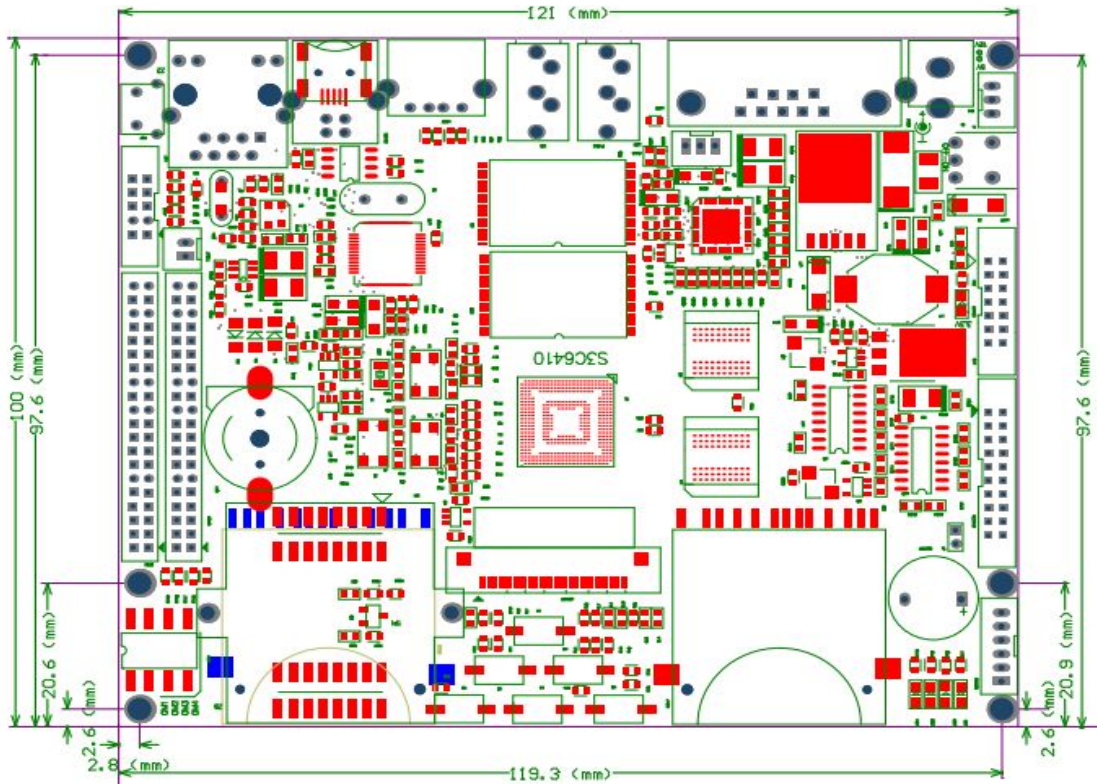
- Memory Subsystem
 - SRAM/ROM/NOR Flash Interface with x8 or x16 data bus.
 - Muxed OneNAND Interface with x16 data bus.
 - NAND Flash Interface with x8 data bus.
 - SDRAM Interface with x32(Port1) data bus.
 - Mobile SDRAM Interface with x32(Port1) data bus
 - DDR Interface with x32(Port1) data bus
 - Mobile DDR Interface with x32(Port1) data bus

1.3 SBC6410 Specifications

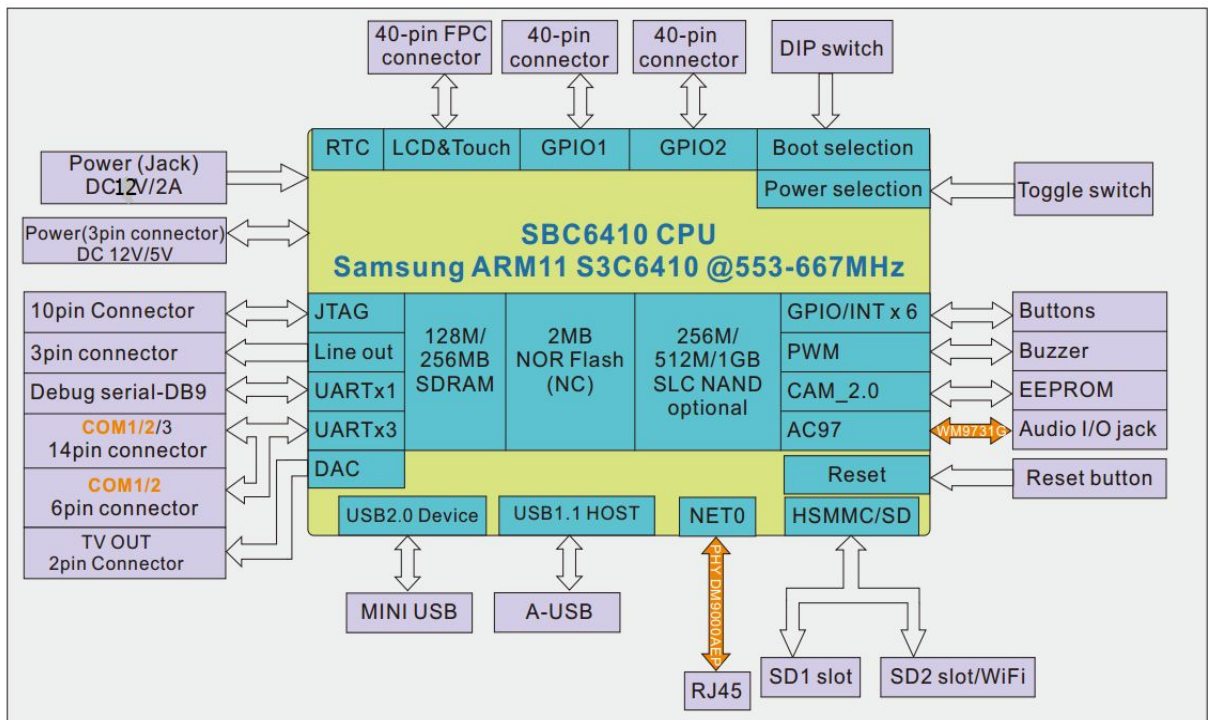
Feature	Specifications
CPU	Samsung S3C6410, ARM1176JZF-S, up to 667MHz Supporting NEON instruction Supporting MPEG-4, MPEG2, H.264/H263, VC-1 and DivX video codec Supporting 2D graphics acceleration, maximum resolution 8000*8000 Supporting 3D graphics acceleration(Power VR SGX540)
Memory	128MB Mobile DDR SDRAM, 266MHz
NAND Flash	256MB SLC NAND Flash. 512MB~1GB SLC/MLC Flash optional
EEPROM	support I2C, it can be soldered with AT88SC016 for encryption
Serial Ports (UARTs)	COM-0, 1 x DB9 RS232 serial port COM-1, 4 x TTL232 serial port COM-2, 2 x RS232 serial port
LCD	The LCD port integrated 4-wire resistor touch screen port. The board comes with driver for 4.3", 7" TFT LCD
Ethernet	10M/100M High performance Ethernet, RJ45 interface
USB	1 x USB2.0 Host, 1 x USB2.0 OTG
JTAG	1 x 10-pin JTAG Port
Audio	Adopt WM9713 Audio chip, Audio I / O interface(3.5mm audio jack)
RTC	Real Time Clock, powered by external lithium battery
SD card	2 x SD/MMC interface (supports 3.3V and 1.8V logic voltage)
General Purpose I/O	GPIO, ADC, SPI, IIC, I/O, Interrupts and MMC are in 2 2x20 pin header
Buttons	6 Programmable User Buttons
Camera(optional)	1.3M pixel CMOS Camera, 1 x 20-pin camera interface
WIFI(optional)	SDIO WIFI Module, supporting IEEE802.11b/g
GPRS(optional)	Base on SIMENS MC388, GSM network
3G(optional)	USB WCDMA Module, dual mode
GPS(optional)	GPS Module, GR-87 Serials
Carrier board Dimension	116.6 x 76.8 x 17mm



1.4 PCB Dimension



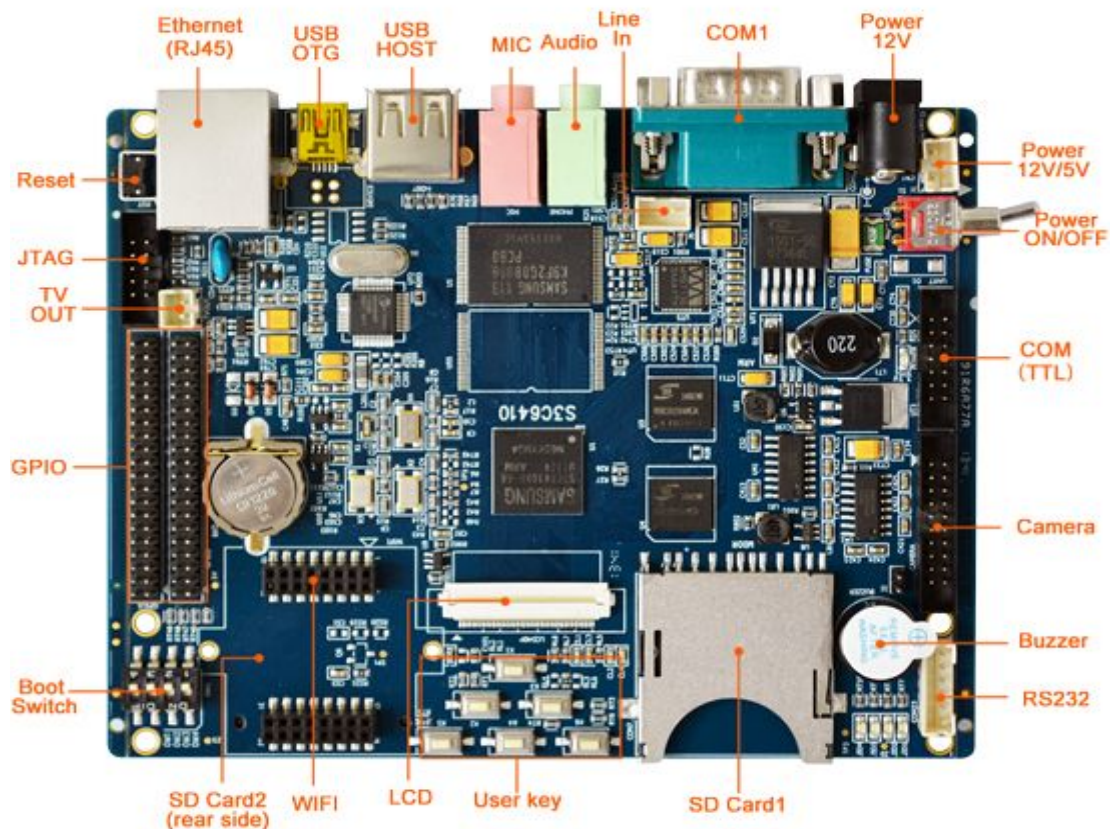
1.5 Block Diagram



1.6 SBC6410 Power meter

Support voltage		12v/2A			
System	Connected devices	Electric current(A)	System	Connected devices	Electric current(A)
Linux	12v power	0.1	Linux	Power, 7 inch resistive screen	0.32
Linux	Power, sd card, play video, U disk, debug serial, Ethernet, 7inch LCD, headphone	0.44	Wince	12v power	0.08
Wince	Power, 7 inch resistive screen	0.3	Wince	Power, sd card, play mp3, U disk, debug serial, Ethernet, 7inch LCD, headphone	0.37

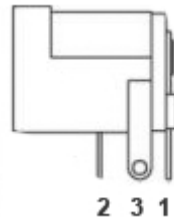
2 Peripherals Introduction



2.1 Power (CN1, J1)

Power supply: DC 12V/2A

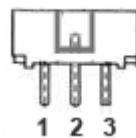
CN1



Pin	Signal	Description	Pin	Signal	Description
1	DC12V	Main power. DC12V power in	2	GND	Ground
3	GND	Ground			

J1 is a 3-Pin white connector. It facilitates the board to connect the power supply when put into the closed enclosure. It can use as power in or power out. If power in from CN1, It can power out 12V and 5V.

J1



Pin	Signal	Description	Pin	Signal	Description
1	DC12V	DC12V voltage	2	GND	Ground
3	VDD_5V	DC5V voltage			

2.2 Power switch (S1)

S1 is a Toggle switch used to control the board power ON/OFF.



Pin	Signal	Description	Pin	Signal	Description
-----	--------	-------------	-----	--------	-------------

1	NC	NC	2	FUSE	Connector to fuse
3	VDD_12V	DC12V	4	NC	NC
5	NC	NC			

2.3 COM (COM1, COM23, UT3)

SBC6410 supports 4 serial ports (COM1/2/3/4). COM1 is a DB9 connector, and COM2&COM3 is a 6-pin connector, COM2&COM3&COM4 is a 14-pin connector.

The COM1 is RS232 port.

Features:

- 32-entry FIFO for receiver and 32-entry FIFO for transmitter
- Programmable baud rate of up to 250K bit/s
- The serial port operates at RS232 voltage levels.

The COM1 is used for debugging. It is used to input and display interactive command, view system boot information and transfer files between the platform and PC.

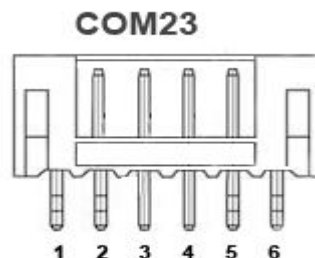
COM1



Pin	Signal	Description	Pin	Signal	Description
1	NC	NC	2	TXD0N	Transmit data
3	RXD0N	Receive data	4	NC	NC
5	GND	Ground	6	NC	NC
7	RSTn0N	Request to sent	8	CTSn0N	Clear to sent
9	NC	NC	10	GND	Ground
11	GND	Ground			

COM23 (CON6)

The COM23 have two serial ports. The UART single output from the CPU through the SP3232EEN chip change to RS232.

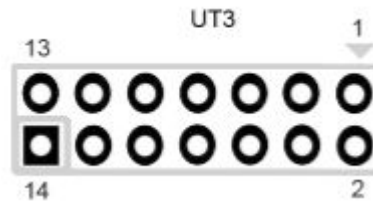


Pin	Signal	Description	Pin	Signal	Description
1	VDD_IO	IO Supply Voltage	2	TXD1N	Transmit data
3	RXD1N	Receive data	4	TXD2N	Transmit data
5	RXD2N	Receive data	6	GND	Ground

UT3 (CON14)

The UT3 is a 14-pin connector and can be extended to 3x three-wire serial ports.

two serial ports is multiplexed with COM23. The UART is use for GPS in SBC6410 by default. The UART single output directly from the CPU. They are TTL UART single.



Pin	Signal	Description	Pin	Signal	Description
1	VDD_IO	IO Supply Voltage	2	VDD_5V	DC5V
3	VDD_IO	IO Supply Voltage	4	VDD_5V	DC5V
5	TXD1	Transmit data	6	RXD1	Receive data
7	CTSn1	Clear to sent	8	RTSn1	Request to sent
9	TXD2	Transmit data	10	RXD2	Receive data
11	TXD3	Transmit data	12	RXD3	Receive data
13	GND	Ground	14	GND	Ground

2.4 Buzzer

The buzzer is controlled by PWM.



Buzzer

Pin	Signal	Description	Pin	Signal	Description
1	BUZZER_1	Connect to J2	2	BUZZER_2	Connect to the Collector of transistor 8050

J2 is used to control the buzzer of voltage. 5V power supply connection the jumper.



Pin	Signal	Description	Pin	Signal	Description
1	VDD_5V	DC5V	2	BUZZER_1	Connect to buzzer pin1

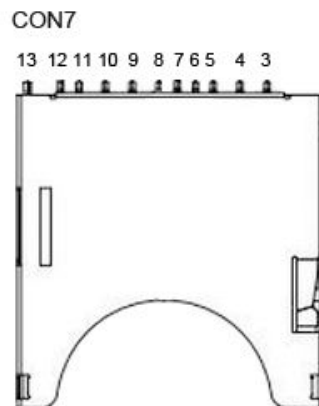
2.5 SD Card

The SD card is used as an external storage device. The MMC controller interface supports up to 4-bit transfer modes. MMC is always accessible through the carrier board interface.

Features:

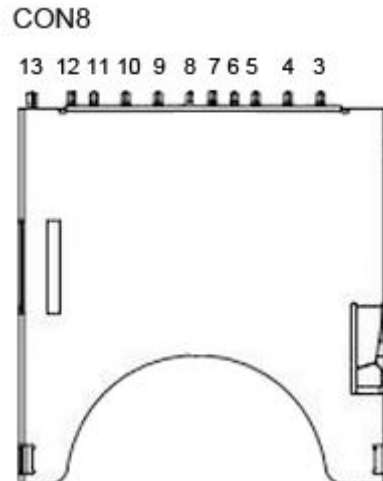
- Low voltage consumption.
- Support hot-plug.
- Support SD mode and SPI mode.

SBC6410 supports 2-channel SD cards: SD0 (CON7), SD1 (CON8). SD0 can be used as bootable-SD Card, it is convenient for users to mass production and software upgrades.



Pin	Signal	Description	Pin	Signal	Description
3	SD0_DATA2	Data signal	4	SD0_DATA3	Data signal
5	SD0_CMD	SD Command signal	6	SD0_CDn	SD Card detect
7	GND	Ground	8	VDD_IO	IO Supply Voltage
9	SD0_CLK	Clock signal	10	GND	Ground
11	SD0_DATA0	Data signal	12	SD0_DATA1	Data signal
13	SD0_WPn	SD Write Protect			

The CON8 can be use for read and write files.



Pin	Signal	Description	Pin	Signal	Description
3	SD1_DATA2	Data signal	4	SD1_DATA3	Data signal
5	SD1_CMD	SD Command signal	6	SD1_CDn	SD Card detect
7	GND	Ground	8	VDD_IO	IO Supply Voltage
9	SD1_CLK	Clock signal	10	GND	Ground
11	SD1_DATA0	Data signal	12	SD1_DATA1	Data signal
13	SD10_WPn	SD Write Protect	14	SD1_DATA3	

2.6 LCD (LCD40P)

The LCD40P is a 0.5mm pitch 40-pin on-board connector. It contains the most common control signals used in LCD (horizontal and vertical scanning, the clock and enable, etc.), in which pin1, 2, 3 and 4 are four-wire touch screen interface, the four signals are led out from CPU, user can connect directly the four-wire resistive touch screen (CPU comes with touch-screen controller).

The SBC6410 comes with driver for 4.3- and 7-inch resistive LCD. User also can choose other size of LCD and touch screen.



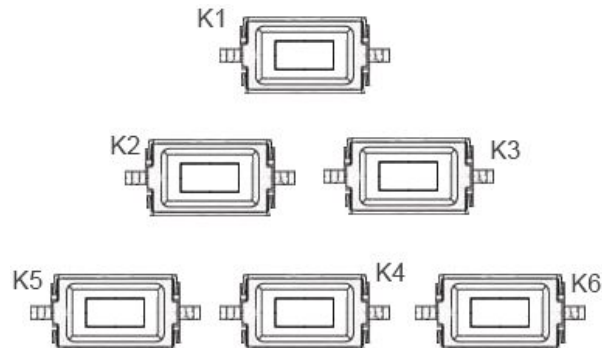
Pin	Signal	Description	Pin	Signal	Description
1	TSYP	ADC Analog Input.	2	YSYM	ADC Analog Input.
3	TSXP	ADC Analog Input.	4	TSXM	ADC Analog Input.
5	VCLK	Pixel clock signal for RGB interface	6	HSYNC	Horizontal synchronous signal for RGB interface
7	VSYNC	Vertical synchronous signal for RGB interface	8	VDEN	Data enable signal for RGB interface



9	LCD_GPE1	LCD GPE1	10	LCD_GPE0	LCD GPE0
11	LCD_PWM/G PF14	LCD PWM/GPF14	12	GND	Ground
13	VD23	LCD pixel data 23 output for RGB interface	14	VD22	LCD pixel data 22 output for RGB interface
15	VD21	LCD pixel data 21 output for RGB interface	16	VD20	LCD pixel data 20 output for RGB interface
17	VD19	LCD pixel data 19 output for RGB interface	18	VD18	LCD pixel data 18 output for RGB interface
19	VD17	LCD pixel data 17 output for RGB interface	20	VD16	LCD pixel data 16 output for RGB interface
21	GND	Ground	22	VD15	LCD pixel data 15 output for RGB interface
23	VD14	LCD pixel data 14 output for RGB interface	24	VD13	LCD pixel data 13 output for RGB interface
25	VD12	LCD pixel data 12 output for RGB interface	26	VD11	LCD pixel data 11 output for RGB interface
27	VD10	LCD pixel data 10 output for RGB interface	28	VD9	LCD pixel data 9 output for RGB interface
29	VD8	LCD pixel data 8 output for RGB interface	30	GND/nRESET	Ground/reset
31	VD7	LCD pixel data 7 output for RGB interface	32	VD6	LCD pixel data 6 output for RGB interface
33	VD5	LCD pixel data 5 output for RGB interface	34	VD4	LCD pixel data 4 output for RGB interface
35	VD3	LCD pixel data 3 output for RGB interface	36	VD2	LCD pixel data 2 output for RGB interface
37	VD1	LCD pixel data 1 output for RGB interface	38	VD0	LCD pixel data 0 output for RGB interface
39	VDD_5V	5V Voltage	40	VDD_5V	5V Voltage

2.7 Buttons (K1/2/3/4/5/6, RST)

SBC6410 provides 6 user-defined buttons (K1, K2, K3, K4, K5, K6), they were led out directly from the CPU INT.



Pin	Signal	Description	Pin	Signal	Description
K1	KEYINT1	KEY Interrupt 1	K2	KEYINT2	KEY Interrupt 2
K3	KEYINT3	KEY Interrupt 3	4	KEYINT4	KEY Interrupt 4
K5	KEYINT5	KEY Interrupt 5	6	KEYINT6	KEY Interrupt 6

The Reset button RST is a 6x6mm Tact Switch, The board adopts MAX811 as the Reset chip. If the system voltage is lower than the threshold (2.93V), MAX811S will reset the system immediately.

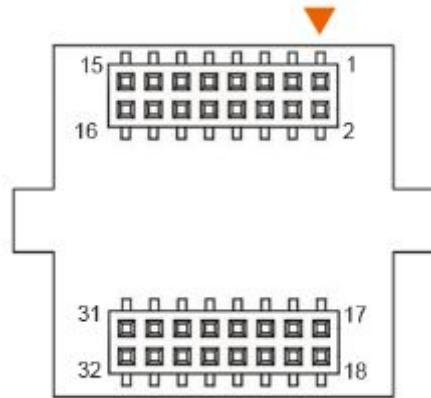


Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	KEY_RST	Connect to MAX811
3	GND	Ground	4	GND	Ground

2.8 WiFi

The WiFi interface consists of 2x 16pin 2.0mm pitch connectors. The SDIO WiFi module supports IEEE 802.11b/g.

Note: When connect the WIFI model to the board play attention the direction.



Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	SD1_WPn	SD1 Write Protect
3	GND	Ground	4	SD1_DATA1	SD1 Data1 signal
5	GND	Ground	6	SD1_DATA0	SD1 Data0 signal
7	GND	Ground	8	SD1_CLK	SD1 clock signal
9	GND	Ground	10	SD1_CDn	SD Card 1 detect
11	GND	Ground	12	SD1_CMD	SD1 Command signal
13	GND	Ground	14	SD1_DATA3	SD1 Data3 signal
15	GND	Ground	16	SD1_DATA2	SD1 Data2 signal
17	NC	NULL	18	GND	Ground
19	VDD_WIFI	Voltage for WIFI	20	GND	Ground
21	VDD_WIFI	Voltage for WIFI	22	GND	Ground
23	VDD_WIFI	Voltage for WIFI	24	GND	Ground
25	VDD_WIFI	Voltage for WIFI	26	GND	Ground
27	NC	NULL	28	GND	Ground
29	WIFI_PD	WIFI PD	30	GND	Ground
31	WIFI_IO	WIFI input/output	32	GND	Ground

2.9 Boot Switch (SW1)

The SW1 is an 8-pin DIP Switch used for boot selection. The SBC6410 support two modes: sd card mode and nand flash mode.



Pin	Signal	Description	Pin	Signal	Description
1	VDD_IO	IO voltage	2	VDD_IO	IO voltage
3	VDD_IO	IO voltage	4	VDD_IO	IO voltage
5	OM4	Boot select 4	6	OM3	Boot select 3
7	OM2	Boot select 2	8	OM1	Boot select 1

Boot mode

Boot Mode	1	2	3	4
Sd card mode	ON	ON	ON	ON
Nand flash mode	ON	ON	OFF	OFF

2.10 GPIO (GPIO1, GPIO2)

SBC6410 provides 2x GPIO (2x20 pin header) for user to extended functions. The pins can be defined as

- Data input / output.
- Interrupt generation.



Pin	Signal	Description	Pin	Signal	Description
1	VDD_IO	IO voltage	2	GND	Ground
3	GPN6/EINT6	Port N 6/External Interrupt 6	4	GPN9/EINT9	Port N 9/External Interrupt 9
5	GPN12/EINT12	Port N 12/External Interrupt 12	6	GPN11/EINT11	Port N 11/External Interrupt 11
7	BOOT_EINT14	BOOT_External Interrupt 14	8	BOOT_EINT13	BOOT_External Interrupt 13
9	EINT16	External Interrupt 16	10	OOT_EINT15	OOT_External Interrupt 15
11	EINT18	External Interrupt 18	12	EINT17	External Interrupt 17
13	EINT20	External Interrupt 20	14	EINT19	External Interrupt 19
15	GPP1	Port P 1	16	GPP0	Port P 0
17	GPP9	Port P 9	18	GPP8	Port P 8
19	ADCIN0	ADC Analog Input 0	20	GPP12	Port P 12
21	ADCIN2	ADC Analog Input 2	22	ADCIN1	ADC Analog Input 1
23	GPQ2	Port Q 2	24	ADCIN3	ADC Analog Input 3
25	GPQ4	Port Q 4	26	DAC_OUT1	DAC Output1

27	GPQ6	Port Q 6	28	GPQ3	Port Q 3
29	GPE2	Port E 2	30	GPQ5	Port Q 5
31	GPE4	Port E 4	32	GPE3	Port E 3
33	MMC2_DATA0/GPH6	MMC2 Data0 signal/Port H 6	34	MMC2_DATA1/GPH7	MMC2 Data1 signal/Port H 7
35	MMC2_DATA2/GPH8	MMC2 Data2 signal/Port H 8	36	MMC2_DATA3/GPH9	MMC2 Data3 signal/Port H 9
37	GPO3/CSn5	Port O 3/Chip select per chip 5	38	GPO4/CSn6	Port O 4/Chip select per chip 6
39	GND	Ground	40	GND	Ground



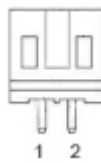
Pin	Signal	Description	Pin	Signal	Description
1	VDD_5V	5V Voltage	2	VDD_IO	IO Voltage
3	KP_COL0	Key Pad Column bit Configure 0	4	KP_COL1	Key Pad Column bit Configure 1
5	KP_COL2	Key Pad Column bit Configure 2	6	KP_COL3	Key Pad Column bit Configure 3
7	KP_COL4	Key Pad Column bit Configure 4	8	KP_COL5	Key Pad Column bit Configure 5
9	KP_COL6	Key Pad Column bit Configure 6	10	KP_COL7	Key Pad Column bit Configure 7
11	KP_ROW0	Keypad I/F Row 0	12	KP_ROW1	Keypad I/F Row 1
13	KP_ROW2	Keypad I/F Row 2	14	KP_ROW3	Keypad I/F Row 3
15	KP_ROW4	Keypad I/F Row 4	16	KP_ROW5	Keypad I/F Row 5
17	KP_ROW6	Keypad I/F Row 6	18	KP_ROW7	Keypad I/F Row 7
19	GND	Ground	20	GND	Ground
21	GPK0	Port K 0	22	GPK1	Port K 1
23	GPK2	Port K 2	24	GPK3	Port K 3
25	GPK4	Port K 4	26	GPK5	Port K 5
27	GPM4	Port M 4	28	GPM5	Port M 5
29	GND	Ground	30	GND	Ground
31	I2C0_SCL	IIC0-bus clock	32	I2C0_SDA	IIC0-bus data
33	SPI1_CS/GPC7	SPI1 chip select(only for slave mode)/Port C 7	34	SPI1_MOSI/GPC6	SPI MOSI[1]. SPI master data output line /Port C 6
35	SPI1_CLK/MMC2_CLK	SPI1 clock /MMC2 clock	36	SPI1_MISO/MMC2_CMD	SPI MISO[1]. SPI master data input line /MMC2

					Command signal
37	SPI0_CS	SPI0 chip select(only for slave mode)	38	SPI0_MOSI	SPI0 master data output line
39	SPI0_MISO	SPI0 master data input line	40	SPI0_CLK	SPI0 clock

2.11 TVOUT

S3C6410 supports 2-CH TV out. SBC6410 amplifies and outputs 1-CH signal (DACOUT0) for user.

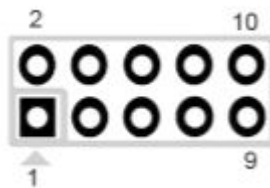
TVOUT



Pin	Signal	Description	Pin	Signal	Description
1	Connect to UT6(Vout/Vsa g)	TV Output	2	GND	Ground

2.12 JTAG

The standard JTAG interface is 4 line: TMS(mode select), TCK(clock), TDI(data input), TDO(data output). SBC6410 provides a 10-pin JTAG interface that contains a complete JTAG standard signal.



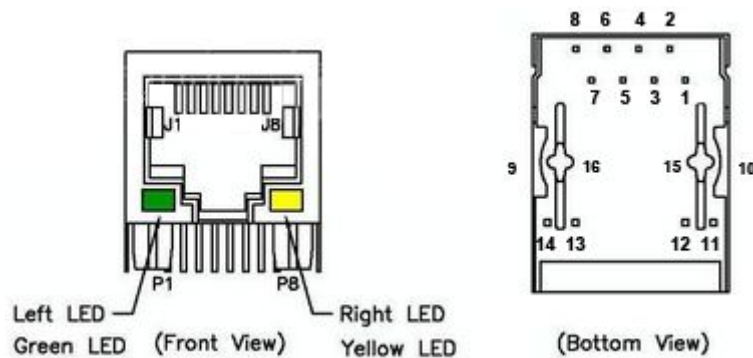
Pin	Signal	Description	Pin	Signal	Description
1	VDD_IO	IO Supply Voltage	2	VDD_IO	IO Supply Voltage
3	TRSTn /nRESET	Test logic reset	4	RTCK	(TAP Controller Clock) provides the clock input for the JTAG logic.
5	TDI	Test data input	6	TDO	Test data output
7	TMS	Test mode select	8	GND	Ground
9	TCK	Test clock	10	GND	Ground

2.13 Ethernet (NET)

The platform adopts DM9000AEP as the Ethernet chip, it can adaptively 10/100M network. The RJ45 connector contains a coupling coil, without additional network transformer.

Features:

- 10/100 BASE-T IEEE 802.3 compliant
- IEEE 802.3u compliant Auto-Negotiation
- Integrated IEEE 1588 time stamping module (inside the MAC).
- Automatic channel swap (ACS)
- Full- and Half-duplex
- Automatic MDI/MDIX crossover
- Automatic polarity correction
- Activity and speed indicator LED controls
- You can set a fixed IP or automatically obtain IP



Pin	Signal	Description	Pin	Signal	Description
1	DM9000_TX+	DM9000 data send +	2	DM9000_TX-	DM9000 data send -
3	DM9000_RX+	DM9000 data receive +	4	NET_AVDD25	Power for NET
5	NET_AVDD25	Power for NET	6	DM9000_RX-	DM9000 data receive -
7	NC	NULL	8	GND	Ground
9	GND	Ground	10	GND	Ground
11	VDD_IO	IO Supply Voltage	12	DM9000_LINKLED	LED for detect link
13	DM9000_LANLED	LED for detect speed	14	VDD_IO	IO Supply Voltage

2.14 USB OTG

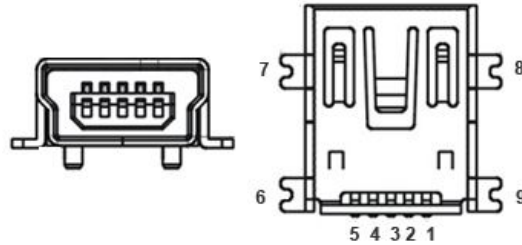
USB2.0 OTG is generally used to download image to the target board.

Features:

Complies with the On-The-Go Supplement to the USB 2.0 Specification

Supports high speed (480Mbps), full speed (12Mbps, Device only), low speed (1.5Mbps, Host only)

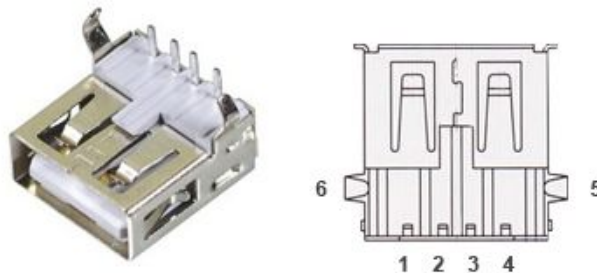
Configures as USB 1.1 full/low speed DRD(Dual-Role Device), Host-only or Device only controller



Pin	Signal	Description	Pin	Signal	Description
1	VBUS	USB Mini-Receptacle Vbus	2	OTGDM	USB OTG negative data
3	OTGDP	USB OTG positive data	4	OTGID	USB OTG ID signal
5	GND	Ground	6	GND	Ground
7	GND	Ground	8	GND	Ground
9	GND	Ground	10	GND	Ground

2.15 USB HOST (HOST)

SBC6410 provides an USB1.1 Host for user to connect the devices such as U disk, USB mobile hard disk, USB mouse, USB keyboard, etc.



Pin	Signal	Description	Pin	Signal	Description
1	VDD_5V	USB Power. DC 5V	2	USBDN	USB Data pin DATA(-) for USB 1.1 Host
3	USBDP	USB Data pin DATA(+) for USB 1.1 Host	4	GND	Ground
5	GND	Ground	6	GND	Ground

2.16 Audio I/O (MIC, PHONE, J5)

S3C6410 supports I2S/PCM/AC97 audio interface. SBC6410 adopts AC97, external WM9713 as the Audio CODEC. Audio output (PHONE) is a 3.5 mm green jack, and audio input (MIC) is pink. In addition, SBC6410 is equipped with a 3pin line in connector.



MIC

Pin	Signal	Description	Pin	Signal	Description
1	MIC/MICBIAS	MIC input	2	MIC/MICBIAS	MIC input
3	MIC/MICBIAS	MIC input	4	MIC/MICBIAS	MIC input
5	GND_AC97	Ground			

PHONE

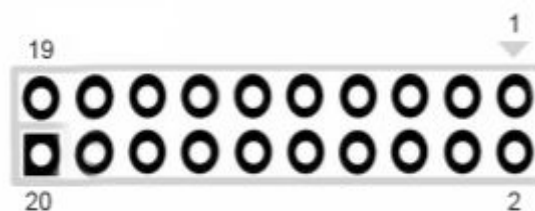
Pin	Signal	Description	Pin	Signal	Description
1	HPL	Left Channel Headphone Output	2	HPR	Right Channel Headphone Output
3	HPR	Right Channel Headphone Output	4	HPL	Left Channel Headphone Output
5	GND_AC97	Ground			

J5 (Line in)

Pin	Signal	Description	Pin	Signal	Description
1	LINER	LINE in at right channel	2	LINEL	LINE in at left channel
3	GND_AC97	Ground			

2.17 Camera

CAMERA is a 2mm pitch 26-pin connector. It can be connected to the OV9650 module combined with an adapter plate. OV9650 is a 1.3Mega pixels CMOS camera module.



Pin	Signal	Description	Pin	Signal	Description
1	CAM_SDA	Camera serial data	2	CAM_SCL	Camera serial clock
3	CAM_IO	Camera IO	4	CAMRSTn	Camera reset
5	LCAMPCLK	Camera Pixel clock	6	LCAMHREFF	Camera Horizontal sync
7	LCAMVSYNC	Camera Vertical sync	8	LCAMCLK	Camera clock
9	LCAMDATA7	Camera data 7	10	LCAMDATA6	Camera data 6
11	LCAMDATA5	Camera data 5	12	LCAMDATA4	Camera data 4
13	LCAMDATA3	Camera data 3	14	LCAMDATA2	Camera data 2
15	LCAMDATA1	Camera data 1	16	LCAMDATA0	Camera data 0
17	VDD_5V	5V Voltage	18	VDD_IO	Power for IO
19	GND	Ground	20	GND	Ground

2.18 Backup battery (BAT1)



The backup battery (3V) is used to ensure the RTC (frequency 32.768KHz) is still able to work after power off. Lithium cell model: CR1220.

3 Product Configurations

Standard Content



SBC6410



CD-ROM



Power Adaptor



USB Cable



Ethernet Cable



Serial Cable

Optional Parts



4.3"/7" LCD



GPS



Camera



WIFI



3G



GPRS



Bluetooth