# **GSM/GPRS/GPS Shield (B)**



# Introduction

GSM/GPRS/GPS Shield (B), Arduino Shield Based on SIM808

# How to use

#### Hardware description



Hardware connection

- 1. SIM808 module
- 2. MIC29302 power chip
- 3. CP2102: USB TO UART converter
- 4. SMF05C: TVS diode
- 5. 1N5408: onboard rectifier
- 6. SIM808 functional pins

- 7. Arduino expansion connector
- 8. USB TO UART interface
- 9. DC power jack
- 10. GPS antenna connector
- 11. Bluetooth antenna connector
- 12. Firmware upgrade interface
- 13. GSM antenna connector
- 14. SIM card slot
- 15. 3.5mm earphone/mic jack
- 16. GPS status indicator
- 17. CP2102 UART Tx/Rx indicator
- 18. NET indicator:

flashes fast when the module starts up flashes slowly after GSM register succeed

- 19. Power indicator
- 20. Power switch
- 21. SIM808 control button: press the button and hold for 1s, to startup/shutdown the SIM808
- 22. Reset button
- 23. UART selection switch, select controlling the SIM808 via:

CP2102 UART pins of Arduino interface

24. SIM808 UART configuration:

SIM\_TX: SIM808 UART TX SIM\_RX: SIM808 UART RX

25. IOREF power selection: configure the UART voltage level

#### **Getting started**

#### Preparation

- GSM/GPRS/GPS Shield (B) (this product)
- SIM card
- 5V TTL UART module
- Serial monitor software (installed on your PC)
- u-center software (of course also installed on your PC)
- GSM antenna
- GPS antenna
- Bluetooth antenna
- Micro USB cable
- 9V DC adapter

#### **Basic operation**

We will demonstrate some basic operation by GSM mode in this section.

1. Power up and the power indicator lights up.

2. Switch to CP2102 (UART selection switch).

Toggle the switch to the side of USB port by which setting communication between CP2102 and SIM808.

- 3. Press the SIM808 control button and hold for 1s to startup the SIM808 until the NET indicator flashes.
- 4. Run a serial monitor software and set as:





a) UART settings

PortNum choose a COM Port (\*)

BaudR115200DpaityNONEDataB8 bitStopB1 bit

(\*) You shall choose the COM Port listed in the Device Manager (This PC -> Properties -> Device Manager).



Send AT command to verify the module

b) Check the **Auto Checksum** and then an *Apendix bits setting* box pops up. Check the **Fixed Byte Checksum** and input 0D into the following box.

c) Input AT+GSV into the Sending box then click the button Send.

d) You can get the received information from the COM port data receive box.

#### **GSM Debugging**

#### **GSM Commands Description**

Frequently used commands for sending SMS

Command	Description	Response
AT	Make sure the module is working properly.	AT OK
AT+CNMI	New SMS message indications, e.g. send: $AT+CNMI=2,1$ to setup new SMS message indications. When a new message is received and SIM card is not full, the SIM808 module will response via serial port, e.g. received: $+CMTI$ : "SM", 1 means a new message received was stored into the position 1 of the SIM card.	
AT+CMGF=1	SMS Configuration	AT+CMGF=1 OK
AT+CSCS	Select TE Character Set Send: <i>AT</i> + <i>CSCS</i> =" <i>GSM</i> " to use GSM 7 bits default alphabet; Send: <i>AT</i> + <i>CSCS</i> =" <i>UCS2</i> " to use 16-bit universal multiple-octet coded character set.	
AT+CMGR	Read SMS message	
AT+CSMP	Set SMS Text Mode Parameters. It should be set as AT+CSMP=17,167,2,25 for using UCS2 format.	
AT+CMGS="phone number"	Set the message transmission number and send SMS message. After receiving the symbol $>$ , a message (end with 0x1A) can be sent out.	>
0x1A	This is a terminator. Before sending it out, you should check the option Send As Hex	

(\*) After sending the message, you should check the option **Send As Hex**, then send the command 1A which means to send a message. Besides, you can send 1B, ESC's ASCII, to cancel sending.

e(F) Options(O)			
OMSettings	COM port data receive	Network data receive	NetSettings
PottNum COM5  PottNum COM5 BaudR 115200 DataB 8 bit DataB 8 bit StopB 1 bit Close ecv Options Receive to file Add line return Receive As HEX Receive Pause Save Clear	AT OK AT+CMGF=1 OK AT+CMGS="13424403025" > www.waveshare.com > > +CMGS: 164 OK +CMT: "1065800711", "", "15/12/22, 10:59:02+ 32" 5ETF4E1C79FB52A863D0919260A8FF1A0031003000 3A0035003877ED4FE1900187EE0031003300340032 00340034003000330030003200353002		(1) Protocol TCP Server (2) Local host IP 192.168.31.180 (3) Local host port [12345 Listening Recev Options Receive to file. Add line return Receive As HEX Receive Pause Save Clear
end Options ☐ Data from file ☑ Auto Checksum ☐ Auto Clear Input ☐ Send As Hex ☐ Send Recycle			Send Options Data from file . Auto Checksum Auto Clear Input Send As Hex Send Recycle
Interval 1000 ms	Send	Send from TCPIP	Send Interval 1000 ms

# Sending English message

• Sending messages using GSM default alphabet

Command	Description
AT	Make sure the module is working properly.
AT+CMGF=1	SMS Configuration.
AT+CMGS="phone number"	Set the message transmission number and send SMS message. After receiving the symbol $>$ , a message (end with 0x1A) can be sent out.
0x1A	This is a terminator. Before sending it out, you should check the option Send As Hex

e(F) Options(O)			
OMSettings	COM port data receive	Network data receive	NetSettings
PortNum COM5 🗾	AT		(1) Protocol
RaudB 115200 +	OK		TCP Server
	AT+CNGF=1		(2) Local host IP
	AT+CSCS="GSM"		192.168.31.180
DataB 8 bit 💌	OK		(3) local host port
StopB 1 bit 💌	AT+CHMI=2, 1		12345
	OK		
💓 Close	+CNTI: "SM".5		Listening
			Press On Minn
ecv Uptions			Kecv Options
Keceive to file	AT+CMGR=5		Keceive to file.
Add line return	+CHCP. "PRC INTERAD" "+		Add line return
Receive As HEX	8618625180908", "", "15/12/22, 11:10:10+32"		Receive As HEX
Receive Pause	www.waveshare.com		Receive Pause
Save Clear	07		<u>Save</u> <u>Clear</u>
end Options	OK		Send Options
Data from file			Data from file .
✓ Auto Checksum			Auto Checksun
Auto Clear Input			Auto Clear Input
Send As Hex			Send As Hex
Send Recycle			Send Recycle
1 1 1000	AT+CMGR=5	Send from TCPIP	Tatama1 [1000] as
ruceivar 11000 wz	Send		Send Send
			T

# Receiving English message

• Receiving messages using GSM default alphabet

command	description
AT	Make sure the module is working properly.
AT+CMGF=1	SMS Configuration.
AT+CSCS="GSM"	Use GSM alphabet
AT+CNMI=2,1	Setup new SMS message indications
AT+CMGR=num	Read SMS message. The <i>num</i> means the storage location of a message.

## • Sending messages using UCS2 character set

command	description
AT	Make sure the module is working properly.
AT+CMGF=1	SMS Configuration.
AT+CSMP=17,168,2,25	Set SMS Text Mode Parameters.
AT+CSCS="UCS2"	Use UCS2 character set.
Use the software Unicode Converter	Use a software to convert phone number and messages to Unicode.
AT+CMGS="a phone number in unicode"	Set the phone number (in unicode). After receiving the symbol >, a message (end with 0x1A) can be sent out.
0x1A	This is a terminator. Before sending it out, you should check the option Send As Hex

• Receiving messages using UCS2 character set

command	description	
AT	Make sure the module is working properly.	
AT+CMGF=1	SMS Configuration.	
AT+CSCS="GSM"	Use GSM alphabet	
AT+CNMI=2, 1	Setup new SMS message indications	
AT+CMGR=2	Read SMS message	
Use the software Unicode Converter	Use a software to convert messages to Unicode.	

	汉字与Unicode 尚转换
双字节汉字	微雪电子
Unicode码	5FAE 96EA 7535 5B50
汉字	转Unicode Unicode转汉字 退出

Unicode Converter

• Frequently used commands for making and receiving calls.

command	description	Response
ATD13612345678	Dial 13612345678, end with semicolon(;). You can	ATD13612345678
AID13012343078,	make a call.	ok
AT+CLIP	Calling line identification presentation	AT+CLIP=1 OK
ATA	Answer an Incoming Call	RING
ATH	Disconnect Existing Connection	

(Please see SIM808\_AT+Command+Manual\_V1.01 for more details of AT commands)

#### **GPS Debugging**

Switching to GPS mode from GSM mode

(F) Options(O)	0014 114		11.00.00
UMSettings	CUM port data receive	Network data receive	NetSettings
PortNum COM5 🔄	AT+ CGNSPWR =1		[1] Protocol
Laude 115200 -	OK		TCP Server
	AT+ CGNSIST =1		(2) Local host IP
Paity NUNE	\$GPGGA 235951 262 0.0 M M *47		192,168, 31,180
)ataB 8 bit 💌	\$GPGLL 235951. 262. V. M×75		(7) I
hand 1 bit	\$GPGSA, A, 1,		(3) Local host port
	\$GPGSV, 1, 1, 00*79		12343
🔶 Close	\$GPRMC, 235951.262, V, , , , , 0.00, 0.00, 050180 , , , N*4E		Listening
new Ontions	\$GPVTG, 0.00, T, , M, 0.00, N, 0.00, K, N*32		Berr Ontions
	\$GPGGA, 235952.262, , , , 0, 0, , , M, , M, , *44		
Keceive to file	\$GPGLL, , , , , 235952. 262, V, 1+76		Acceive to file.
Add line return	\$GPGSA, A, 1, , , , , , , , , , , , *1E \$GPGSV 1 1 00+70		Add line return
Receive As HEX	\$GPRMC 235952 262 V 0.00.0.00.050180		Receive As HEX
Receive Pause	N*4D		Receive Pause
Save Clear	\$GPVTG, 0.00, T, , M, 0.00, N, 0.00, K, N*32 \$GPGGA, 235953, 262 0.0 M, M, *45		Save Clear
and Options	\$GPGLL, , , , , 235953.262, V, H*77		Send Options
- Data from file	\$GPGSA, A, 1,		□ Data from file
Auto Checkrum	\$GPGSV, 1, 1, 00*79		E Auto Cheskenn
- Auto Clean Trent	\$GPRMC, 235953. 262, V, , , , 0. 00, 0. 00, 050180		Auto Checkson
- C-1 to V	,,, N*4C		Cand An Vie
Send As Nex	\$GPG64 235654 262 0.0 N M +42		Cond Rs Rex
Send Kecycle		·	Send Kecycle
Interval 1000 ms	AT+ CGNSTST =1	Send from TCPIP	Sand Interval 1000 ms
Load Clear	Send		Load Clear

Serial message receiving under GPS mode

1) Send the following commands :

- AT+ CGNSPWR =1 (GPS power up)
  AT+ CGNSTST =1 (GPS reset)

#### Return OK.

2) GPS signal output: Choose the GPS serial port.

#### See GPS information by u-center



u-center software



Set the port and baud

🕐 u-center 7.02 - [Packet Console]	
File Edit View Player Receiver Tools W	ow Help
🗋 🖬 🗃 🖛 📑 🚺 Eject Ct	
to ▼ nu ▼   🔧 Stop Cti Pause Ct	H → → ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
Record Ct	50
Step Ctrl+Sp	40
Play Cti	3•
Scan Ct	F
Goto Begin	10
Goto End	Bb
â   ×   🖬	Latitude

See GPS information



GPS location

1) Open u-center software.

2) Click the button Receiver to set Port or Baudrate. Baudrate is 12500 by default which can be set by the command AT+CGPSIPR. "Port" is the serial port in use.

3) Click Player to check the GPS information.

Remark: Please see the User Guide PDF for more details of u-center.

#### **GPS Command Description**

AT+CGNSPWR	GPS power control	=1, GPS power up
------------	-------------------	------------------

AT+CGNSINF	Get current GPS location info	often 32
T+CGPSSTATUS	GPS status	

(Please see SIM808\_AT+Command+Manual\_V1.01 for more details of AT commands)

#### **GPRS** Debugging

#### Local virtual servers settings

Virtual Servers				
ID Service Ports	IP Address	Protocol	Status	Modify
Add New Enable All	Disable All	Delete All		
	Previous	Next		

Local virtual servers settings

Virtual servers can be used for setting up public services on your LAN. A virtual server is defined as a service port, and all requests from Internet to this service port will be redirected to the computer specified by the server IP. Please see your router's guide.

- Service Ports setting: set to a no conflict port. In this example, the service port is set as 12345.
- IP Address setting: Run CMD in the PC, and execute the 'ipconfig' command to confirm your IPv4 address. In this example, the IP address is 192.168.1.104.

#### **GPRS Command Description**

1) The GPRS configuration can be performed by sending out following commands sequentially:

command	Description
AT+CSQ	Signal quality report
AT+CSTT="CMNET"	Set APN as "CMNET".
AT+CIICR	Bring up wireless connection with GPRS or CSD
AT+CIFSR	Get Local IP Address
AT+CDNSGIP=www.sim.com	Query the IP Address of Given Domain Name

2) GPRS debugging:

e(F) Options(O)			
COMSettings	CDM port data receive	Network data receive	NetSettings
PortNum COM5  PortNum COM5 BaudR 115200 DataB 8 bit DataB 8 bit StopB 1 bit Close Receive to file Add line return Receive As HEX Receive Pause Save Clear	AT+CSQ +CSQ: 20,0 OK AT+CST="CMNET" OK AT+CIICR OK AT+CIPSR 10.103.29.201 AT+CDNSGIP="www.sim.com" OK +CDNSGIP: 1, "www.sim.com", "116.228.221.60" AT+CIPSTART="TCP", "222.125.175.28", "12345" OK CONNECT OK AT+CIPSEND >	[Receive from 117.138.39.65 : 7708] : ABCDEF	(1) Protocol TCP Server (2) Local host IP [192.168.1 .104 (3) Local host port [12345 Disconnect Receive to file. Add line return Receive As HEX Receive Pause Save Clear
Send Options	ABCDEF		Send Options
☐ Data from file	SEND OK		☐ Data from file .
Auto Checksum			Auto Checksum
Auto Clear Input			Auto Clear Input
☐ Send As Hex ☐ Send Recycle		Peers: 117.136.39.65:7708 -	Send As Hex
Interval 1000 ms	+ Send	Send from TCPIP Send	Interval 1000 ms

GPRS running state

Find out the PC's WAN IP, which can be obtained by searching "IP" in a search engine, or inquiring your Internet service providers directly. In this example, the WAN IP address is 222.125.175.28. Then send out following commands sequentially:

Command	Description	
	The WAN IP address should be set	
ΛΤ - CIDST Λ DT-"TCD" "222 125 175 28" "12345"	according to actual condition. In this	
A1+CII START = 1CI , 222.125.175.26 , 12545	example, the WAN IP address is	
	222.125.175.28, and port number is 12345.	
	Send SMS message. After receiving the	
AT+CIPSEND	symbol >, a message (end with $0x1A$ ) can	
	be sent out	
01 A	This is a terminator. Before sending it out,	
	you should check the option Send As Hex	
AT+CIPCLOSE	Close TCP or UDP Connetion	
AT+CIPSHUT	Deactivate GPRS PDP Context	

(\*) After sending the message, you should check the option **Send As Hex**, then send the command 1A which means to send a message.

(Please see SIM808\_AT+Command+Manual\_V1.01 for more details of AT commands)

#### **Bluetooth Debugging**



Bluetooth Debugging

AT commands for Bluetooth debugging

Command	Description	
AT+BTPOWER=1	BT power control. =1, BT power up	
AT+BTHOST?	Inquiry and set host BT device name. Response: Name and MAC address	
AT+BTSCAN=1,10	Scan surrounding BT device. Scanning time 10-60s (10s here)	
AT+BTPAIR=1,1	Set BT pairing mode. To connect with a BT device, you need input AT+BTPAIR=1,1 to confirm pairing request.	
AT+BTACPT=1	There is a request that tries to build a SPP's connection.	
AT+BTATD=10086	Dial up a voice call using BT device. Here 10086 is a phone number to be dialed.	

#### How to use with Arduino UNO R3

#### Preparation

- GSM/GPRS/GPS Shield (B) (this product)
- Arduino UNO R3
- SIM card
- USB cable (type B)
- Serial monitor software (installed on your PC)
- u-center software (of course also installed on your PC)
- GSM antenna
- GPS antenna
- Bluetooth antenna
- 9V DC adapter

1) Operation



Arduino hardware connection

- Tag 1: Connect a USB cable (type B) to your Arduino.
- Tag 2: Connect a micro USB cable to the module.
- Tag 3: DC power supply (6-9V).
- Tag 4: Power up your board.
- Tag 5: Set the VREF for your Arduino.
- Tag 6: Connect a GPS antenna.
- Tag 7: SIM808 control button.

press the button and hold for 1s, to startup/shutdown the SIM808

- Tag 8: Connect a BT antenna.
- Tag 9: Connect a GSM antenna.
- Tag 10: SIM808 UART configuration

SIM\_TX: SIM808 UART TX SIM\_RX: SIM808 UART RX

• Tag 11: Set the UART communication port, select controlling the SIM808 via:

CP2102 UART pins of Arduino interface

#### **Software Debugging**



Open GNSS.ino



Verify the program and open a serial monitor

田田 ◆	1
SPRC 002519 020, V, N=77 SGPGSA, A, 1,	
SINSS   Arduino 1.5.6-r2       SCFVTG, 0.00, T, M, 0.00, H, 0.	
文件 编辑 Sketch II # ##b       SkP6dA, 002520.020, V, B*7D         ONSS       SkP6dA, 002520.020, V, B*7D         ONSS       SkP6dA, 1,, *1E         ONSS       SkP6dA, 002520.020, V,, 0.00, 0.00, 060180, ., B*45         mySerial. begin (9600):       SkP6dA, 002520.020, V,, 0.00, 0.00, 060180, ., B*45         void leep() // run over and over       SkP6dA, 002521.020, V,, 0.00, V, W, *4E         SkP6dA, 002521.020, V, B*7C       SkP6dA, 002521.020, V, B*7C         skpSerial. println("AT"):       SkP6dA, 002522.020, V,, 0.00, 0.00, 060180, ., B*44         delay (2000):       SkP6dA, 002522.020,, 0.0, ., M, M, .*4D         delay (2000):       SkP6dA, 002522.020,, 0.0, ., M, M, .*4D         delay (2000):       SkP6dA, 002522.020,, 0.0, ., M, M, .*4D         skPfodA, 002522.020, V,, 0.00, 0.00, 060180, ., B*44       SkPfodA, 002522.020,, 0.0, ., M, M, .*4D         delay (2000):       SkPfodA, 002522.020,, 0.0, ., M, M, .*4D         skPfodA, 002522.020, V,, 0.00, 0.00, 060180, ., B*47       SkPfodA, 002522.020, V,, 0.00, 0.00, 060180, ., B*47         skPfodA, 002522.020, V,, 0.00, V, .W, *4E       SkPfodA, 002522.020, V,, 0.00, ., M, M, .*4C         skPfodA, 002522.020, V,, 0.00, K, B*32       SkPfodA, 002522.020, V,, 0.00, ., M, M, .*4E         skPfodA, 002522.020, V,, 0.00, K, B*32       SkPfodA, 002522.020, V,, 0.00, ., M, M, .*4E	
mySerial.begin (9600):       SFFWIG.0.021,, 0.00, U.00, U.	
<pre>void loop() // run over and over SGPGSW, 1, 1, 000+79 SGPGSW, 0005221.020, V,, 0. 00, 0. 00, 060180, ., N+44 sGPVTG, 0. 00, T, M, 0. 00, N, 0. 00, N, N+44 sGPVTG, 0. 00, T, M, 0. 00, N, 0. 00, N, N+42 sGPGGA, 002522.020, V, N+7F //Sand message mySerial_println("AT+CGHSPVR=1"): sGPGSA, A, 1,</pre>	
//Sand message       SGPOSA, A, 1,, *1E         mySerial. println("AT+CGUSPWE=1");       SGPOSA, A, 1,, *1E         delay (200);       SGPOSV, 1, 1, 00+79         //reset GPS in autonomy mode       SGPOSA, 002522, 020, V,, 0, 00, 00, 060180,, B+47         mySerial. println("AT+CGUSTST=1");       SGPOGA, 002523, 020, V,, 0, 00, K, B+22         mySerial. println("AT+CGUSTST=1");       SGPGGA, 002523, 020,, 0, 0,, K, *4C         delay (200);       SGPGGA, 002523, 020,, 0, 0,, K, *4C         mySerial. listen 0;       SGPOSA, 1,, *1E	
delay (200); scPGLL,,,,,002523.020, V, N+7E mySerial.listen(); scPGLL,,,,,002523.020, V, N+7E	
(	
bytes. Global variables use 340 bytes (16%) of dynamic m for local variables. Maximum is 2,048 bytes. 1 个对象	

Press RESET

For example, we use GPS by the steps:

- Set the UART communication port to Arduino.
- Press PWRKEY and hold for 1s to startup the SIM808.
- Upload the program to your Arduino R3
- Open Arduino's Serial Monitor.
- Press RESET

Or use the software u-center instead of Serial Monitor.

#### How to use with NUCLEO-F401RE

#### Preparation

- GSM/GPRS/GPS Shield (B) (this product)
- NUCLEO-F401RE
- ST-LINK Debugger
- Micro USB cable
- Serial monitor software (installed on your PC)
- u-center software (of course also installed on your PC)
- 9V DC adapter

1) Operation



NUCLEO-F401RE hardware connection

• Tag 1: SIM808 UART configuration

SIM\_TX: SIM808 UART TX SIM\_RX: SIM808 UART RX

- Tag 2: Connect a micro USB cable to the serial port of Nucleo board.
- Tag 3: DC power supply (6-9V).
- Tag 4: Jumper settings: Enable the communication between STM32 MCU and this product.

RX---PA3

TX---PA2

• Tag 5: Jumper settings: Enable the communication between CP2102 and STM32 MCU.

RX---PC7 TX---PC6

- Tag 6: Power up your board.
- Tag 7: Set the VREF for your Nucleo.
- Tag 8: Connect a GPS antenna.
- Tag 9: SIM808 control button.

press the button and hold for 1s, to startup/shutdown the SIM808

- Tag 10: Connect a BT antenna.
- Tag 11: Connect a GSM antenna.
- Tag 12: SIM808 UART configuration

SIM\_TX: SIM808 UART TX SIM\_RX: SIM808 UART RX

#### **Software Debugging**

For example, we use GPS by the steps:

- Download the program to your NUCLEO-F401RE using ST-LINK.
- Press the RESET button.
- Download the program to your Nucleo.
- Open serial monitor software. Choose the serial port and set the baudrate as 115200. Press RESET and get info.
- Or use the software u-center instead of serial monitor software.



Compile and download the project GSP.uvproj by Keil MDK

le(F) Options(O)			111 To 100
COMSettings PottNum COM5  PottNum COM5  BaudR 115200  DPaity NONE  DataB 8 bit  DataB 8 bit  StopB 1 bit  Company Recev Options Receive to file Add line return Receive As HEX Receive Pause Save Clear Save Data from file Auto Checksum Auto Checksum Auto Clear Input Send As Hex	COM port data receive AT OK AT+CGPSPWR=1 OK AT+CGPSRST=1 OK \$GPGGA, 000156.000,, 0, 0,, M, , M, , *4A \$GPGGL,, 000156.000, V, N*78 \$GPGSA, A, 1,, *1E \$GPGSA, A, 1,, *1E \$GPGSV, 1, 1, 00*79 \$GPRMC, 000156.000, V,, 101010, ., N*4E \$GPVTG, .T, .M, .H, .K, N*2C	Network data receive	NetSettings (1) Protocol TCP Server (2) Local host IP [192.168.31.180 (3) Local host port [12345  Listening Recev Options Receive to file. Add line return Receive As HEX Receive Pause Save Clear Send Options Data from file Auto Checksum Auto Clear Input Send As Hex
Send Recycle Interval 1000 ms	Send from ES232 Send	Send from TCPIP	Send Interval 1000 ms

Get the serial information using a serial monitor software



See GPS information by u-center

## Resources

- <u>Schematic</u>
- <u>Source code</u>

#### Datasheets

#### **GSM808 Related**

- <u>SIM800 Bluetooth applocation</u>
- SIM800 Series GNSS Application Note V1.00
- <u>SIM808 SPEC V1507.pdf</u>
- SIM808 Hardware Design V1.02.pdf
- SIM800 Series AT Command Manual V1.09

#### Other chips

- <u>MIC29302</u>
- <u>SMF05C</u>
- <u>CP2102</u>