Document Name: **U7300 User Manual**

Contents

1. Introduction

1.1 Overview

The LONGSUNG HSPA U7300 series module, powered by Qualcomm MDM8200A chipset, can be integrated into any devices for HSPA+ mobile applications. It provides phone book, SMS and GPS as well as high speed internet access to HSPA+, HSPA and UMTS networks worldwide.

The U7300 module complies with the technical standard listed below:

·HSUPA

3GPP R6, up to 5.76Mbps UL Category 6

·HSDPA

3GPP R7, up to 21 Mbps DL

·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/AWS1700/2100 MHz and GSM/GPRS/EDGE 850/900/1800/1900 MHz.

1.2 Application scenario

The HSPA+ U7300 module support phone book, SMS, GPS and Internet access functions. The application of U7300 is as follows:
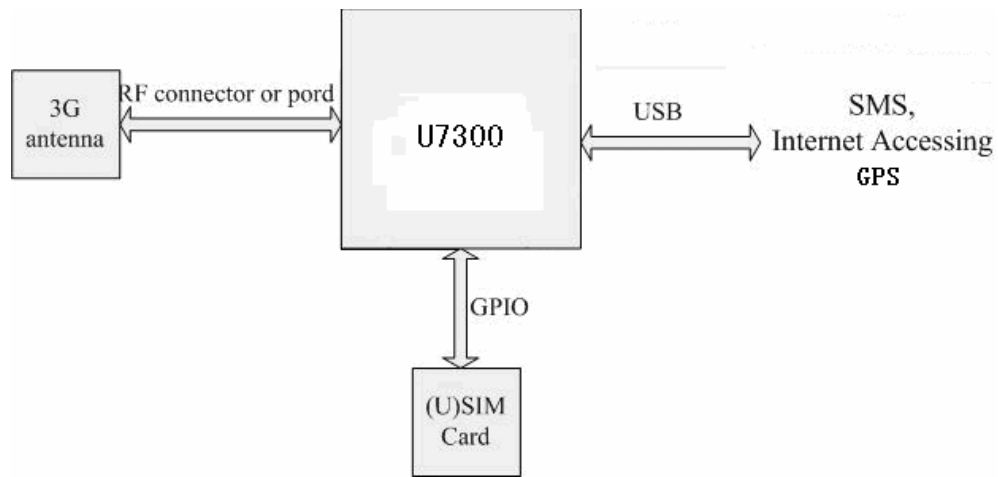
Figure1-1 U7300 application scenario

2. U7300 interfaces

2.1 U7300 interface summary

The HSPA+ module U7300 supports for multimode operation: HSDPA, HSUPA, HSPA+ tri-band UMTS (900/AWS1700/2100 MHz) and quad-band GSM (850/900/DCS1800/PCS1900 MHz). The size of U7300 is 50.9×29.9×4.5mm. And the appearance is shown in Figure 2-1 and Figure 2-2.

Figure 2-1 The front view of U7300   **Figure 2-2 The rear view of U7300**

The antenna pads are show as part 1in the Figure 2-1, the upper one is for the main antenna, and the below one is for the diversity antenna; The antenna pad which is shown as part 2 in Figure 2-1 is for GPS application; A miniPCIe interface is shown as part 3 in Figure 2-1; U7300 module also offers some test points, they are shown as part 4 in Figure 2-2

2.1.1 Test points

The test points of U7300 are displayed in figure 2-3, and the definition of each point is listed in table 2.1.
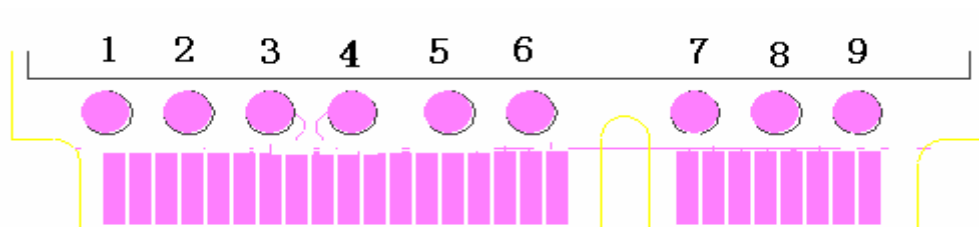
Figure 2-3 Test points of U7300

Table 2.1 The definition of U7300 test points

SN	Definition
1	U7300 Power Input
2	GND
3	USB DATA+
4	USB DATA-
5	GND
6	USIM Card Reset
7	USIM Card Clock
8	USIM Card Data
9	USIM Card Power

2.1.2 Mini PCIe Interface

A Mini PCIe Interface is used, two primary data interfaces are defined for PCI Express Mini Card: PCI Express and USB. For more information, please refer to the *PCI Express®Mini Card Electromechanical Specification Revision 1.1* Figure 2-4 show the Mini PCIe Interface.
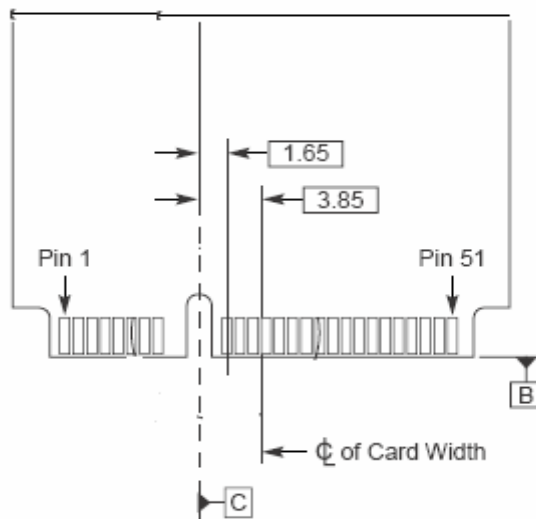
Figure 2-4 The Mini PCIe Interface

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 Mini PCIe Interface is listed in table 2.2 below.

Figure 2-5 The Mini PCIe Interface pin sequence of U7300

Table 2.2 The definition of Mini PCIe Interface

SN	Definition	Description	Remark
1	NC	No Connect	
3	NC	No Connect	Audio Interface
5	NC	No Connect	Audio Interface

7	NC	No Connect	Audio Interface
9	GND	Ground	
11	VCC_MSM26_DIG	Power Output	1.8V
13	VRTC	Backup battery	1.8V
15	GND	Ground	
17	KPD_PWR_N	Power On Key	Active Low
19	UART_CTS	CTS of UART	UART Interface
21	GND	Ground	
23	UART_RXD	Rx of UART	UART Interface
25	UART_RTS	RTS of UART -	UART Interface
27	GND	Ground	
29	GND	Ground	
31	UART_TXD	Tx of UART	UART Interface
33	EXT_RST_N	External Reset to U7300	
35	GND	Ground	
37	GND	Ground	
39	VCC	3.3V Power Supply	3.3V
41	VCC	3.3V Power Supply	3.3V
43	GND	Ground	
45	NC	No Connect	
47	NC	No Connect	
49	NC	No Connect	
51	NC	No Connect	
2	VCC	3.3V Power Supply	3.3V
4	GND	Ground	
6	GPIO_TBD1	General purpose I/O	1.8V
8	USIM_PWR	USIM Power	USIM Interface
10	USIM_DATA	USIM Data	USIM Interface
12	USIM_CLK	USIM CLK	USIM Interface
14	USIM_RESET	USIM Reset	USIM Interface

16	GPIO_TBD2	General purpose I/O	1.8V
18	GND	Ground	
20	W_DISABLE_N	External Disable signal	Active low signal. This signal is used by the system to disable radio operation on add-in cards that implement radio frequency applications
22	MDL_RESET_N	Reset	3.3V(Active low)
24	VCC	3.3V Power Supply	3.3V
26	GND	Ground	
28	GPIO_TBD3	General purpose I/O	1.8V
30	DCD / I2C_SCL	Data Carrier Detect / I2C_SCL	1.8V
32	RI/I2C_SDA	Ring Indicator/I2C_SDA	1.8V
34	GND	Ground	
36	USB_DM_IN	USB Data-	USB Interface
38	USB_DP_IN	USB Data+	USB Interface
40	GND	Ground	
42	LED_WWAN	Led control Signal	Active low signal
44	GPIO_TBD4*	General purpose I/O	1.8V
46	UART_DTR*/ GPIO	DTR of UART/ General purpose I/O	UART Interface
48	UART1_DSR*/ GPIO	DSR of UART/ General purpose I/O	UART Interface
50	GND	Ground	
52	VCC	3.3V Power Supply	

2.1.3 RF interface

U7300 uses HRS's U.FL-R-SMT-1(10) RF connector on the module side. There are two RF connector on U7300: main antenna and diversity/GPS antenna.   Diversity/GPS antenna uses common antenna.

The RF connector is showed in figure 2-6.

Figure 2-6 The sketch map of RF connector

2.2 U7300 interface application

U7300 supplies multifold functional interface by a Mini PCIe Interface, such as USIM card interface, USB interface, UART interface, IIC interface and power supply interface and so on. The detail information will be given in the follow sections.

2.2.1 RF antenna interface

The impedance of RF antenna is 50Ω.

The two connectors are on the top of U7300;

For minimizing the wasting of RF cable, user should pay more attention to make choice. We suggest choosing the cable that satisfies:

• GSM850/900<1dB

• DCS1800/PCS1900<1.5dB

• UMTS2100/ AWS1700/ UMTS900<1.5dB

And the antenna should satisfy the table below：

Item	Parameter		
Plus(dBi)	GSM	DCS	UMTS

	0.5	1	1
Type	Omni directional antenna		

2.2.2 Power supply and earth

The power supply needed by U7300, is listed as follow:

1. DC:3.3$V^{~}$4. 2V, the power for U7300 working;

2. The earth point: GND;

The description of U7300 Power and GND pins is shown in the table 2.3 below.

Table 2.3 The description of U7300 Power and GND pins

Power input	SN. of the Mini PCIe Interface
VCC	2, 24, 39, 41,52
GND	4, 9, 15, 18,21, 26, 27, 29, 34, 35, 37, 40, 43, 50

2.2.3 USB interface

2.2.3.1 Description

U7300 offers a high-speed USB interface by Mini PCIe Interface, which submits to USB 2.0 protocol. The detail information is given in table 2.4 below.

Table 2.4 U7300 USB interface description

Signals offered by USB interface	The name of the correlative pins in Mini PCIe Interface	SN. of the Mini PCIe Interface	Description
USB_VBUS	VCC	2, 24, 39, 41,52	USB power
DM	USB_DM_IN	36	USB Data-

DP	USB_DP_IN	38	USB Data+
GND	GND	4, 9, 15, 18,21, 26, 27, 29, 34, 35, 37, 40, 43, 50	GND

2.2.3.2 Reference circuit

The reference circuit of USB interface is shown in figure 2-7.

1）For getting the steady-going USB power supply, it is recommended that a 10uF filter capacitor and a 22pF（C714） filter capacitor should be used.

2） For reducing the BER of USB transmission, it is recommended to add a resistor with values below 10Ω to the DM and DP in USB interface. Just like the resistors R765 and R766 in figure 2-7.

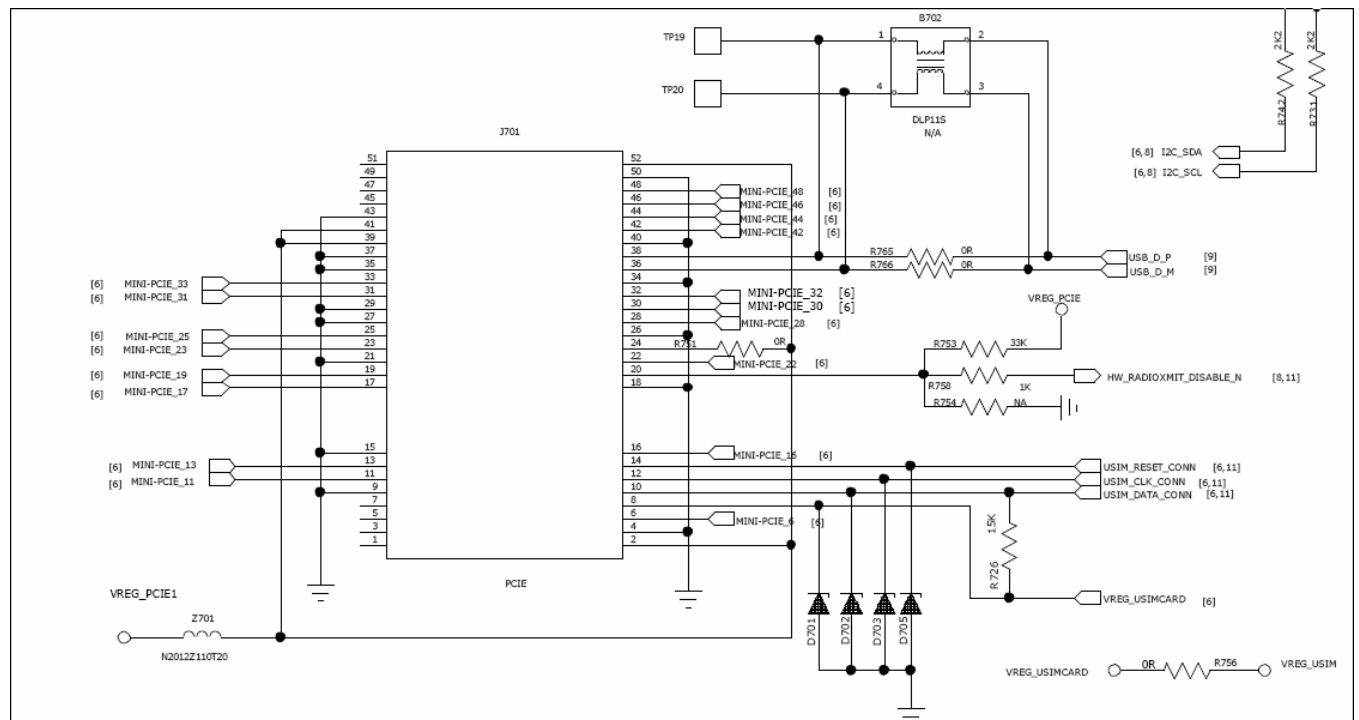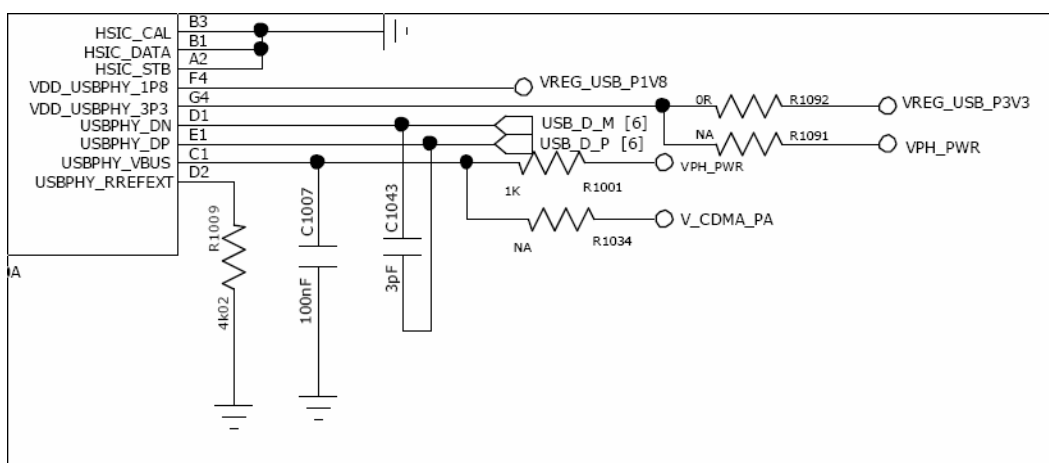3） For avoiding the electro-static in USB interface, it is recommended to use the static capacitance values below 3pF.

Figure 2-7 The reference circuit of USB interface

4）The USB interface input the voltage from VPH_PWR . R1001 is connected to VPH_PWR, which is a resistor with the value 1KΩ .

Figure2-8 The reference of voltage protection circuit

2.2.4 USIM interface

U7300 supports GSM850/GSM900/DCS1800/PCS1900 and UMTS2100/AWS1700/UMTS900 operation mode. The UMTS mode submits to 3GPP R99（2002.9）criterion，and the GSM/GPRS/EDGE mode submits to CMCC GSM/GPRS criterion. USIM card as well as SIM card can be used.

2.2.4.1 Description

U7300 offers USIM card interface by Mini PCIe Interface. And it can be used in both UMTS and GSM/GPRS/EDGE networks. The table 2.5 gives the more detail information.

Table 2.5 U7300 USIM card interface description

Signals offered by USIM interface	The name of the correlative pins in Mini PCIe Interface	SN. of the Mini PCIe Interface	Description
DATA	USIM_DATA	10	USIM card data
CLK	USIM_CLK	12	USIM card CLK
RST	USIM_RESET	14	Reset signal
VCC	VREG_USIMCARD	8	USIM card power
GND	GND	4, 9, 15, 18,21, 26, 27, 29, 34, 35, 37, 40, 43, 50	GND

2.2.4.2 Reference circuit

The reference circuit of USIM interface is shown in figure 2-9.

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

2）For avoiding the instantaneous voltage overflowing, the resistor with the reference value 22Ω can be used for the DALA, CLK and RST.

3）For avoiding the electro-static in USIM socket, it is recommended to use the ESD element to the DATA，CLK and VCC. Just like the voltage dependent resistors D701, D702, D703 and D705 in figure 2-8. And the ESD element should close to the USIM socket as close as possible.

4）For getting the more smooth USIM power supply, it is recommended to use the filter capacitors. Just like C1224 and C312 in figure 2-8, and their reference values are 33pF and 100nF.

5）In order to remove the unwanted peak signal and the elimination high frequency interference which produces on RST and CLK, the filter capacities can be placed in RST and the CLK end, the reference value is 33pF.

Figure 2-9 The reference circuit of USIM interface
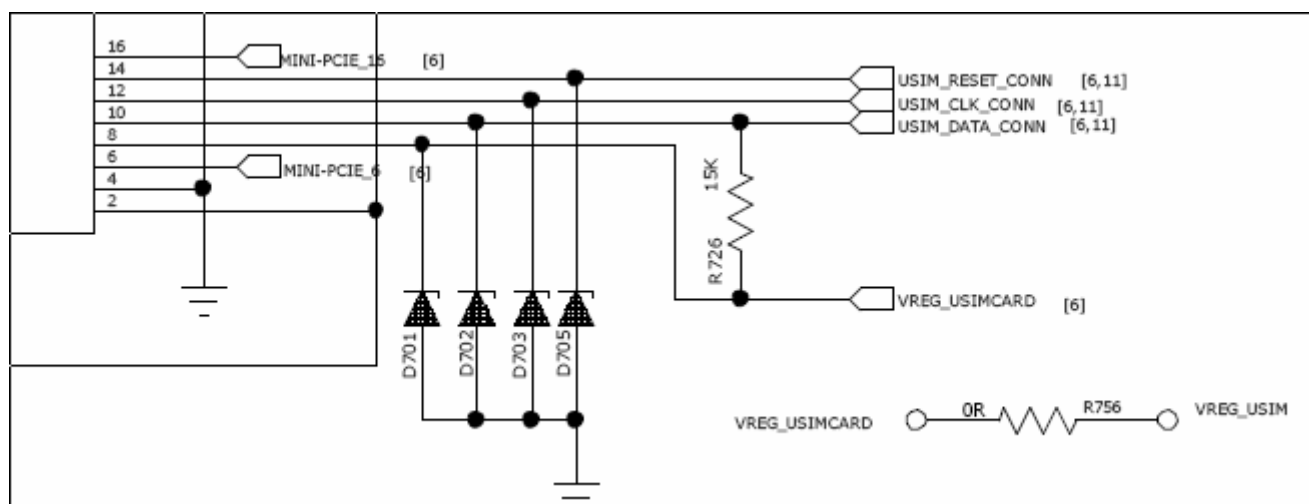
2.2.5 IC interface

U7300 offers Micro the PCM interface by Mini PCIe Interface.

2.2.5.1 IIC interface description

U7300 offers the IIC interface for user. Two operating modes with different transfer rates, Standard-mode: up to ~100 kbps, Fast-mode: up to ~400 kbps.The detail information is given in table 2.11 below.

Table 2.11 U7300 IIC interface description

Signals offered by IIC	The name of the correlative pins in Mini PCIe Interface	SN. of the Mini PCIe Interface	Description
I2C_SCL	I2C_SCL	30	IIC Clock signal
I2C_SDA	I2C_SDA	32	IIC Data signal

Notes: The IIC Bus 2.2K pull up resistance have been integrated in U7300.

2.2.6 UART interface

U7300 offers a UART interface (RS232) by Mini PCIe Interface for debugging.

2.2.6.1 Description

The information about UART interface offered by U7300 is described in table 2.12 below.

Table 2.12 U7300 UART interface description

Signals offered by UART	The name of the correlative pins in Mini PCIe Interface	SN. of the Mini PCIe Interface	Description
DTR	UART_DTR	46	
DSR	UART1_DSR	48	
DCD	UART_DCD	30	
RI	UART1_RI	32	
Rx	UART_RX	23	
Tx	UART_TX	31	
RTS	UART_RTS	25	
CTS	UART_CTS	19	
GND	GND	4, 9, 15, 18,21, 26, 27, 29, 34, 35, 37, 40, 43, 50	

2.2.6.2 Reference circuit

The reference circuit of UART interface is shown in figure 2-12.

As the UART of U7300 can only supply TTL level while the PC serial port level is the RS232 level, the signal level

between them must use level transformation chip. The reference IC is SP3238EEA which produces by SIPEX, as shown in Figure 2-11。J401 is a 9 needle serial port plugs，we can use it to connect U7300 and PC.

Figure 2-12 The reference circuit of UART interface

2.2.7 GPS interface

U7300 supports gpsOne® Gen7. The U7300's gpsOne® Gen7 engine supports position location and personal navigation while operating in any of the following modes:

1) Standalone

2) MS-assisted and MS-based

3) gpsOneXTRA Assistance™

The U7300 device includes primary and secondary receiver paths, thereby enabling advanced techniques such as mobile receive diversity (MRD), and a dedicated GPS receive path. The separate GPS path allows data Rx processing on the active primary path while simultaneously processing GPS signals on the secondary path (simultaneous-GPS, or S-GPS, processing).

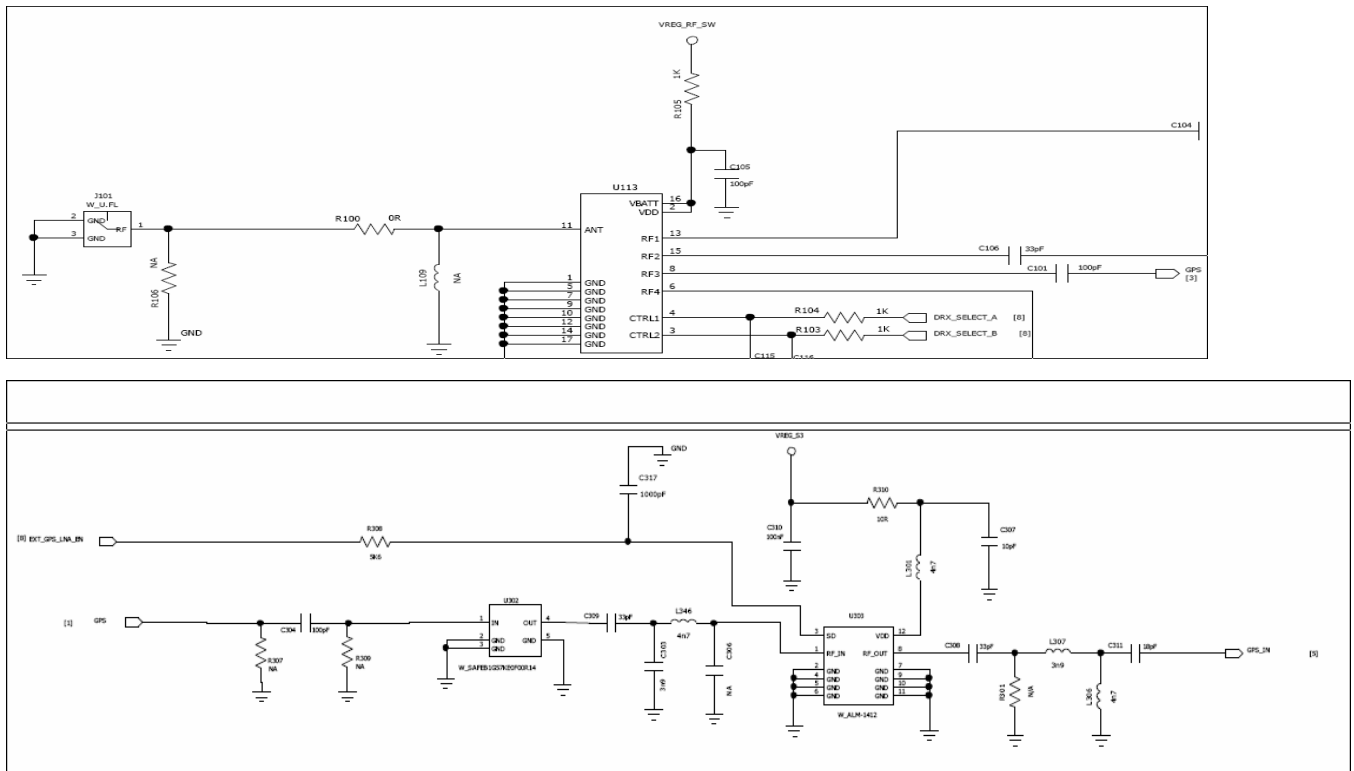The reference circuit of GPS interface is shown in figure 2-13.

Figure 2-13 The reference circuit of GPS interface

2.2.8 Others

U7300 also offers some other functional interfaces besides those which have been described above.

These signals are listed in table 2.15 below.

Table 2.15 The other signals offered by U7300

The name of the correlative pins in Mini PCIe Interface	SN. of the Mini PCIe Interface	Description
KPD_PWR_N	17	Power on key, active low(NA)
EXT_RST_N	33	Reset signal for U7300
EXT_RST_N	22	NA(Reset signal for U7300)
VREG_MSME	11	VREG_MSME Output，1.8V
VCOIN	13	Standby battery input

1） U7300 offers a power supply named VREG_MSME, its value is +1.8V and the Max. value of electric current is 100mA.

2） U7300 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 U7300 being powered off, the backup battery will power the real time clock, the Crystal Oscillator Circuit and the SMPL timer. And while U7300 being powered on, the battery will be charged

up. The voltage offered by battery must be less than 3.6V.

For only keeping the SMPL (Sudden momentary power losing) timer while Sudden momentary power losing, a capacitor can be used inside of battery. And the correlativity between the capacitance and the holding time is listed in table 2.16.

Table 2.16 the correlativity between the capacitance and the holding time

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

3）KPD_PWR_N is used for power on U7300 module. And U7300 will be start-up just by putting the KPD_PWR_N to earth.

4）EXT_RST_N is used for reset the U7300 module. And U7300 will be reseted just by putting the KPD_PWR_N to earth.

3. U7300 key features

The U7300 module has features such as internet access, SMS, start-up mode switching, and extended mass memory. The features are described in following sections. For detail information about AT commands, please make refers to the related documents.

3.1 Internet access

AT commands can be used for querying/setting the network band, selecting network mode, setting the network search mode, setting register mode, querying network signal strength, setting APN and so on. The related AT commands are listed as follows:

·Network Band Set: AT+ BNDPRF =<nv441>, <nv946>

·Network Band Query: AT+BNDPRF?

·Network Mode Set: AT+MODODR=<mode >

·Network Mode Query: AT+MODODR?

·SIM LOCK status: AT+NWLCK?

·Network Mode Service Query: AT+MODPRF?

·Network Query: AT+PSRAT

·PIN and PUK Remain Times Query: AT+CPNNUM

·APN Set: AT+CGDCONT=1,"IP","CMNET"

·Dial up Access: ATDT*99***1#

·Network Disconnecting: ATH

　　The users need to use PPP protocol for internet access besides AT commands. The PPP protocol can be provided by customers or API functions offered by OS, such as the RasDial function in Windows OS.

```
DWORD RasDial(

  LPRASDIALEXTENSIONS dialExtensions,

  LPTSTR phoneBookPath,

  LPRASDIALPARAMS rasDialParam,

  DWORD NotifierType,

  LPVOID notifier,

  LPHRASCONN pRasConn

);
```

3.2 SMS

The SMS feature is implemented by AT commands. You can set the service center address, switch message format, enable/disable receiving message report, delete message, preview message, receive/send message and so on.

　　The related AT commands are listed as follow:

·New Message Indication: AT+CNMI

·Message Send: AT+CMGS

·Message Prefered Storage: AT+CPMS

·Message Preview: AT+CMGPR

·Message Delete: AT+CMGD

·Message format Switch: AT+CMGF

·Service Center Address Set: AT+CSCA

·Receiving Message Report enable/disable: AT+CNMI=2,1,0,1,0

3.3 GPS

GPS functions are implemented by AT commands. The related AT command as follow:

AT+GPSSTART originate GPS request

AT+GPSEND stop GPS request

AT_GPSMODE config the gps request mode

AT+GPSCFG configure GPS parameter such as qos、fix rate、session mode and so on

3.4 Phonebook

The Phonebook feature is implemented by AT commands. You can set the phonebook storage location, read phone number, write phone number and delete phone number and so on.

The related AT commands are listed as follow:

AT+CPBS=<storage> set the storage location

AT+CPBR=<index> read phone number

AT+CPBW=[<index>][,<number>[,<type>[,<text>]]] write phone number on the phone.

AT+CPBW=[<index>] delete phone number.

AT+CPBF=<findtext> find the phone number according to the findtext.

3.5 start-up mode switching

The U7300 module supports start-up mode switch between USB Disk start-up and Modem start-up(some have support Modem &Disk start-up mode), mode switch between USB Disk function and Modem function.

The related AT commands are listed as follows:

·Set USB Disk start-up mode: AT+DISK=8,"D3"

·Set Modem start-up mode: AT+DISK=8,"D1"

·Set Modem &Disk start-up mode: AT+DISK=8,"D2"

·Read current start-up mode: AT+DISK=?

3.6 Extended Mass Memory

The U7300 module supports T-Flash card as extended mass memory device. The Max capability is 32GB.

4. Application Illustration

4.1 Dial-up procedure

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CPIN?	SIM card querying
2	R	READY	
3	S	AT+CPNNUM	PIN And PUK querying
4	R	PIN1=3; PUK1=10; PIN2=0; PUK2=8	
5	S	AT+NWLCK?	SIM LOCK querying
6	R	+NWLCK: NETWORK UNLOCKED	
7	S	AT+CIMI	Get IMSI
8	R	460020177608847	IMSI, by which APN is selected
9	S	AT+CGDCONT=1,"IP","CMNET"	Set APN ,take China Mobile for example
10	R	OK	
11	S	ATDT*99***1#	Dial-up
12		PPP protocol	

4.2 SMS Procedure

4.2.1 Message Format

U7300 supports two kinds of message format, PDU and TEXT which can be set by AT command AT+CMGF, AT+CMGF=0 means PDU format, and AT+CMGF=1 means TEXT format.

4.2.2 Set Message Storage Location

The command **AT+CPMS=<mem1>,<mem2>,<mem3>** is used to set message storage location.

<mem1>, <mem2>, <mem3> can be set as SM and ME, SM means SIM card，ME means the U7300 module.

<mem1>: The parameter set here means memory storage used as read and delete message function. It can be operated by the followed AT commands: AT+CMGL, AT+CMGR and AT+CMGD;

<mem2>: The parameter set here means memory storage used as writing and send message function. It can be operated by the followed AT commands: AT+CMSS and AT+CMGW;

<mem3>: Received messages will be storage in this memory if routing to PC is not set;

Response:

If no error:

+CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3>

OK

<used1, 2, 3> Number of messages currently storage in <mem1, 2, 3>

<total1, 2, 3> Number of message capacity of <mem1, 2, 3>

If error:

+CMS ERROR:<err>

The command AT+CPMS? is used to display the remained capacity of memory.

AT+CPMS?

Response:

If no error:

+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK

If error:

+CMS ERROR

4.2.3 PDU Format

Sending:

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain

1	S	AT+CSCS=" UCS2"	Select TE character set
2	R	OK	
3	S	AT+CMGF=0	Select message PDU format
4	R	OK	
5	S	AT+CMGS=26 31000B815100295641F20008A70C003100320033003200330031 \<ctrl-Z\>	Write a message to 15009265142, content:123231
6	R	+CMGS: 2 OK	Send successfully

Writing message to memory and read：

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CMGW=26 31000B815100295641F20008A70C003100320033003200330031 \<ctrl-Z\>	Write a message to self 15009265142, content:123231
2	R	+CMGW: 6 OK	Memory location index 6 of the stored message is returned.
3	S	AT+CPMS="ME"	Set Prefered Message Storage to ME
4	R	OK	Set Successfully
5	S	AT+CMGR=6	Read the Message from memory
6	R	+CMGR: 2,,26 0891683108200905F031000B815100295641F20008A70C003100320033003200330031 OK	Read Successfully

Receiving message:

+CMTI: "SM",0

Means new received message in the memory located from index 0.

Reading message：

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CMGF=0	Select message PDU format
2	R	OK	Select successfully
3	S	AT+CMGR=0	Read message has been received in the memory location index 0
4	R	+CMGR: 0,,24 0891683108200905F0240D91683198916718F3000 880509111258023047A7A8C03 OK	Read successfully

Deleting message:

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CPMS="SM"	Set Prefered Message Storage to SM
2	R	OK	Set Successfully
3	S	AT+CMGD=0	Delete message from preferred memory location index 0.
4	R	OK	Delete successfully

4.2.4 TEXT Format

Sending:

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300..

SN.	Type	AT Command/Respond	Explain
1	S	AT+CSCS=" GSM"	Select TE character set
2	R	OK	
3	S	AT+CMGF=1	Select message TXT format

4	R	OK	
5	S	AT+CMGS="13572034257" > 1233455664788666555 \<ctrl-Z>	Send message
6	R	+CMGS: 4 OK	Send successfully

Writing message to memory and read：

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300..

SN.	Type	AT Command/Respond	Explain
1	S	AT+CMGW="13572034257" > 11111114 \<ctrl-Z>	Write a message
2	R	+CMGW: 8 OK	Memory location index 8 of the stored message is returned.
3	S R	AT+CPMS="ME" OK	Set Prefered Message Storage to ME
4	S	AT+CMGR=8	Read the message from the memory
5	R	+CMGR: "STO UNSENT","13572034257", 11111114	Read Successfully

Receiving message:

+CMTI: "SM",1

Means new received message in the SIM card located index is 1.

Reading message：

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CMGR=8	Read message has been received in the memory location index 8

| 2 | R | +CMGR: 0,,24

 +CMGR: "STO UNSENT","13572034257",

 11111114

 OK | Read successfully |

Deleting message:

The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300. The type "S" means the AT Command sent to U7300, and the type "R" means Respond from U7300.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CMGD=8	Delete message from preferred memory location index 8.
2	R	OK	Delete successfully

4.2.5 SMS Service Center Address Setting

The user can set the SMS service center address, TP-Validity-Period and SMS Data Coding Mode.

SN.	Type	AT Command/Respond	Explain
1	S	AT+CSCA="+8613800201500",145	Set the SMS service center address, and the address will be kept in SIM card.
2	R	OK	
3	S	AT+CSMP=17,167,0,8	Set the TP-Validity-Period as 167 （24 hours) ,and the SMS Data Coding Mode as UCS2
4	R	OK	

Remark:

1) TP-MTI supports SMS-DELIVER, SMS-SUBMIT and SMS-STATUS-REPORT, while not support SMS-DELIVER-REPORT, SMS-SUBMIT-REPORT and SMS-COMMAND.

2) TP-PID is 0 by default while TPDU is sending or saving.

3) The Min. length of <pdu> is 8 and the Max. length of <pdu> is 164 while TPDU is sending or saving,.

4) The parameter <stat> can only be 2 for the command AT+CMGW.

5) In TEXT Format, the parameter <fo> can be 17 and 49, the parameter <pid> can only be 0, the parameter <dcs> can be 0~31 and the parameter <vp> can be 0~255 for AT+CSMP command

6) In TEXT Format, the parameter <stat> can only be "STO UNSENT" for the command AT+CMGW

4.3 PHONE BOOK

4.3.1 Set Phone Book Storage Location

Phone book storage location can be set by AT command AT+CPBS. The AT command can be used in three ways.

Performing AT+CPBS? will return the current storage location of the phone book. Such as +CPBS:<storage>[,<used>,<total>].The parameter <total> indicated how many phone numbers can be stored on the phone. The parameter <used> indicates how many phone numbers have been stored.

Performing AT+CPBS=? will return all the storage type which the phone supports. Such as +**CPBS**：(list of supported <**storage**>s).

We can use AT+CPBS=<storage> to set storage location. There are six types storage location. It's follow as:

"LD"   --store the recently call number which have dialed (SIM).

"MC"   --store the recently call number which haven't answered.

"RC"   --store the recently call number which have been answered.

"ON"   -- store the phone number of itself.

"ME"   --NVRAM storage

"SM"   --SIM storage

4.3.2 Read Phonebook entries

When you want to read phonebook entries, you can use AT command AT+CPBR.

Performing   AT+CPBR=? will list of supported index, phone number length and text length.

Performing AT+CPBR=<index1>[,<index2>] will return the content of the phonebook entry of index1. If we use index1 and index2 at the same time ,it will return all the entries between index1 and index2. Such as

[+CPBR:<index1>,<number>,<type><text>[[...]<CR><LF>+CPBR:<index2>,<number>,<type><text>]]

The parameter <type> include 129 and 145.145 indicate which is a international phone number. 129 indicate which is a unknown type number.

The parameter <text> is the tag of the number.

4.3.3 Write phonebook entry

When you want to write a phonebook entry on the phone, you can use AT commande AT+CPBW.

Performing   AT+CPBW=? will return list of supported index, max length of phone number, list of supported phone number types and max length of text.

We can use the command "AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]" to write number on the phone. If the parameter <number> is NULL, the command will delete the phone number on the phone of index.

4.3.4 Find phonebook entries

We can use AT command AT+CPBF when we want to find the entry according to the text.

Performing AT+CPBF=? will return the max length of phone number and the max length of text. Such as +CPBF:[<nlength>],[<tlength>].

When we want to find a entry, we can give the text of the phone number ,and according to the text, we use AT+CPBF=<findtext> to find the number we want.

4.4 GPS

4.4.1 Start GPS Request

All GPS parameter have a default value,before start gps request,you can modify the value of parameter,also you can use the default value, then you can start gps request with at command AT+GPSSTART ，this command without any parameter.

4.4.2 Stop GPS Request

AT+GPSEND is used to stop gps fix procedure, this command is without any parameter.

4.4.3 GPS Mode Config

This command is used to config the gps mode and query current mode,AT+GPSMODE=<MODE> is to config gps mode,now we got 7 modes to be config.

   0   STANDALONE ONLY

   1   MSBASED

2   PDE_CALC_ONLY

3   ACCURACY   OPTIMAL

4   SPEED OPTIMAL

5   BEST POSITION MODE

6   DATA   OPTIMAL

AT+GPSMODE? Is used to get current mode

4.4.4 GPS Parameter Config

We use command AT+GPSCFG=<arg1>< arg2>< arg3>< arg4>< arg5> to config GPS parameters,

Arg1   threshold   accuracy

Arg2   performance

Arg3   fixes number
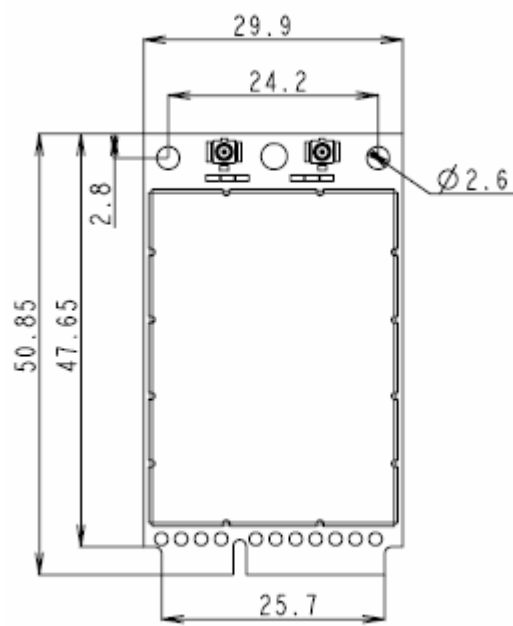
Arg4   time between fixes

Arg5   session mode

session mode have 6 mode to be config

0   LATEST(Get latest PD info)

1   NEW(Get new position)

2   UPDATE(Obtain cont PD updates)

3   TRACK(Perform Tracking mode)

4   TRACK_IND(Tracking mode independent fixes)
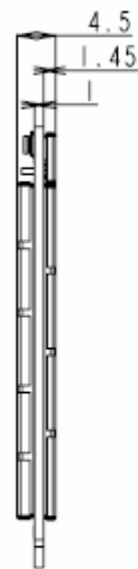
5   DATA_DLOAD(Data download option)

AT+GPSCFG command is used to get arg1 to arg5 value

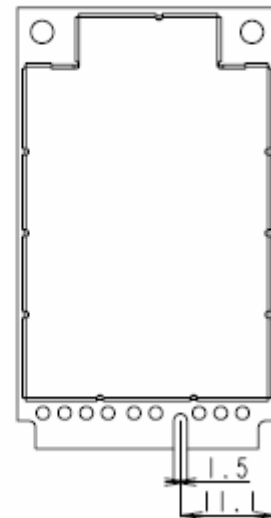## Appendix：Mechanical dimensions of U7300

The following are Mechanical dimensions of U7300 bottom view, side view and top view. (Unit: mm)

Top View   Side View   Bottom View