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LONGCHEER Cellular Engine

U5200 user guide describes interfaces, function and application, which is provided to LONGCHEER's customers for testing, evaluation, integration and information.

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VERSION HISTORY

Version	Author	Date	Chapter	What is new
V1.0	Lu Xiangcheng	2008-10-31		New
V1.01	Lu Xiangcheng	2008-11-5		2.2.6 Camera interface: add interface logic levels 2.2.7 UART interface: Exchange CTS and RTS of MCU 2.2.8 LED control: Change the reference circuit of LED control.
V1.1	Bian Shaohui	2008-12-12		Change U5100PLUS to U5200 Modified the camera interface. Added power on/off and reset reference circuit

Contents

1．Introduction

1.1 Overview

The LONGCHEER HSDPA module U5200, powered by Qualcomm MSM6246 chipset, can be integrated into any devices for 3G mobile applications. It provides Voice Call, SMS, MMS, Video Call and Extended mass memory function as well as high speed internet access to HSDPA and UMTS networks worldwide.

The U5200 module complies with the technical standard listed below:

·HSDPA

3GPP R5, up to 3.6 Mbps DL Category 8

·UMTS

Up to 384 Kbps DL and UL

·EDGE

3GPP R4, Class 12, up to 236.8 Kbps DL and 118.4Kbps UL

·GPRS

Up to 85.6 Kbps DL and 42.8 Kbps UL

It supports the frequency bands: UMTS 850/1900/2100 MHz and GSM/GPRS/EDGE 850/900/1800/1900 MHz.

1.2 Application scenario

The HSDPA module U5200 supports Voice Call, SMS, MMS, Video Call, Extended mass memory and Internet access functions. The application of U5200 is as follows:
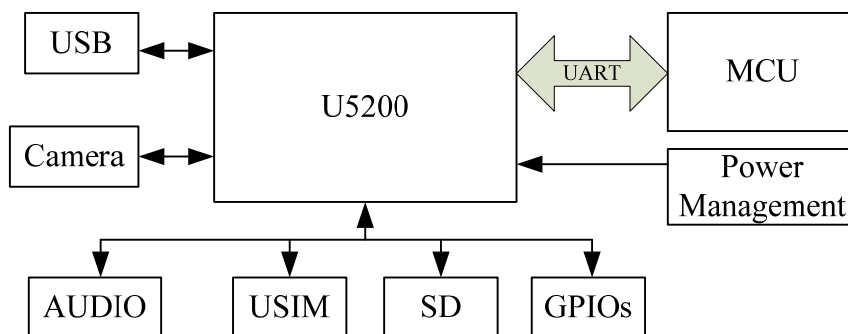
Figure1-1 U5200 application scenario

2. U5200 interfaces

2.1 U5200 interface summary

The module U5200 supports multimode operation: HSDPA, tri-band UMTS (850/1900/2100 MHz) and quad-band GSM (850/900/1800/1900 MHz). The size of U5200 is 45×33×4.6mm. And the appearance is shown in Figure 2-1 and Figure 2-2.
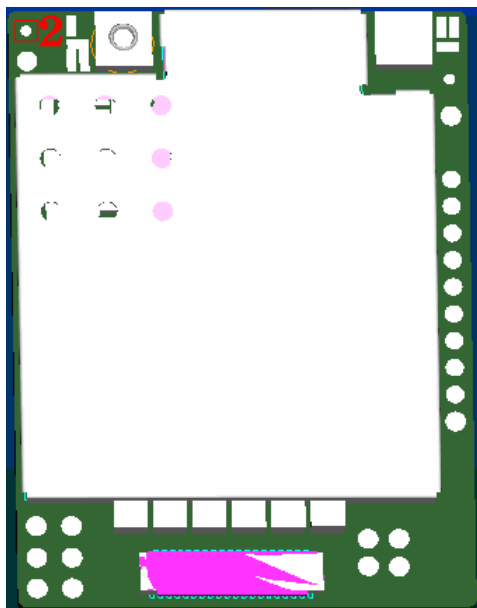
Figure 2-1 The front view of U5200   **Figure 2-2 The rear view of U5200**
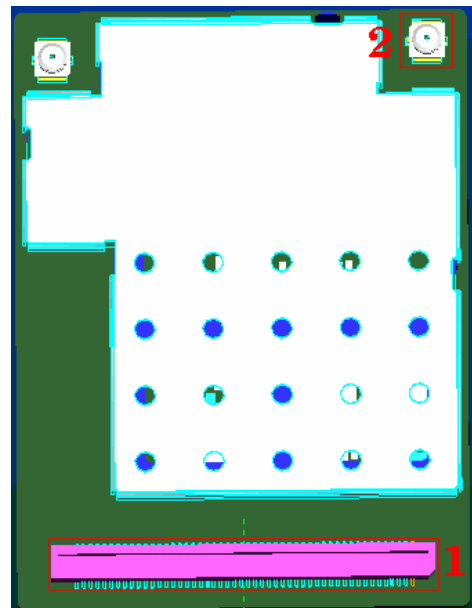
The 100PIN board to board connector is shown as part 1 in Figure 2-2, which is the main interface for application. An antenna pad and a RF connector is shown as part 2 in Figure 2-1 and Figure 2-2.

2.1.1 Board to Board connector

A 100PIN board to board connector is offered for user, which is a two-piece structure narrow pinch(0.5mm) header (AXK6F00347YJ),   and its sketch map is given in figure 2-3. The value of parameter A, B and C is as follow:

A=28mm, B=24.5mm, C=1.25mm.

It is recommended to use the AXK5F00547YJ, which is produced by NAIS, as the socket on the daughterboard.
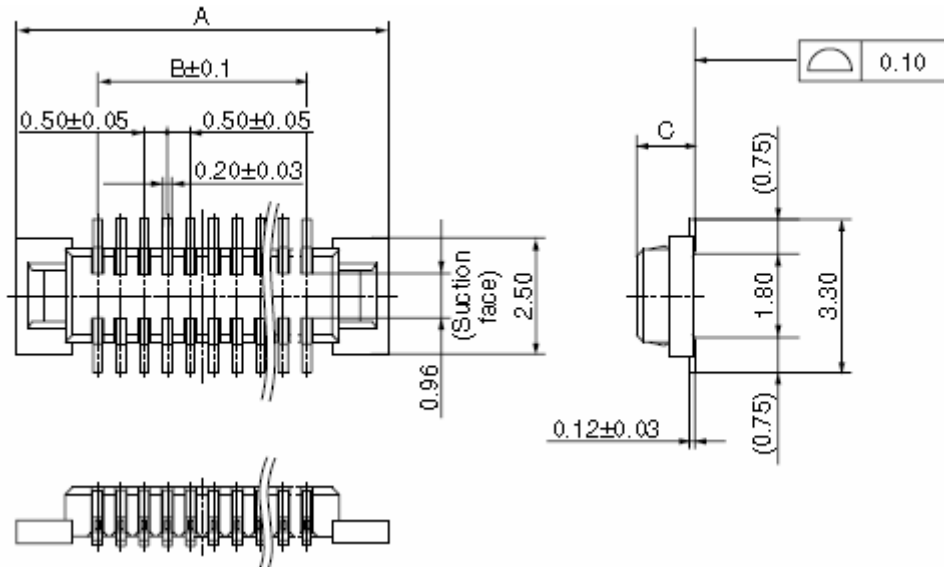
Figure 2-3 The sketch map of board to board connector

For protecting the connector from electro-static, it is better to use the ESD element. And the ESD element should be as close as possible to connector. The definition of the PINs in board to board connector is listed in table 2.1 below.
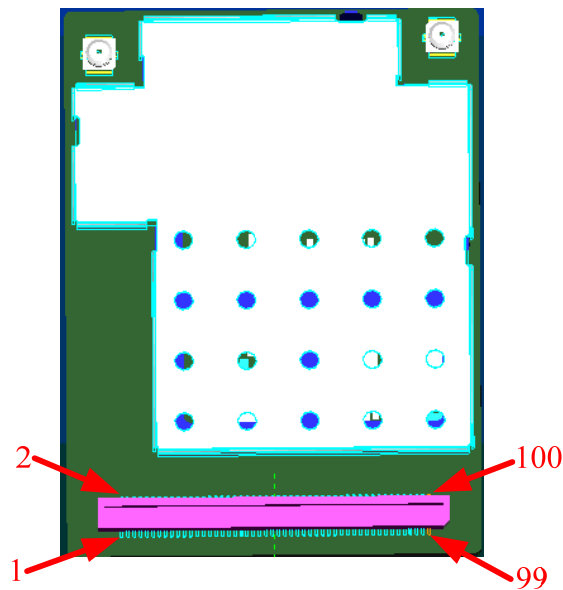
Figure 2-4 The 100 PINs board to board connector of U5200

Table 2.1 The definition of board to board connector

|					
GND	1			2	HPH_L
MIC1_P	3			4	HPH_R
MIC1_N	5			6	GND
GND	7			8	I2C_SDA
MIC2_P	9			10	GND
MIC2_N	11			12	I2C_SCL
GND	13			14	GND
EAR1ON	15			16	HOST_WAKE
EAR1OP	17			18	GPIO_1.8V
GND	19			20	CAMIF_VSYNC
USB_HS_DP	21			22	CAMIF_EN
USB_HS_DM	23			24	CAMIF_HSYNC
GND	25			26	VREG_MSME
USB_VBUS	27			28	VREG_MSMP
NC	29			30	GND
UART1_RTS	31			32	CAMIF_PO
UART1_CTS	33			34	GND
UART1_RX	35			36	CAMIF_PCLK
UART1_TX	37			38	CAMIF_DATA[9]
KPD_PWR_N	39			40	CAMIF_DATA[8]
EXT_RST_IN	41			42	CAMIF_DATA[7]
CAMIF_RESET	43			44	CAMIF_DATA[6]
SPI_INT	45			46	CAMIF_DATA[5]
SPI_CS	47			48	CAMIF_DATA[4]
SPI_DIN	49			50	CAMIF_DATA[3]
SPI_DOUT	51			52	CAMIF_DATA[2]
GND	53			54	CAMIF_DATA[1]
HKADC1	55			56	CAMIF_DATA[0]
GND	57			58	VCOIN
PCM_CLK	59			60	BT_PWR_EN
GND	61			62	NC
PCM_DIN	63			64	EXT_WAKE
PCM_DOUT	65			66	32K_CLK_BT
PCM_SYNC	67			68	VREG_GP2
KYBD_BACKLIGHT	69			70	VREG_MMC
LCD_BACKLIGHT_CTRL	71			72	SDCC1_DATA3
VREG_EXTUSIM	73			74	SDCC1_DATA2
GND	75			76	SDCC1_DATA1
USIM_CLK	77			78	SDCC1_DATA0
GND	79			80	SDCC1_CMD
USIM_DATA	81			82	GND
USIM_RESET	83			84	SDCC1_CLK

GND	85			86	GND
PMIC_SPKR_OUT_M	87			88	UICC_USB_DAT
PMIC_SPKR_OUT_P	89			90	UICC_USB_VM
GND	91			92	GND
VBATT_INT	93			94	VCHG_IN
VBATT_INT	95			96	VCHG_IN
VBATT_INT	97			98	VBATT_INT
VBATT_INT	99			100	VBATT_INT

2.1.2 RF interface

The U5200 module provides an interface for RF antenna which has two different modes for connection: Connector mode: U5200 uses MURATA's MM9329-2700RA1 RF connector on the rear side, it is recommend to use MURATA's MXTK92XXXXX as matching connector. Please refer to MURATA's MXTK92XXXXX documents for more information.

Solder pad mode: The antenna can also be soldered to the pad on the module which has a ground pad close to the antenna pad.

The ground impedance of RF antenna is 50Ω. The RF connector is shown in Figure 2-5.
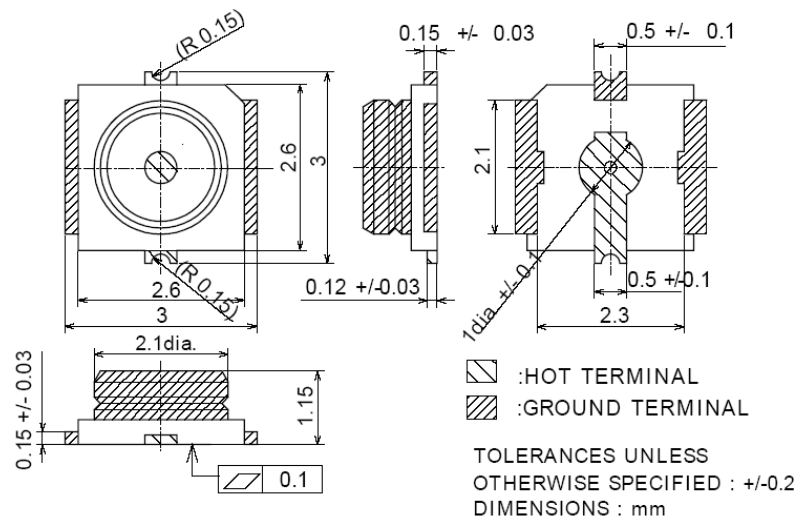

Figure 2-5 The sketch map of RF connector

It's required to use RF cable of which the insertion loss should comply with:

• GSM850/900<1dB

• DCS1800/PCS1900<1.5dB

• UMTS2100/ UMTS1900/ UMTS850<1.5dB

2.2 Application note of U5200 interfaces

U5200 provides rich interfaces for secondary development by the 100PIN board to board connector, such as Camera interface, Micro SD/T-Flash card interface (Compatible for MMC card), USIM card interface, USB interface, audio interface, UART interface, PCM（Pulse Code Modulation) interface, SPI（Serial Peripheral interface) interface, power supply interface and so on. The detailed information will be described in the following sections.

2.2.1 Power supply and Ground

The power supply input for U5200 module is listed as follows:

DC +3.8V～+4.15V, for U5200 working voltage;

The description of U5200 Power supply and GND pins is shown in Table 2-2 below.

Table 2-2 The description of U5200 Power supply and GND pins

Power input	The correlative pins in B to B connector	SN. of the B to B connector
DC: +3.8V～+4.15V input	VBATT_INT	93、95、97、98、99、100
GND	GND	1、6、7、10、13、14、19、25、30、34、53、57、61、75、79、82、85、86、91、92

2.2.2 USB interface

2.2.2.1 Description

U5200 provides a high-speed USB interface by 100PIN board to board connector, which supports USB 2.0 protocol. The detailed information is given in Table 2-3.

Table 2-3 U5200 USB interface description

Signals of USB interface	The correlative pins in board to board connector	SN. of 100pin board to board connector	Description

USB_VBUS	USB_VBUS	27	USB power
DM	USB_HS_DM	23	USB Data-
DP	USB_HS_DP	21	USB Data+
GND	GND	1、6、7、10、13、14、19、25、30、34、53、57、61、75、79、82、85、86、91、92	GND

2.2.2.2 Reference circuit

The reference circuit of USB interface is shown in Figure 2-6 below.

1) To get the reliable USB power supply, it is recommended to use a 10uF（C406) filter capacitor and a 22pF（C407) filter capacitor which need to be grounded.

2) To reduce the reflection caused by the high frequency alternating signal in the transmission, it is recommended to add a resistor with value below 10Ω to the DM and DP in USB interface to ensure correct transmission for USB data. Just like the resistors R408 and R409 in Figure 2-6.

3) To avoid static electricity in USB interface, it is recommended to use the ESD protection device. Just like the varistor RV406, RV407 and RV408 with capacitor values below 3pF.

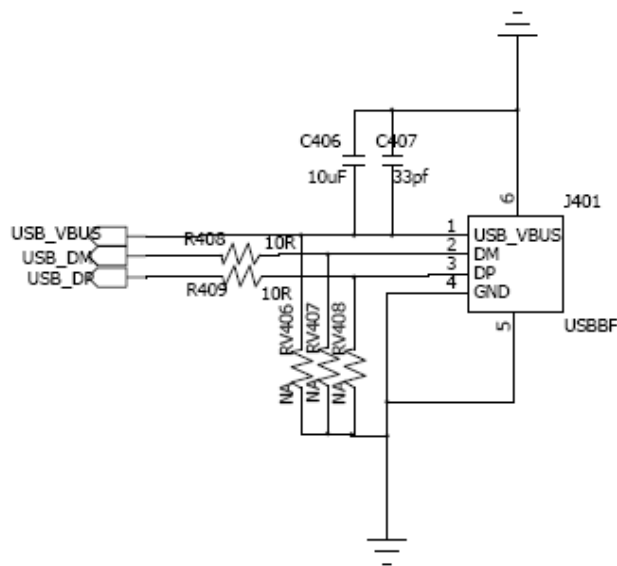4) To ensure USB working reliably, it is recommended to use additional protection device.

Figure 2-6 The reference circuit of USB interface

2.2.3 USIM interface

U5200 supports USIM card in UMTS mode as well as SIM card in GSM/GPRS/EDGE mode.

2.2.3.1 Description

U5200 provides USIM card interface by 100 pin board to board connector which can be used in both UMTS and GSM/GPRS/EDGE networks. The Table 2-4 gives more detailed information.

Table 2-4 U5200 USIM card interface description

Signals offered by USIM interface	The name of the correlative pins in board to board connector	SN. of the board to board connector	Description
DATA	USIM_DATA	81	USIM card data
CLK	USIM_CLK	77	USIM card CLK
RST	USIM_RESET	83	Reset signal
VCC	VREG_EXTUSIM	73	USIM card power
GND	GND	1、6、7、10、13、14、19、25、30、34、53、57、61、75、79、82、85、86、91、92	GND

2.2.3.2 Reference circuit

The reference circuit of USIM interface is shown in Figure 2-7 below.

1) The DATA line of USIM is connected to SIM power supply by a pull-up resistor with reference value 15KΩ.

2) To avoid the instantaneous voltage overflowing, the resistor with reference value 22Ω can be used for the DATA, CLK and RST line. Just like the resistors R307, R308 and R309 in Figure 2-7.

3) To avoid the static electricity in USIM socket, it is recommended to use the ESD protection device for the DATA，

CLK and VCC line. Just like the varistors RV301, RV302, RV303 and RV304 in figure 2-7 which should be close to the USIM socket as possible.

4) To get more flat USIM power supply, it is recommended to use the filter capacitors. Just like C311 and C312 in Figure 2-7 with reference value 33pF and 100nF.

5) To eliminate the peak interference and high frequency interference signal on RST and CLK line, the filter capacities (C310, C309) can be placed in RST and CLK line, the reference value is 33pF.
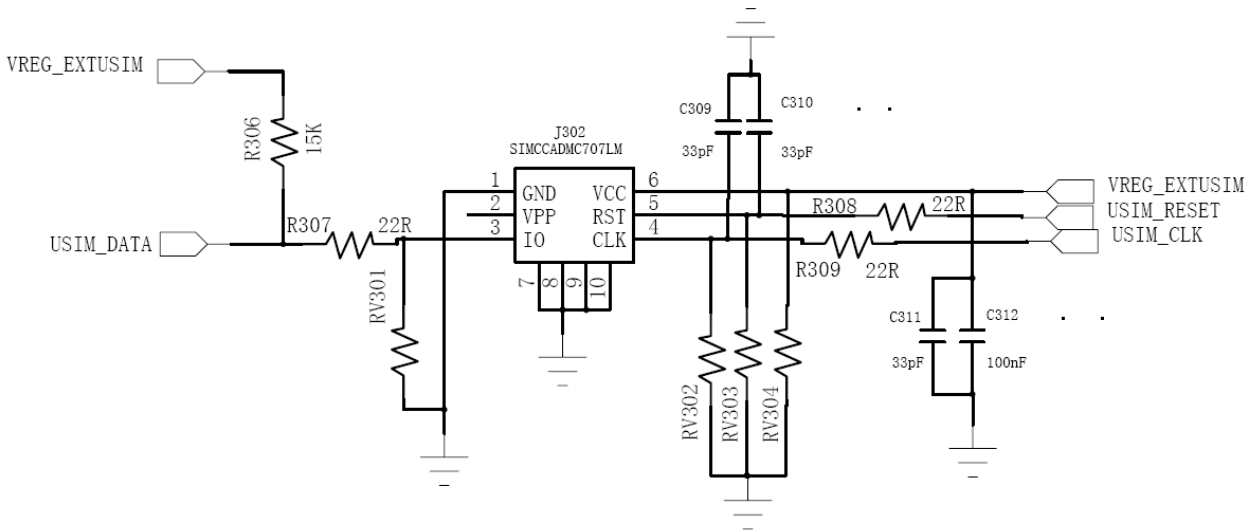
Figure 2-7 The reference circuit of USIM interface

2.2.4 Micro SD card interface

U5200 provides a Micro SD card interface for extended mass memory. The Micro SD card interface can also be used for T-Flash card and MMC card.

2.2.4.1 Description

U5200 provides Micro SD card interface by 100 pin board to board connector. The Table 2-5 gives the more detailed information.

Table 2-5 U5200 Micro SD card interface description

Signals of Micro SD interface	The correlative pins in board to board connector	SN. of 100Pin board to board connector	Volt	Description

DATA2	SDCC1_DATA2	74	2.6	Micro SD card data2
DATA3	SDCC1_DATA3	72	2.6	Micro SD card data3
CMD	SDCC1_CMD	80	2.6	The signal for command, reading or writing
VCC	VREG_MMC	70	Analog output 3.0	Power
CLK	SDCC1_CLK	84	2.6	CLK
DATA0	SDCC1_DATA0	78	2.6	Micro SD card data0
DATA1	SDCC1_DATA1	76	2.6	Micro SD card data1
GND	GND	1、6、7、10、13、14、19、25、30、34、53、57、61、75、79、82、85、86、91、92		GND

2.2.4.2 Reference circuit

The reference circuit of Micro SD card interface is shown in Figure 2-8.

1) The data line of Micro SD such as SDCC_DATA0, SDCC_DATA1, SDCC_DATA2, SDCC_DATA3 and SDCC_CMD, should be connected to Micro SD card power supply by pull-up resistors with reference value 10KΩ. Just like R304, R305, R301, R302 and R303 in Figure 2-8.

2) To get more flat Micro SD card power supply, it is recommended to use filter capacitors. Just like C307 and C308 in Figure 2-9, and the reference values are 33pF and 100nF.

3) To eliminate high-frequency interference, it is recommended to use capacitors for Micro SD card data line, such as SDCC_DATA0, SDCC_DATA1, SDCC_DATA2, SDCC_DATA3 and SDCC_CMD、SDCC_CLK. Just like C301, C302, C303, C304, C305 and C306 in Figure 2-8.

4) To avoid static electricity in Micro SD card socket, it is recommended to use the ESD protection device which should be close to the Micro SD card socket as possible.
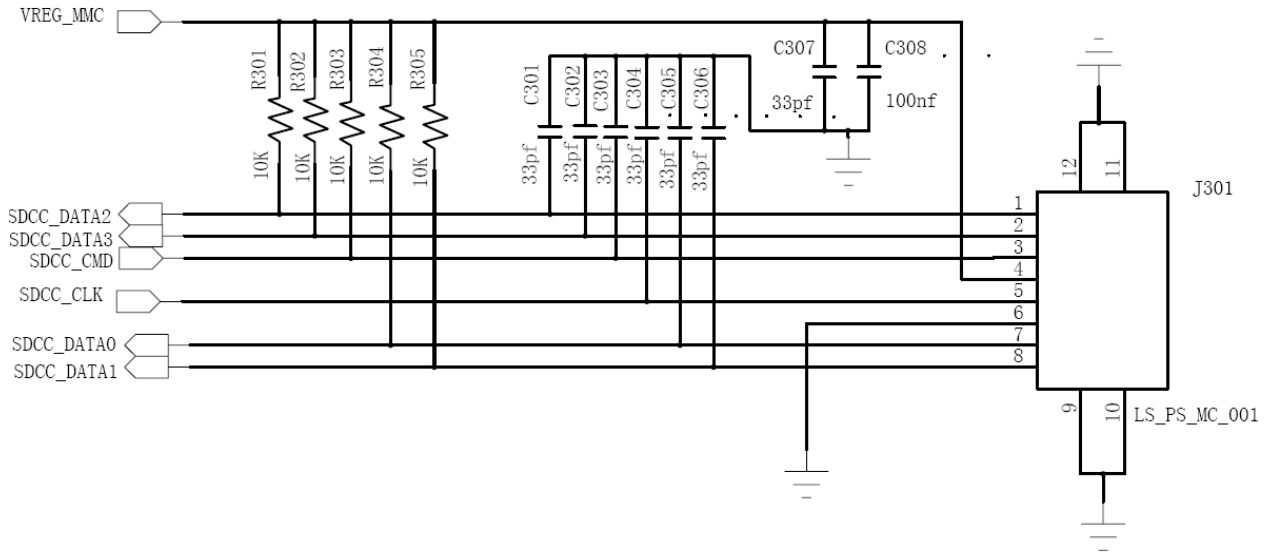
Figure 2-8 The reference circuit of Micro SD card interface

2.2.5 Audio interface

The audio signals here include two pairs of input difference signals（MIC1_P, MIC1_N, MIC2_P, MIC2_N)、 a pair of output difference signals (EAR1OP,EAR1ON)、a pair of stereo output difference signals (HPH_L,HPH_R）and a pair of output difference signals with PA(PMIC_SPKR_OUT_P, PMIC_SPKR_OUT_M）.

2.2.5.1 Description

The audio signals provided by U5200 are described in Table 2-6 below.

Table 2.6 U5200 audio signal description

The name of the correlative pins in board to board connector	SN. of the board to board connector	Description
MIC1_P	3	Audio input 1 data+
MIC1_N	5	Audio input 1 data-
MIC2_P	9	Audio input data+
MIC2_N	11	Audio input data-
EAR1OP	17	Audio output data+
EAR1ON	15	Audio output data-

HPH_L	2	Headset stereo output_ Left
HPH_R	4	Headset stereo output_ Right
PMIC_SPKR_OUT_P	89	Speaker output+
PMIC_SPKR_OUT_M	87	Speaker output-

2.2.5.2 The connection between audio I/O and earphone

The audio I/O signals provided by U5200 can be connected to a stereo earphone jack which is shown in Table 2-7.

Table 2.7 The connection between earphone jack and the board to board connector

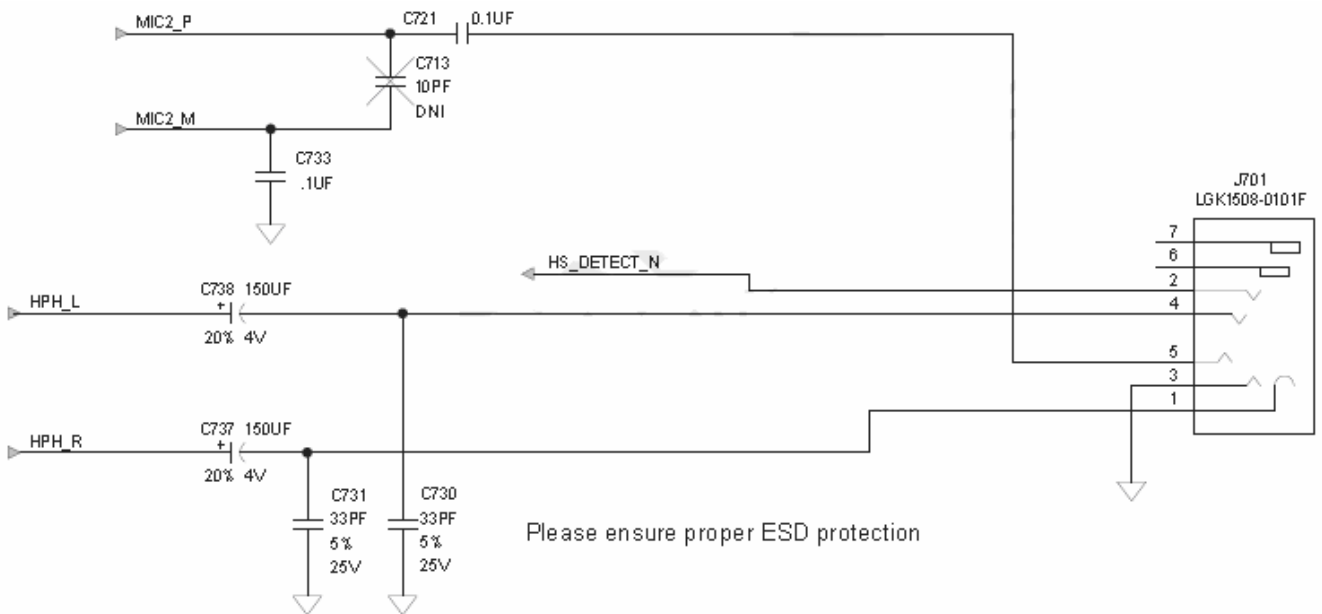| PIN name of earphone jack	the correlative pins in board to board connector	SN. of 100 pin board to board connector	Description
Left Speaker	HPH_L	2	The left output of stereo
Right Speaker	HPH_R	4	The right output of stereo
MIC+	MIC2_P	9	The microphone input+
MIC-	MIC2_N	11	The microphone input-

Figure 2-9 The reference circuit of earphone jack

1）It is recommended to use the smoothing capacitor or smoothing circuit for reducing the undesired signal between different frequency bands. Just like what is shown in figure 2-9.

2）For avoiding the electro-static, it is recommended to use the ESD element.

2.2.5.3 The connection between audio I/O and phone handset

The audio I/O signals offered by U5200 can be connected to a phone handset. The more detailed information about connection between phone handset and the board to board connector is shown in table 2.8 below.

Table 2.8 The connection between phone handle and the board to board connector

Signals phone handle	The correlative pins in board to board connector	SN. of 100 Pin board to board connector	Description
EAR_P	EAR1OP	17	Audio output data+
EAR_N	EAR1ON	15	Audio output data-
MIC_P	MIC1_P	3	Audio input data+
MIC_N	MIC1_N	5	Audio input data-
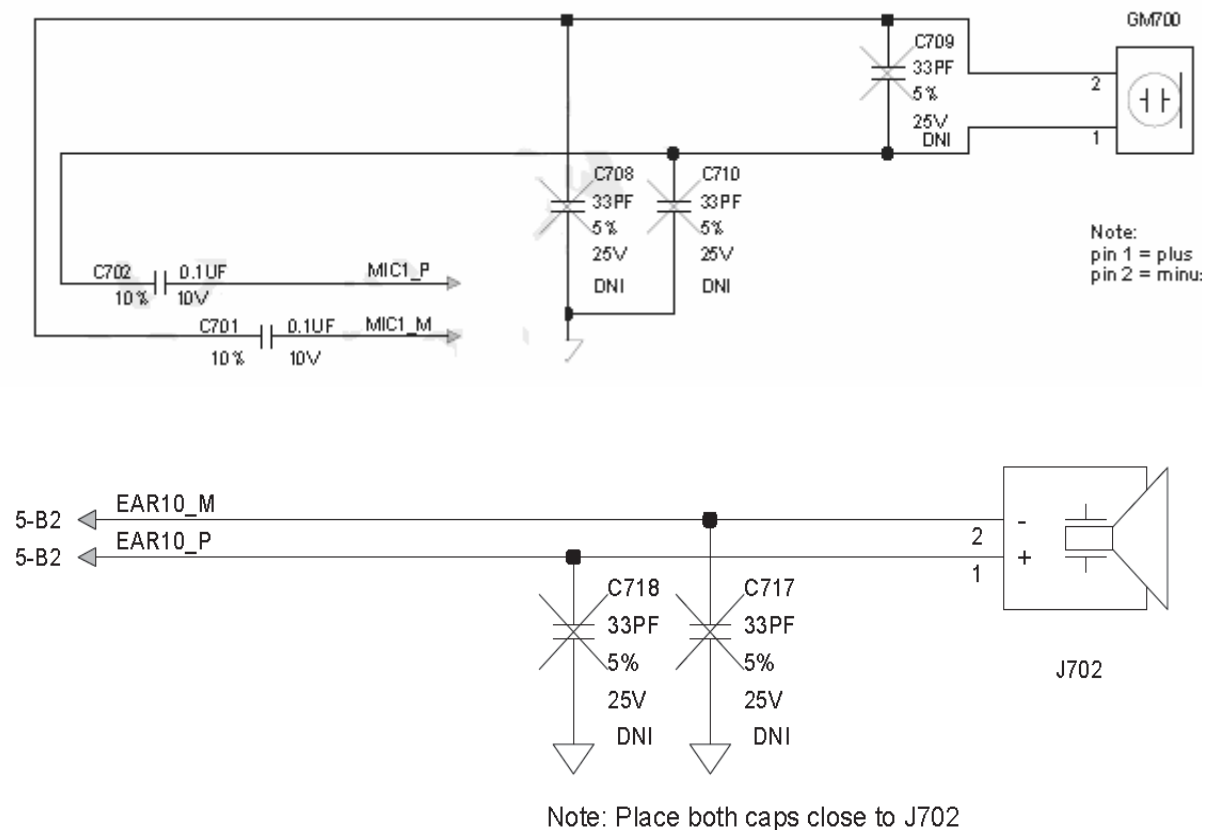
Figure 2-10 The reference circuit of audio interface

1）It is recommended to use the smoothing capacitor or smoothing circuit for reducing the undesired signal between

different frequency bands. Just like what is shown in figure 2-10.

2）For avoiding the electro-static, it is recommended to use the ESD element.

2.2.5.4 The connection between audio I/O and speaker

The audio I/O signals offered by U5200 can be connected to a speaker, which signal is already amplified by a class D amplifier in U5200 module, with a rated output of 500 mW into an 8 ohm speaker. The detailed information about the connction between audio I/O and speaker is described in table 2-9 below.

Table 2.9 The connection between speaker and the board to board connector

| Signals of Speaker	The correlative pins in board to board connector	SN. of 100pin board to board connector	Description
SPKR_P	PMIC_SPKR_OUT_P	89	Speaker output+
SPKR_M	PMIC_SPKR_OUT_M	87	Speaker output-

Figure 2-11 The reference circuit of speaker interface

1）It is recommended to use the smoothing capacitor or smoothing circuit for reducing the undesired signal between different frequency bands. Just like what is shown in figure 2-11.
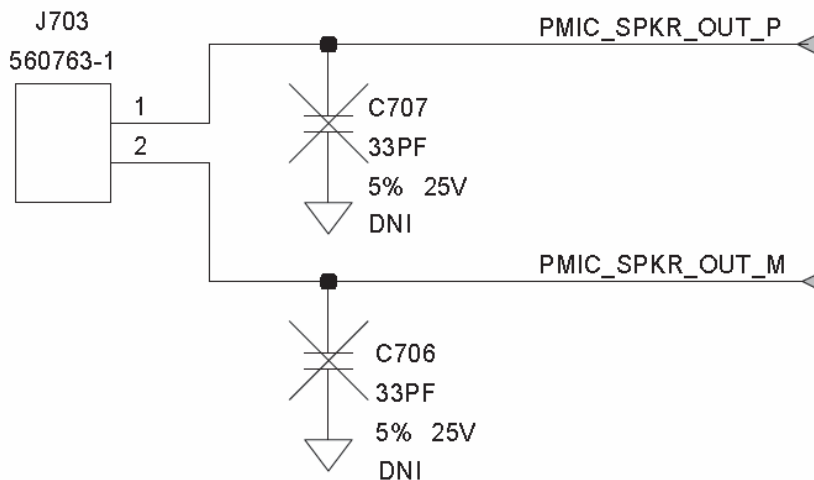
2）For avoiding the electro-static, it is recommended to use the ESD element.

2.2.6 Camera interface

U5200 offers the camera interface by 100PIN board to board connector, and most of the camera interface is simulated by GPIO PIN.

2.2.6.1 Description

The camera interface offered by U5200 are described in the table 2.10 below.

Table 2.10The connection between camera and the board to board connector

| Signals of Camera	The correlative pins in board to board connector	SN. of 100 Pin board to board connector	Volt	Description
SIO_D	I2C_SDA	8	2.6	I2C Interface
SIO_C	I2C_SCL	12	2.6	I2C Interface
Reset	CAMIF_RESET	43	2.6	Reset signal
Vsync	CAMIF_VSYNC	20	2.6	VSYNC signal
PWDN	CAMIF_EN	22	2.6	Camera Enable signal
Hsync	CAMIF_HSYNC	24	2.6	Hsync signal
DVDD	VREG_MSME	**26**	Analog Output,1.8	Vcore
DOVDD	VREG_MSMP	28	Analog Output,2.6	Vio
AVDD	VREG_GP2	68	Analog Output,2.6	V analog
PCLK	CAMIF_PCLK	36	2.6	P_clock
XCLK	CAMIF_PO	32	2.6	Master Clock
D9	CAMIF_DATA[9]	**38**	2.6	Camera Data 9
D8	CAMIF_DATA[8]	**40**	2.6	Camera Data 8
D7	CAMIF_DATA[7]	**42**	2.6	Camera Data 7
D6	CAMIF_DATA[6]	**44**	2.6	Camera Data 6
D5	CAMIF_DATA[5]	**46**	2.6	Camera Data 5
D4	CAMIF_DATA[4]	**48**	2.6	Camera Data 4
D3	CAMIF_DATA[3]	**50**	2.6	Camera Data 3
D2	CAMIF_DATA[2]	**52**	2.6	Camera Data 2

2.2.6.2 Reference Circuit
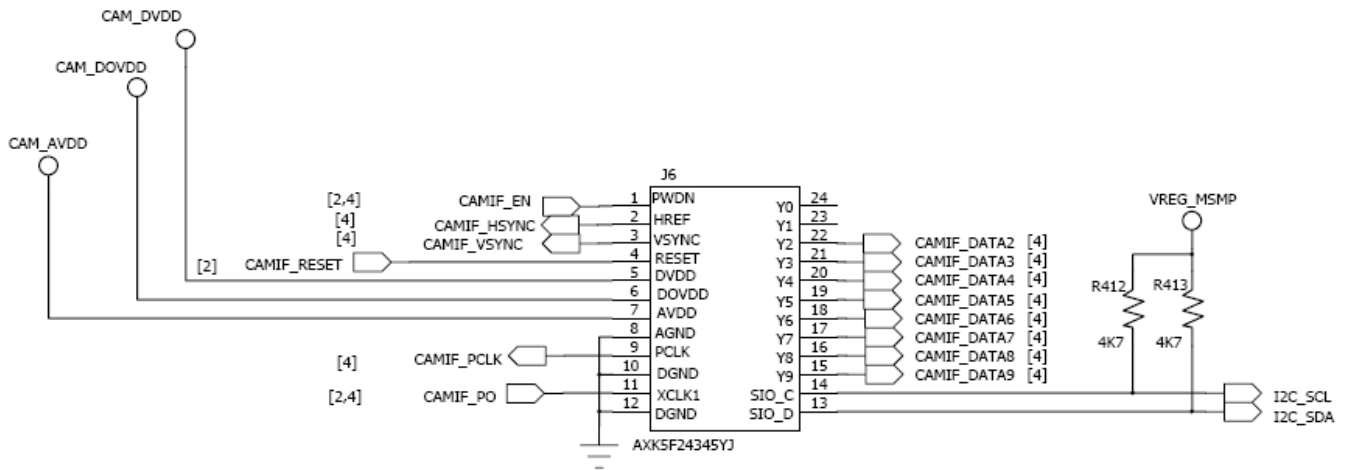
Figure 2-12 The reference circuit of camera interface

1）The reference circuit is based on Camera IC OV7670. If the camera is not the one we recommended, the power supplier of it need to be replaced with LDOs on daughterboard. Because we are not sure that if UMTS module output current can meet your camera requirement.

2）The I2C line must be connected to VREG_MSMP by pull-up resistor with reference value 4.7KΩ.

3）CAMIF_PO and CAMIF_PCLK need to be protected by GND.

4) D [9:2] – 8 MSB bits of the output data bus from the camera module for a 10-bit I/F.
D [1:0] – 2 LSB bits of the output data bus from the camera module for a 10-bit I/F.
In case of a camera module with 8-bit output capability, these bit positions are idle and will not be connected. Bit 9:2 will provide the 8-bit bus.

2.2.7 UART interface

U5200 provides a UART interface by 100 pin board to board connector for debugging.

2.2.7.1 Description

The information about UART interface provided by U5200 is described in Table 2-11.

Table 2.11 U5200 UART interface description

Signals of UART	Pins inboard to board connector	SN. of 100pin board to board	Volt	Description

		connector		
Rx	UART1_RX	35	2.6	Rx in UART
Tx	UART1_TX	37	2.6	Tx in UART
CTS	UART1_CTS	33	2.6	CTS in UART
RTS	UART1_RTS	31	2.6	RTS in UART
GND	GND	1、6、7、10、13、14、19、25、30、34、53、57、61、75、79、82、85、86、91、92		GND

2.2.7.2 Reference circuit

The reference circuit of UART interface is shown in Figure 2-13.

1) The UART interface can only supports TTL level.

2) To avoid static electricity, it is recommended to use the ESD protection device for the signal line of the UART socket.

3) If the UART1_RTS and the UART1_CTS are not necessary for your design, you can left them open.
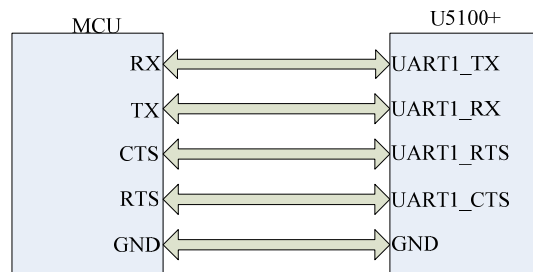
Figure 2-13 The reference circuit of UART interface

2.2.8 LED control

2.2.8.1 Description

There are three pins for LEDs control in the 100 PINs board to board connector. And the detailed information is given in table 2.12 below.

Table 2.12 U5200 LED control interface description

Signals of requirment	Pins in board to board connector	SN. of the board to board connector	Volt	Description
LED_CTL_R	SPI_DOUT	51	2.6	The Red LED control
LED_CTL_G	SPI_DIN	49	2.6	The Green LED control
LED_CTL_B	SPI_CS	47	2.6	The Blue LED control

2.2.8.2 Reference circuit

The reference circuit for LED is shown in Figure 2-14.
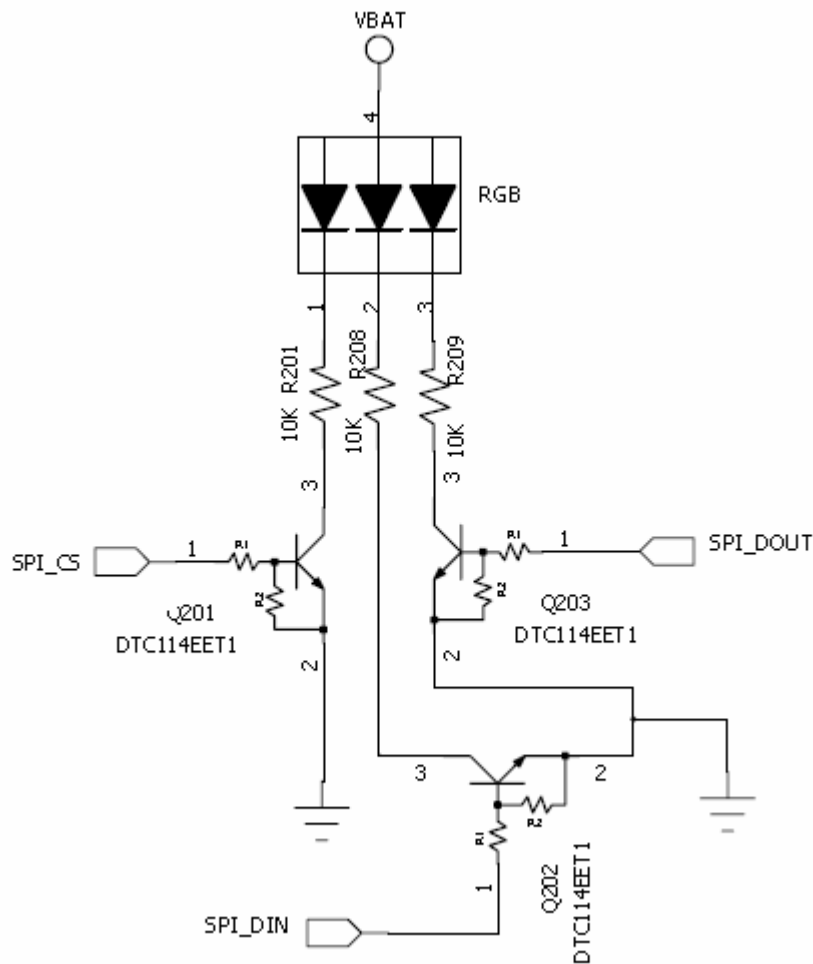
Figure 2-14 The reference circuit of LED control

1) The LED control pin（GPIO） controls the LED through a transistor, as is shown in Figure 2-14.

2) The reference value is 5mA. So the current-limiting resistor may be used. Just like the resistor R201，R208，R209 in

Figure 2-14.

2.2.9 Power on/off and Reset

KPD_PWR_N is used for power on U5200 module. And U5200 will be start-up just by putting the KPD_PWR_N to earth.

EXT_RST_IN is used for reset the U5200 module. And U5200 will be reseted just by putting the EXT_RST_IN to earth.

Table 2.13 U5200 power on/off and reset interface description

KPD_PWR_N	39	Analog input	Power on key
EXT_RST_IN	41	2.6	Module Reset Signal

The reference circuit for Power on/off and reset is shown in Figure 2-15.

Figure 2-15 The reference circuit of Power on/off and Reset

2.2.10 Others

U5200 also provides some other interfaces listed in Table 2-13.

Table 2.13 The other signals offered by U5200

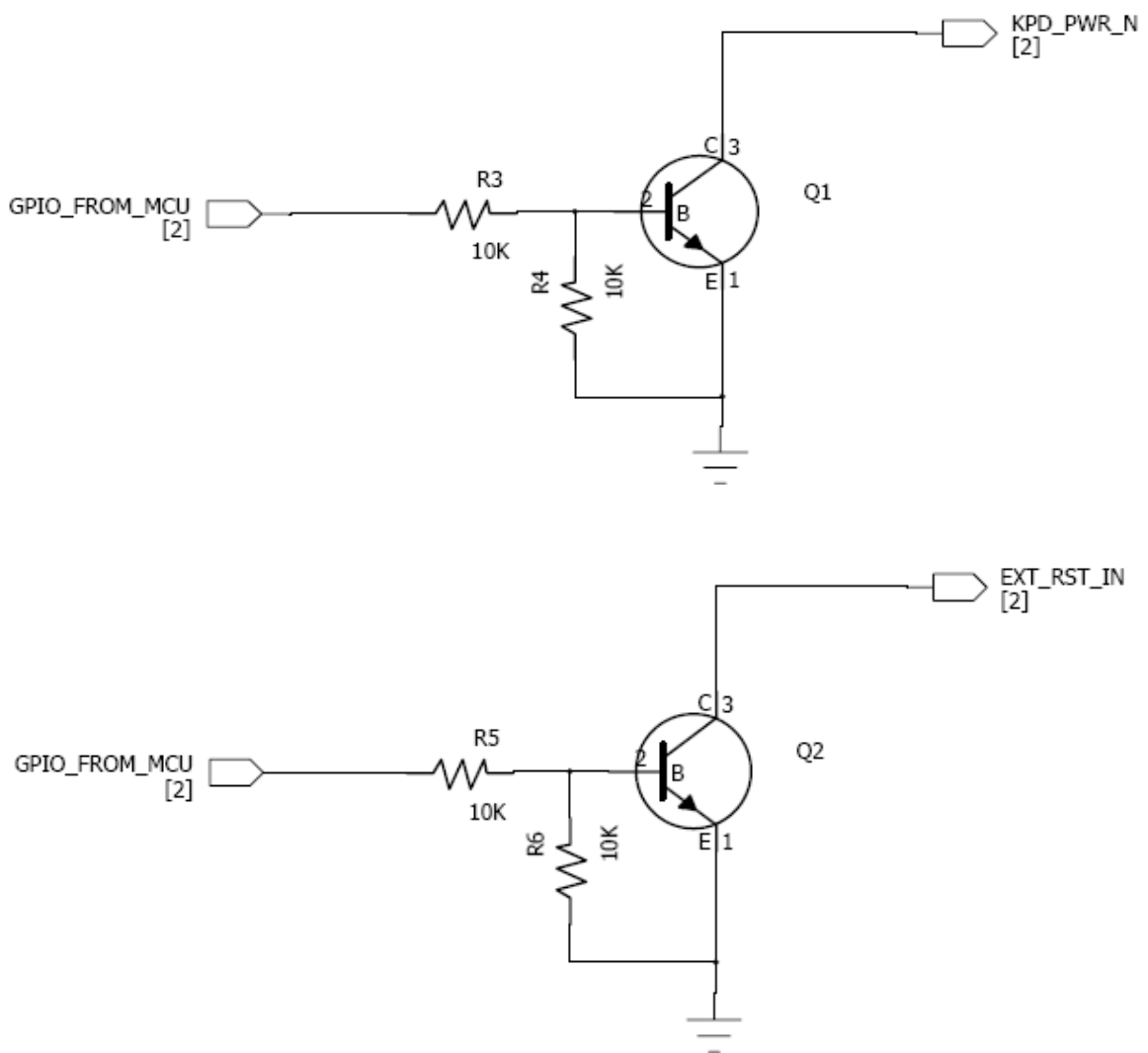| pins in board to board connector	SN. of the board to board connector	Volt	Description
SPI_INT	45	2.6	GPIO, can be used as an interrupt from MCU to U5200 Module
PCM_SYNC	67	2.6	PCM interface. alternative functions: GPIO, can be used as Motor control.
PCM_CLK	59	2.6	PCM interface. alternative functions: GPIO, can be used as Motor control.
PCM_DIN	63	2.6	PCM interface. alternative functions: GPIO, can be used as Motor control.
PCM_DOUT	65	2.6	PCM interface. alternative functions: GPIO, can be used as Motor control.
32K_CLK_BT	66	2.6	32K clock output
EXT_WAKE	64	2.6	GPIO
NC	62	2.6	NC
BT_PWR_EN	60	2.6	GPIO
HOST_WAKE	16	2.6	GPIO
NC	29	2.6	NC
GPIO_1.8	18	1.8	GPIO
VCOIN	58	Analog input	Backup Battery Input
VCHARGE	94、96	Analog input	5V Charger in
HKADC1	55	Analog input	ADC Input

1）The Charger voltage should be 5V, and the current should be more than 500mA.

2）U5200 offers a power input pin named VCOIN for backup battery. The anode of the battery connects to VCOIN, and the cathode puts to earth. While U5200 being powered off, the backup battery will power the real time clock, the Crystal Oscillator Circuit and the SMPL timer. And while U5200 being powered on, the battery will be charged up. The voltage offered by battery must be less than 3.6V. For keeping the SMPL timer while Sudden momentary

power losing, a capacitor can be used besides battery. And the correlativity between the capacitance and the

holding time is listed in table 2.14.

Table 2.14 the correlativity between the capacitance and the holding time

The capacitance	The Packaging (X5R)	The holding time(s)
1.5uF	0805	0.5
3.3uF	0805	1.0
4.7uF	0805	1.5
6.8uF	1206	2.0

3）U5200 provides one ADC channel HKADC1, which can be used to detect some analog signal, such as battery

voltage, temperature and so on. The voltage range of the HKADC1 is : 0～2.6V。

4）All GPIOs above can be used as a special signal, but should be customized.

Appendix A：Mechanical dimensions of U5200

The following are Mechanical dimensions of U5200 bottom view (Unit: mm)
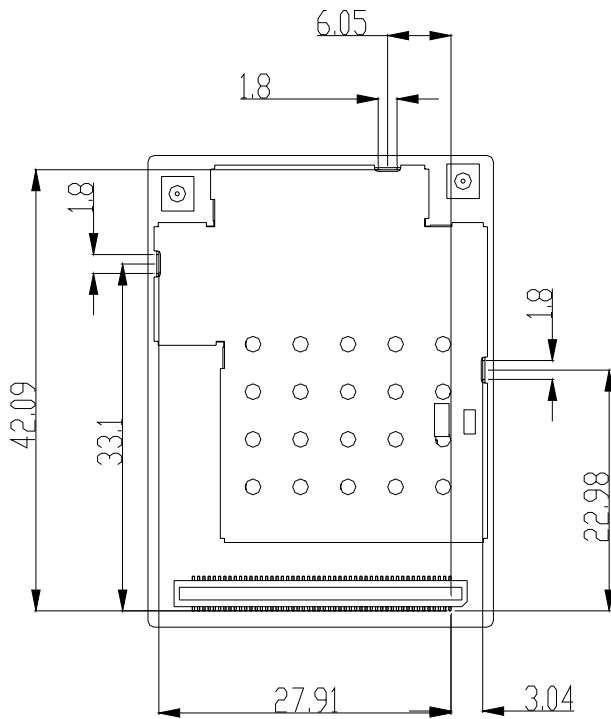
Appendix B：Pins description of U5200

SN	Definition	Description	Volt	Remark
1	GND	Ground		
3	MIC1_P	MIC1 Data+	Analog input	MIC1 Interface
5	MIC1_N	MIC1 Data-	Analog circuit	MIC1 Interface
7	GND	Ground		
9	MIC2_P	MIC2 Data+	Analog circuit	MIC2 Interface
11	MIC2_N	MIC2 Data-	Analog circuit	MIC2 Interface
13	GND	Ground		
15	EAR1ON	Earphone Data+-	Analog circuit	Earphone Interface
17	EAR1OP	Earphone Data+	Analog circuit	Earphone Interface
19	GND	Ground		
21	USB_HS_DP	USB Data+		USB Interface
23	USB_HS_DM	USB Data-		USB Interface
25	GND	Ground		
27	USB_VBUS	USB Power		USB Interface
29	NC	SPI_Clock	2.6	NC
31	UART1_RTS	RTS in UART	2.6	UART, could also be used as GPIO，which should be customized.
33	UART1_CTS	CTS in UART	2.6	UART, could also be used as GPIO，which should be customized.
35	UART1_RX	RX in UART	2.6	UART, could also be used as GPIO，which should be customized.
37	UART1_TX	TX in UART	2.6	UART, could also be used as GPIO，which should be customized.
39	KPD_PWR_N	Power On		Key on
41	EXT_RST_IN	Reset	2.6	Reset module
43	CAMIF_RESET	Camera RESET	2.6	Camera interface, could also be used as GPIO，which should be customized.
45	SPI_INT	INT signal.	2.6	Could also be used as GPIO，which should be customized.
47	SPI_CS	SPI_CS	2.6	SPI Interface, could also be used as GPIO，which should be customized.
49	SPI_DIN	SPI Data Input	2.6	SPI Interface, could also be used as GPIO，which should be customized.
51	SPI_DOUT	SPI Data Output	2.6	SPI Interface, could also be used as GPIO，which should be customized.

53	GND	Ground		
55	HKADC1	External analog signal detecting	Analog circuit	
57	GND			
59	PCM_CLK	PCM_Clock	2.6	PCM Interface, could also be used as GPIO，which should be customized.
61	GND	Ground		
63	PCM_DIN	PCM Data Input	2.6	PCM Interface, could also be used as GPIO，which should be customized.
65	PCM_DOUT	PCM Data Output	2.6	PCM Interface, could also be used as GPIO，which should be customized.
67	PCM_SYNC	PCM Synchronous Signal	2.6	PCM Interface, could also be used as GPIO，which should be customized.
69	KYBD_BACKLIGHT	Keypad Backlight control		
71	LCD_BACKLIGHT_CTRL	LCD Backlight control		
73	VREG_EXTUSIM	USIM Power		
75	GND	Ground		
77	USIM_CLK	USIM CLK		USIM Interface
79	GND	Ground		
81	USIM_DATA	USIM_DATA		USIM Interface
83	USIM_RESET	USIM_RESET		USIM Interface
85	GND	Ground		
87	PMIC_SPKR_OUT_M	Speaker Data-	Analog circuit	Speaker Interface
89	PMIC_SPKR_OUT_P	Speaker Data+	Analog circuit	Speaker Interface
91	GND	Ground		
93	VBATT_INT	Power Supply		
95	VBATT_INT	Power Supply		
97	VBATT_INT	Power Supply		
99	VBATT_INT	Power Supply		
2	HPH_L	Headset Output Interface	Analog circuit	Headset Interface
4	HPH_R	Headset Output Interface	Analog circuit	Headset Interface
6	GND	Ground		
8	I2C_SDA	I2C Data	2.6	I2C Interface
10	GND	Ground		
12	I2C_SCL	I2C Clock	2.6	I2C Interface
14	GND	Ground		
16	HOST_WAKE	GPIO	2.6	

18	GPIO_1.8V	GPIO 1.8V	1.8	GPIO
20	CAMIF_VSYNC	Camera Vsync	2.6	Camera interface, could also be used as GPIO，which should be customized.
22	CAMIF_EN	Camera Enable	2.6	Camera interface, could also be used as GPIO，which should be customized.
24	CAMIF_HSYNC	Camera Hsync	2.6	Camera interface, could also be used as GPIO，which should be customized.
26	VREG_MSME	MSME Output Power	Analog output 1.8	MSME Output Power,
28	VREG_MSMP	MSMP Output Power	Analog output 2.6	MSMP Output Power,
30	GND	Ground		
32	CAMIF_PO	Camera_PCLK	2.6	Camera interface, which is from Module to camera
34	GND	Ground		
36	CAMIF_PCLK	Camera_MCLK	2.6	Camera interface, which is from camera to Module
38	CAMIF_DATA[9]	Camera Data 9	2.6	Camera interface, could also be used as GPIO，which should be customized.
40	CAMIF_DATA[8]	Camera Data 8	2.6	Camera interface, could also be used as GPIO，which should be customized.
42	CAMIF_DATA[7]	Camera Data 7	2.6	Camera interface, could also be used as GPIO，which should be customized.
44	CAMIF_DATA[6]	Camera Data 6	2.6	Camera interface, could also be used as GPIO，which should be customized.
46	CAMIF_DATA[5]	Camera Data 5	2.6	Camera interface, could also be used as GPIO，which should be customized.
48	CAMIF_DATA[4]	Camera Data 4	2.6	Camera interface, could also be used as GPIO，which should be customized.
50	CAMIF_DATA[3]	Camera Data 3	2.6	Camera interface, could also be used as GPIO，which should be customized.
52	CAMIF_DATA[2]	Camera Data 2	2.6	Camera interface, could also be used as GPIO，which should be customized.
54	CAMIF_DATA[1]	Camera Data 1	2.6	Camera interface, could also be used as GPIO，which should be customized.
56	CAMIF_DATA[0]	Camera Data 0	2.6	Camera interface, could also be used as GPIO，which should be customized.
58	VCOIN	VRTC	Analog input	
60	BT_PWR_EN	GPIO	2.6	
62	NC	GPIO	2.6	NC

64	EXT_WAKE	GPIO	2.6	
66	32K_CLK_BT			
68	VREG_GP2	GP2 Output Power	Analog output 2.8	GP2 Output Power,
70	VREG_MMC	Micro SD Power	Analog output 3.0	SDCC1_CMD and VREG_MMC are compatible for MMC card too.
72	SDCC1_DATA3	Micro SD Data 3	2.6	Micro SD Interface, could also be used as GPIO，which should be customized.
74	SDCC1_DATA2	Micro SD Data 2	2.6	Micro SD Interface, could also be used as GPIO，which should be customized.
76	SDCC1_DATA1	Micro SD Data 1	2.6	Micro SD Interface, could also be used as GPIO，which should be customized.
78	SDCC1_DATA0	Micro SD Data 0	2.6	Micro SD Interface, could also be used as GPIO，which should be customized. And SDCC1_DATA0, SDCC1_CLK, SDCC1_CMD and VREG_MMC are compatible for MMC card too.
80	SDCC1_CMD	Micro SD Command	2.6	Micro SD Interface, could also be used as GPIO，which should be customized. And SDCC1_DATA0, SDCC1_CLK, SDCC1_CMD and VREG_MMC are compatible for MMC card too.
82	GND	Ground		
84	SDCC1_CLK	Micro SD Clock	2.6	Micro SD Interface, could also be used as GPIO，which should be customized. And SDCC1_DATA0, SDCC1_CLK, SDCC1_CMD and VREG_MMC are compatible for MMC card too.
86	GND	Ground		
88	UICC_USB_DAT	USB UICC DAT		Supports only USB UICC application in host mode.
90	UICC_USB_VM	USB UICC VM		Supports only USB UICC application in host mode.
92	GND	Ground		
94	VCHG_IN	Charge In Power		Charge In Power,5V
96	VCHG_IN	Charge In Power		Charge In Power,5V
98	VBATT_INT	Power Supply		
	VBATT_INT	Power Supply		

100				