ZTE MW3736Hardware Design User Manual

Intend to OEM Integrator Installation

Version：V1.0

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Important compliance information for North American users

The MW3736 Module has been granted modular approval for mobile applications. Integrators may use the MW3736 Module in their final products without additional FCC certification if they meet the following conditions. Otherwise, additional FCC approvals must be obtained.

1. At least 20cm separation distance between the antenna and the user's body must be maintained at all times.

2. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed 3dBi in the GSM850/WCDMA850 band and 5dBi for GSM1900/WCDMA1900 band.

3. The MW3736 Module and its antenna must not be co-located or operating in conjunction with any other transmitter or antenna within a host device. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

4. A label must be affixed to the outside of the end product into which the MW3736 Module is incorporated, with a statement similar to the following: For MW3736: This device contains FCC ID: Q78-MW3736.

5. A user manual with the end product must clearly indicate the operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.

The end product with an embedded MW3736 Module may also need to pass the FCC Part 15 unintentional emission testing requirements and be properly authorized per FCC Part 15.

Note: If this module is intended for use in a portable device, you are responsible for separate approval to satisfy the SAR requirements of FCC Part 2.1093.

FCC NOTICE:

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications made to this equipment not expressly approved by ZTE Corporation may void the FCC authorization to operate this equipment.

With strong technical force, ZTE Corporation can provide CDMA/GPRS/WCDMA/GSM module customers with the following all-around technical support:

1. Provide complete technical documentation;

2. Provide the development board used for R&D, test, production, after-sales, etc.

3. Provide evaluations and technical diagnosis for principle diagram, PCB, test scenarios;

4. Provide test environment;

ZTE Corporation provides customers with onsite supports, and also you could get supports through telephone, website, instant messenger, E-mail, etc.

Preface

Summary

This user manual mainly describes ZTE MW3736 module's product principle diagram, module's PINs, hardware interfaces and module structure. This manual is used to instruct the users on the module's hardware design, and on the basis of this module, quickly and conveniently design different kinds of wireless terminals.

Target Readers

- System designing engineers
- Mechanical engineers
- Hardware engineers
- Software engineers
- Testing engineers

Description of contents:

This manual contains 5 chapters. See the table below:

1. Module's General description. This chapter introduces MW3736 module's basic technical specification, relevant documents and abbreviations.

2. Module's External Interfaces. This chapter introduces MW3736 module's pin name and functions.

3. Module's Electrical Characteristics. This chapter describes MW3736 module's interface level, power consumption, reliability, etc.

4. Description of Hardware Interfaces. This chapter describes MW3736's hardware interfaces.

5. Mechanical Design. This chapter describes MW3736 module's appearance diagram, assembly diagram and PCB layout on the main board.

Contents

1 Module's General Description

With 36-PIN stamp-hole interface, MW3736 module developed by ZTE Corporation is a kind of WCDMA/GSM industrial module, which can be built in the Set-Top-Box, vehicle-mounted terminals, and enable users to get access to the Internet wirelessly and send/receive Emails, browse the web pages, download at high speed and play online videos, etc.

It enables users to get access to the Internet any time in a place where WCDMA/GSM network is covered. It also features in SMS, voice call, etc. and provides highly free and convenient solutions for users in mobile data communication, and truly realizes the dream of mobile office.

MW3736 module is divided into two products with different frequency bands, respectively named as MW3736_V1A and MW3736_V1B. They can be recognized through the silkscreen printed at the bottom of it. MW3736_V1A corresponds to the frequency band WCDMA850/1900, GSM850/900/1800/1900; while MW3736_V1B corresponds to the frequency band WCDMA850/900/2100, GSM850/900/1800/1900.

This chapter mainly introduces the module's basic functions and logic block diagrams.

1.1 Introduction to Module's Functions

Table 1-1 Module's functions

Parameters	MW3736
Basic features	
Frequency band	WCDMA850/1900、GSM850/900/1800/1900
Dimensions	39.50mm×31.00mm×2.65mm
Weight	10g
Work temperature	-25℃~+65℃
Storage temperature	-30℃~+85℃
Performance	
Work voltage	3.6V~4.2V Standard: 3.8V
Standard consumption	Sleep current (Min.): 1mA
	Idle current（Ave.）: 5mA@-75dBm
	Talk current: 230mA@-75dBm
	Maximum current (instantaneous value): 1800mA@-102dBm
Maximum output power	21dBm ~ 32.5dBm@-102dBm
Rx. signal sensitivity	-108dBm
Interface	

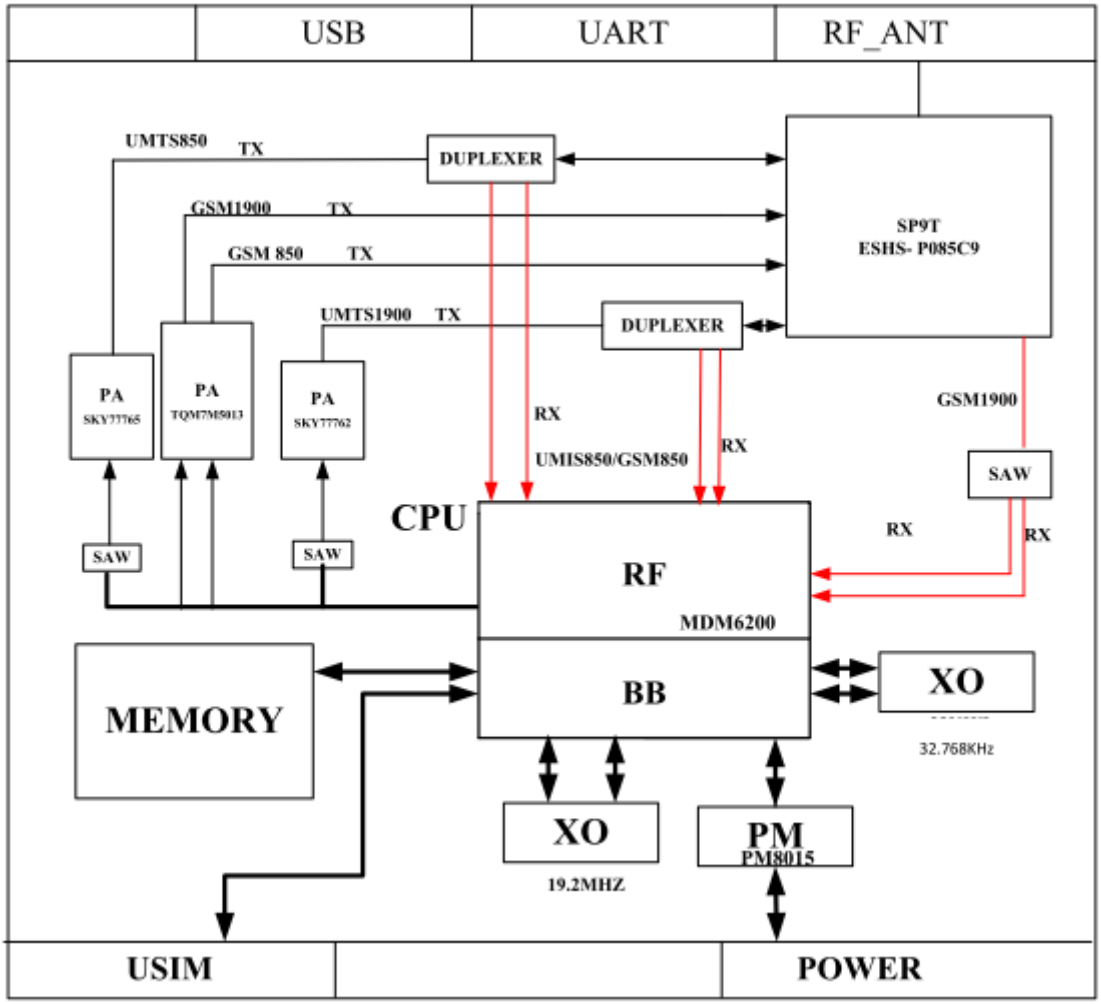
Parameters	MW3736
Connection method	36 Pin stamp-hole
Antenna	U.FL-R-SMT 50ohm antenna connector
Integrated full duplex port	AT command, data transmission
UIM card socket level	1.8V /2.85V
Data service	
Mode	WCDMA/ GSM/EDGE
Max. downlink data rate	14.4Mbps
Max. uplink data rate	5.76Mbps
Protocol	Internal TCP/IP and UDP/IP protocol stack
	TCP server
	Embedded FTP
SMS	
	Support TEXT/PDU mode
	PTP MO/MT
	SMS Cell Broadcast
Audio (optional)	
	PCM audio
	Headset
	Audio encoder EVRC & 13K QCELP
	Volume control
	Support DTMF
AT command settings	
	Common AT commands
	ZTE exclusive AT commands

1.2 Module's Principle Block Diagram

See MW3736's major logic functions in the following block diagram:

Figure 1-1 Module's principle diagram

MW3736_ principle diagram:



1.3 Abbreviations

Table 1-2 Introduction to Abbreviations

A		
ADC	Analog-Digital Converter	
AFC	Automatic Frequency Control	
AGC	Automatic Gain Control	
ARFCN	Absolute Radio Frequency Channel Number	
ARP	Antenna Reference Point	
ASIC	Application Specific Integrated Circuit	
B		
BER	Bit Error Rate	
BTS	Base Transceiver Station	

C		
CDMA	Code Division Multiple Access	
CDG	CDMA Development Group	
CS	Coding Scheme	
CSD	Circuit Switched Data	
CPU	Central Processing Unit	
D		
DAI	Digital Audio interface	
DAC	Digital-to-Analog Converter	
DCE	Data Communication Equipment	
DSP	Digital Signal Processor	
DTE	Data Terminal Equipment	
DTMF	Dual Tone Multi-Frequency	
DTR	Data Terminal Ready	
E		
EFR	Enhanced Full Rate	
EGSM	Enhanced GSM	
EMC	Electromagnetic Compatibility	
EMI	Electro Magnetic Interference	
ESD	Electronic Static Discharge	
ETS	European Telecommunication Standard	
F		
FDMA	Frequency Division Multiple Access	
FR	Full Rate	
G		
GPRS	General Packet Radio Service	
GSM	Global Standard for Mobile Communications	
H		
HR	Half Rate	
I		
IC	Integrated Circuit	
IMEI	International Mobile Equipment Identity	
ISO	International Standards Organization	
ITU	International Telecommunications Union	
L		
LCD	Liquid Crystal Display	
LED	Light Emitting Diode	
M		
MCU	Machine Control Unit	
MMI	Man Machine Interface	
MS	Mobile Station	
P		
PCB	Printed Circuit Board	

PCL	Power Control Level	
PCS	Personal Communication System	
PDU	Protocol Data Unit	
PLL	Phase Locked Loop	
PPP	Point-to-point protocol	
R		
RAM	Random Access Memory	
RF	Radio Frequency	
ROM	Read-only Memory	
RMS	Root Mean Square	
RTC	Real Time Clock	
S		
SIM	Subscriber Identification Module	
SMS	Short Message Service	
SRAM	Static Random Access Memory	
T		
TA	Terminal adapter	
TDMA	Time Division Multiple Access	
TE	Terminal Equipment also referred it as DTE	
U		
UART	Universal asynchronous receiver-transmitter	
UIM	User Identifier Management	
USB	Universal Serial Bus	
V		
VSWR	Voltage Standing Wave Ratio	
Z		
ZTE	ZTE Corporation	

2 Description of Module's External Interfaces

MW3736 module adopts 36pin stamp-hole interface to connect externally.

2.1 Definitions of Module's Interfaces

Table 2-1 Definitions of module's interface

1	VREG_USIM	UIM	MW3736		GND	36
2	USIM_RST				GND	35
3	USIM_CLK			LED	SIG_LED	34
4	USIM_DATA			PCM (Optional)	PCM_DIN	33
5	GND				PCM_CLK	32
6	NC			USB	USB_DM	31
7	NC				USB_DP	30
8	NC				ON/OFF	29
9	NC			UART	PCM_SYNC(/DSR)	28
10	NC				PCM_DOUT(DCD)	27
11	NC				/DTR	26
12	GND				/RTS	25
13	/PON_RESET				RI	24
14	VBUS	POWER			TXD	23
15	NC				RXD	22
16	VBAT				/CTS	21
17	V_MSME_1V8				GND	20
18	VBAT			ANT	RF_ANT	19

Functions	Pin No.	Signal name	I/O	Basic functions	Remarks
SIM card interface	1	VREG_USIM	O	2.85V/1.8V power supply	
	2	USIM_RST	O	USIM card reset signal	
	3	USIM_CLK	O	USIM card clock cable	
	4	USIM_DATA	I/O	USIM card data cable	
	11	MIC1_N	I	Differential audio input	

				channel1 -	
Reset	13	/PON_RESET	I	Reset signal	1.8V, valid upon low level
Power	14	VBUS	I	USB power	+5V
	16	VBAT	I	Module's main power	3.3V-4.2V
	17	V_MSME_1V8	O	Digital power	Voltage output, 1.8V
	18	VBAT	I	Module's main power	3.3V-4.2V
	29	ON/OFF	I	Power on/off control	1.8V, valid upon low level
UART	21	/CTS	I	Clear to send	1.8V, valid upon low level
	22	RXD	I	Receive data	1.8V
	23	TXD	O	Transmit data	1.8V
	24	RI	O	Ringtone	1.8V
	25	RTS	O	Request to send	1.8V, valid upon low level
	26	/DTR	I	Data terminal ready	1.8V, valid upon low level
PCM **(optional)**	27	PCM_DOUT （DCD）	O	PCM data output	1.8V，duplex with DCD
	28	PCM_SYNC （/DSR）	O	PCM frame SYNC clock	1.8V，duplex with /DSR
	32	PCM_CLK （WAKEUP）	O	PCM data clock	1.8V, duplexing pin. See Note (1) for detailed functions.
	33	PCM_DIN	I	PCM data input	1.8V
USB interface	30	USB_DP	I/O	USB data+	
	31	USB_DM	I/O	USB data-	
LED	34	SIG_LED	O	Module's working status indicator	
Antenna	19	RF_ANT	I/O	Antenna interface	
GND	5 12 20	GND			

	35 36				

Note:

（1） The default function is WAKEUP, and generally it is at high level. After entering the USB sleep mode, the module needs to wake up the main controller (or PC) to trigger certain event (e.g., call or text message); in this case, it displays the level variation of “Low—High--Low”, and each state lasts for 1 second; after that, the PIN automatically becomes high level, and the main controller (or PC) needs to send USB wakeup command to awaken the module.

（2） As the PCM function is enabled, it’s used as the CLK pin of the PCM. As the module enters the sleep mode, there is high level at WAKEUP pin; when it needs to wake up the main controller (or PC) if there is an incoming call at this moment, it displays the level variation of “Low—High--Low”, and each state lasts for 1 second; subsequently it displays the waveform of the PCM CLK PIN. When it needs to wake up the main controller (or PC) if there is other event such as text message, it displays the level variation of “Low—High--Low”, and each state lasts for 1 second; subsequently the PIN automatically becomes high level

2.2 Antenna Interface

Proper measures should be taken to reduce the access loss of effective bands, and good shielding should be established between external antenna and RF connector. Besides, external RF cables should be kept far away from all interference sources such as high-speed digital signal or switch power supply.

According to mobile station standard, stationary wave ratio of antenna should be between 1.1 and 1.5, and input impedance is 50 ohm. Different environments may have different requirements on the antenna’s gain. Generally, the larger gain in the band and smaller outside the band, the better performance the antenna has. Isolation degree among ports must more than 30dB when multi-ports antenna is used. For example, between two different polarized ports on dual-polarized antenna, two different frequency ports on dual-frequency antenna, or among four ports on dual-polarized dual-frequency antenna, isolation degree should be more than 30dB.

Precautions of using PIN2 and RF connector:

Compatible design has been used on MW3736 RF external interface, therefore customers can select reasonably according to the product form during the second-time development of the module to optimize the cost of BOM.

Program 1：

PIN2 is used as the antenna PIN. Pay attention to the following when using it as the antenna’s feed PIN:

（1）The feed connected to PIN2 is 50ohm micro-strip or strip line. To approach the module, put π shape or F shape matching network for later tuning.

（2）The RF wires must be kept away from the GND, and generally the distance should be 3 times of the width of RF wires.

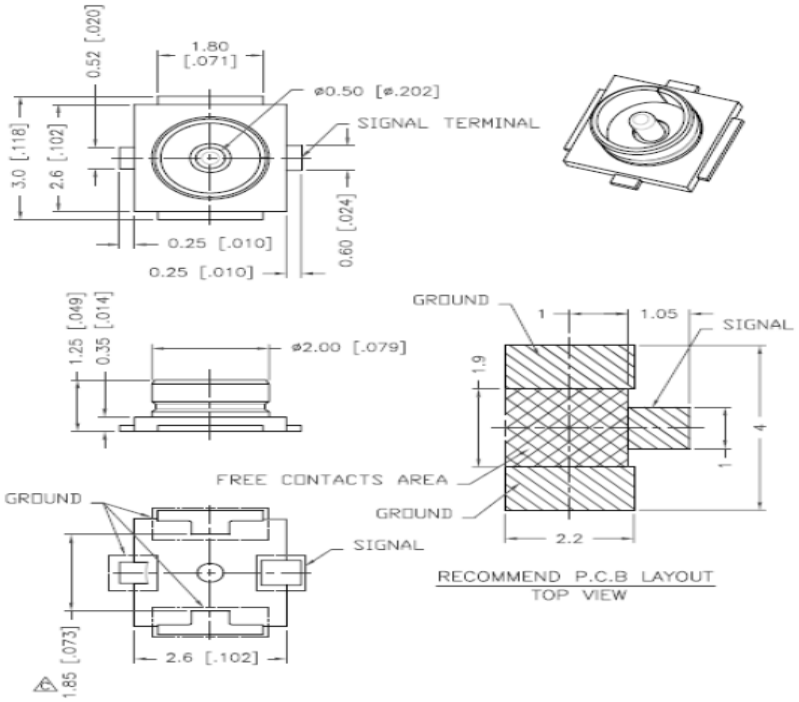
（3）It’s forbidden to put some interference sources such as DCDC, WIFI module around RF wires

or RF port

Program 2:

When using RF plug as the antenna feed, disconnect PIN2 from the main board and make sure there are some clean areas below or around PIN2. Keep 2mm distance between the surface of PIN2 and GND, and drill holes below PIN2. It's not suggested to use the compatible design of PIN2 at the same time when using the RF connector.

Figure 2-1 Antenna interface diagram



the maximum antenna gain is 3dBi for GSM850/WCDMA850 band and 5dBi for GSM1900/WCDMA1900 band.

2.3 Antenna Interface's RF Performance

See the antenna interface's RF performance in table 2-2:

Table 2-2 Antenna Interface's RF Performance

MW3736_V1A:

Antenna Interface's RF Performance	Module's uplink (MS->BTS)	Module's downlink (BTS->MS)	Power (dBm)	Antenna interface Rx. sensitivity
WCDMA850	824MHz-849MHz	869MHz-894MHz	23 (+1/-2)	< -110dBm
WCDMA1900	1850MHz-1910MHz	1930MHz-1990MHz	23 (+1/-2)	< -110dBm
GSM850	824MHz-849MHz	869MHz-894MHz	32+-0.5	< -108dBm
GSM1900	1850MHz-1910MHz	1930MHz-1990MHz	29 +-0.5	< -108dBm
GPRS850	824MHz-849MHz	869MHz-894MHz	30+-0.5	< -108dBm

GPRS1900	1850MHz-1910MHz	1930MHz-1990MHz	28.5±0.5	< -108dBm
EDGE850	824MHz-849MHz	869MHz-894MHz	32 +-0.5	< -108dBm
EDGE1900	1850MHz-1910MHz	1930MHz-1990MHz	30+-0.5	< -108dBm

3 Module's Electrical Characteristics

This chapter mainly introduces the module's electrical characteristics, including module's interface level, power consumption, reliability, etc.

3.1 Descriptions of interface level

Table 3-1 Description of level of module's main external interfaces

External interfaces	High/low level	Min.	Typical	Max.	Remarks
UART	0		0	0.3*V_UART	
	1	0.7*V_UART	V_UART		Internal voltage conversion
UIM	0		0	0.3*VREG_RUIM	
	1	0.7*VREG_RUIM	VREG_RUIM		

Among them, V_UART is 1.8V, and VREG_RUIM is 1.8V/2.85V.

3.2 Power on/off Time Sequence

The time sequence diagram indicates the whole power on/off process.

Table 3-1 Power on/off circuit time characteristics

Parameter	Comments	Min	Typ	Max	Units
Internal pull-up resistor [1]	At KPD_PWR_N	–	200	–	kΩ
Sequence time intervals [2]					
t(reg1)	Poweron event to first regulator on [3]	26	33	40	ms
t(reg)	Time for regulator to settle before next enable	100	128	500	µs
t(settle)	Regulator settling time [4]	20	–	500	µs
t(xo)	XO regulator enable to valid XO pulses	–	–	6	ms
t(reset1)	Last regulator on to PON_RESET_N = H	10	20	30	ms
t(pshold)	PS_HOLD timeout	133	200	300	ms
t(reset0)	PON_RESET_N = L to first regulator in group 1 off	6.7	10.0	15	ms
t(reg0)	Time allowed for discharge	–	–	2	ms
Regulator accuracy	To continue poweron sequence	4	7	9	%
Debounce timer [5]		15.625	–	2000	ms
Power supply current					
Normal operation		–	10	12	µA
Off		–	2	5	µA

3.3 Reliability

Before leaving the factory, the module has gone through a series of reliability tests, such as: high/low temperature operation, high/low temperature storage, thermal shock, alternating temperature humidity, etc. The test results conform to the requirements in the industry. List the module's work temperature in the table below:

Table 3-3 Module's temperature characteristics

Parameters	Descriptions	Min.	Max.	Remarks
To	Normal work temperature	-25℃	+65℃	
Ta	Limited work temperature	-30℃	+75℃	Basic functions are normal, but the RF performance slightly drops.
Ts	Module's storage temperature	-40℃	+85℃	

3.4 ESD

The module's interface, antenna interface and UIM card interface all pass the standard ESD performance testing.

Table 3-4 Module's ESD characteristics

Interface	Test items	Test requirements	Performance
Antenna interface	Air discharging	±8 kV	Nothing wrong
	Contact discharging	± 6 kV	Nothing wrong
UIM card interface	Air discharging	±8 kV	Nothing wrong
	Contact discharging	± 6 kV	Nothing wrong

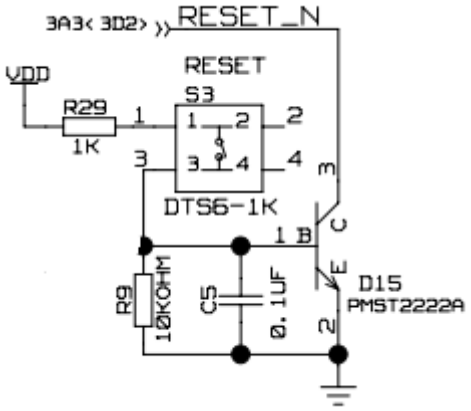
4 Reference Design of Interface Circuits

This chapter describes the reference design of interface circuits and precautions according to the module's functions.

4.1 Power and Reset

See the reference design of power circuit in figure 4-1.

Figure 4-1 Power and reset circuit reference design diagram



- Power design

The module is powered by VBAT. See the voltage characteristics in table 4-1.

Table 4-1 Voltage characteristics

Classification	MIN	TYPICAL	MAX（instantaneous）
Input voltage	3.6 V	3.7V	4.2 V
Input current	< 3mA (average)	--	530mA（WCDMA） 1800mA（GSM）

- Power on

The module will be normally powered off after connected to the power normally.

Provide one 4S ~ 6S low pulse to the module's ON/OFF pin to turn on the module.

The time required to power on at each time depends on the module's status. Usually, the low level must last for at least 4 seconds.

- Power off

Provide one 4S ~ 6S low pulse to the module's ON/OFF pin to turn off the module.

- Reset

Provide one 3S low pulse to the module's /RESET pin to reset the module.

After reset, the module will enter the power-off status. Provide one at least 4S low pulse to the module's ON/OFF pin to turn on the module again.

V_MSME_1V8

There is a voltage output pin with current adjuster on MW3736 module, which can be used to supply external power to the board. The voltage of this pin and the voltage of baseband processor/memory come from the same voltage adjuster. The voltage output is available only when the module is on. The normal output voltage is 1.8V, and the user should absorb the current from this pin as little as possible (less than 10mA). Generally, it is recommended to use this pin for pull-up when matching the level.

Other Advice

In order to make sure the data is saved safely, please don't cut off the power when the module is on. It's strongly recommended to use the soft switch to turn off the mobile phone. If the interval between the cut-off and power-on is less than 2 seconds, it would cause the module to automatically power on.

4.2 COM Port

The module provides a full duplex UART interface, whose maximal data rate is 230.4kbps and typical data rate is 115.2kbps. The external I/O level is 1.8V CMOS signal.

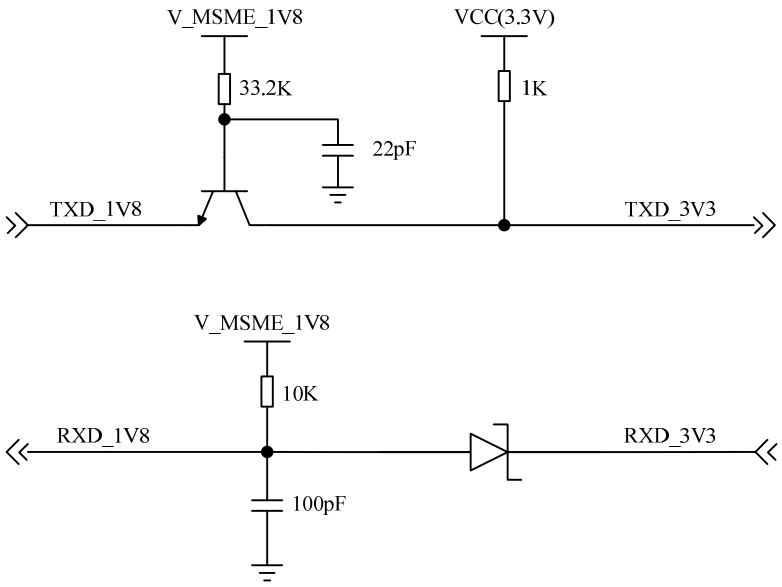
Precautions：

1）The module's I/O level is 1.8V CMOS, and the level conversion is required when connected with standard 3.3V logic circuit.(e.g., MCU or RS232 driver chip MAX3238). Otherwise, it might cause unstable com ports because the level is not matched or cause damage to the module because it is at high level for a long time.

For non 1.8V external UART, it needs to convert the level. Normally a dynatron is used to realize the level conversion. As shown in figure 4-2, the resistance is just for your information, please calculate again during the design. The diode in the figure is Schottky diode (forward voltage drop: 0.3V). If you select other diode, please select one with smaller forward voltage drop to guarantee that RXD_1V8's level is below the threshold when inputting low level.

2）Port baud rate 115200 (by default), can be used for AT commands and MODEM. The hard flow control is OFF by default.

Figure 4-2 UART interface level conversion

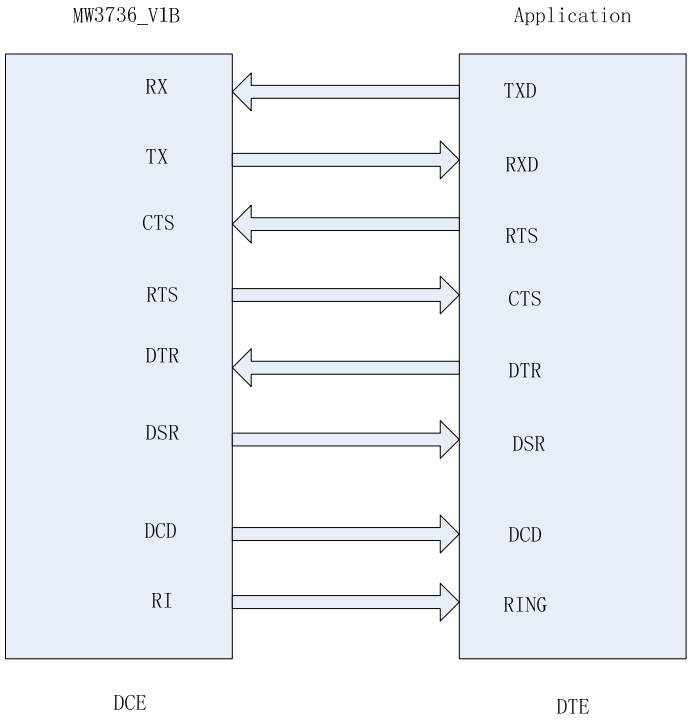


4）Connect to RXD and TXD only when there is no flow control in use;

When using hardware flow control to connect other processors, use RXD, TXD, /CTS and /RTS; when used as Modem to connect to the PC, connect all IO signal cables (8 wires). Besides, the ringtone signal will produce low level interruption upon an incoming call or text message. Select the port IO signals for level conversion according to the specific conditions.

Descriptions of UART interface:

Figure 4-3 UART DCE—DTE connection relationship diagram



See the definitions of UART1 interface in table 4-2.

Table 4-2 Definitions of UART1 interface

Classification	No.	Definitions	I/O	Descriptions	Remarks
UART (1.8V)	22	UART_RX	I	Receive data	DTE transmits serial data
	25	UART_RTS	O	Ready to send	DTE informs DCE to send
	23	UART_TX	O	Transmit data	DTE receives serial data
	26	UART_DTR	I	Data terminal ready	DTE is ready
	21	UART_CTS	I	Clear to send	DCE has switched to Rx. mode
	24	UART_RI	O	Ringtone indication	Inform DTE upon a remote call
	28	UART_DSR	O	Data set ready	DCE is ready
	27	UART_DCD	O	Carrier wave detection	Data link connected
		GND		GND	

4.3 UIM card Interface

The module supports 1.8V/2.85V UIM card. See the design in figure 4-3. It's recommended to add ESD to protect the UIM card.

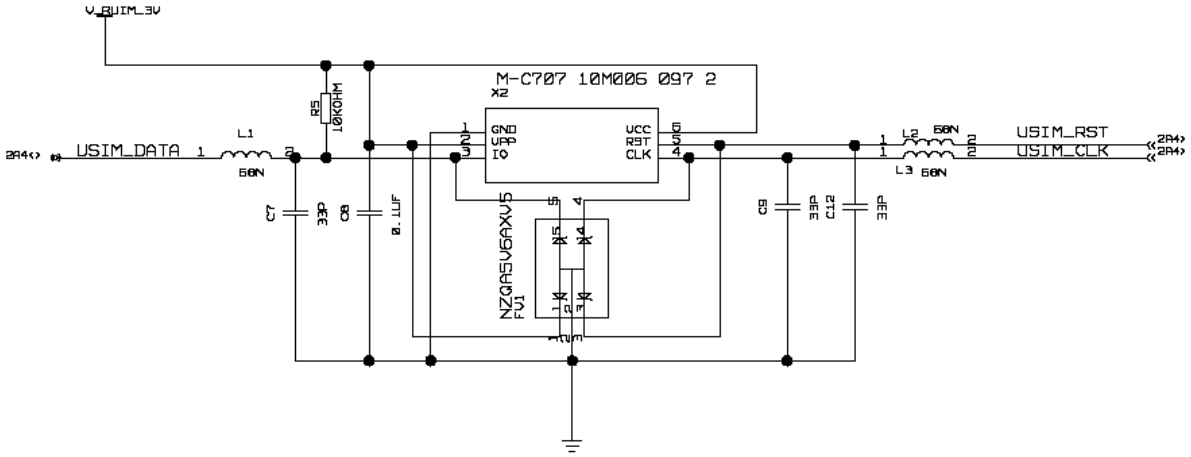
Table 4-3 UIM card interface definitions

Classification	No.	Definitions	I/O	Descriptions	Remarks
UIM	1	V_RUIM	O	RUIM card voltage	
	2	UIM_RST	O	RUIM card rest	
	3	UIM_CLK	O	RUIM card clock	
	4	UIM_DATA	I/O	RUIM card data	

The typical rate value of UIM card interface is about 3.25MHz, therefore the UIM card socket should be put near the module's interface to avoid serious waveform deformation caused by overlong wiring (it's advised that the wiring should not exceed 100mm), otherwise, it will affect the signal communication.

The wiring of UIM_CLK and USIM_DATA should be enveloped by the ground wires. Add one 0.1uF or 0.22uF capacitance to V_RUIM, and add 33pF capacitance to UIM_CLK, UIM_DATA & UIM_RST to filter the interference of antenna signals. Besides, the anti-static performance of these four signals can be realized through the TVS tube or ESD component. See the figure below for the reference design.

Figure 4-4 UIM card circuit reference design



Note:

The PCB wiring of UIM card should be laid closely around the module as possible as you can, and the ESD component should be put near the UIM card socket.

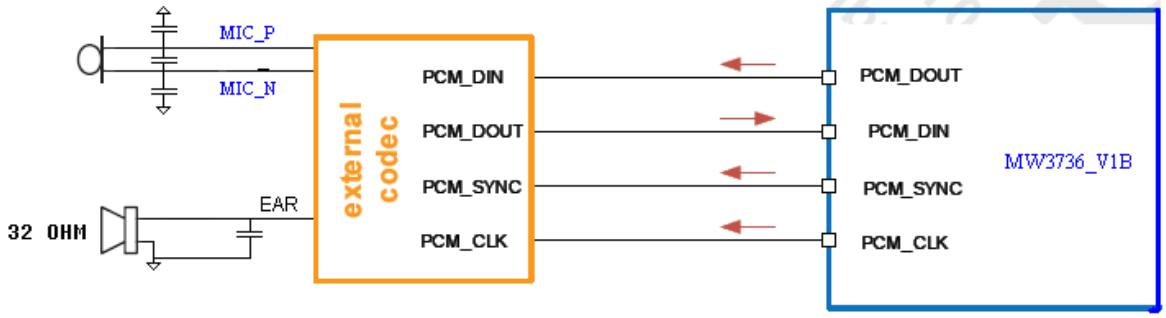
4.4 Audio Interface (optional)

The module provides one PCM interface, which must connect one CODEC externally to input and output audios. The module's PCM interface provides PCM_CLK, PCM_SYNC, PCM_DIN, PCM_DOUT，and it supports 2.048MHz PCM clock data rate and 8K frame data rate. PCM clock will stop the output when it enters the dormant mode.

The module's PCM interface must work under Master mode, and the clock and SYNC signal must be sent by the module. The device connected with the interface can work under Slave mode only.

See the audio interface circuit in figure 4-4.

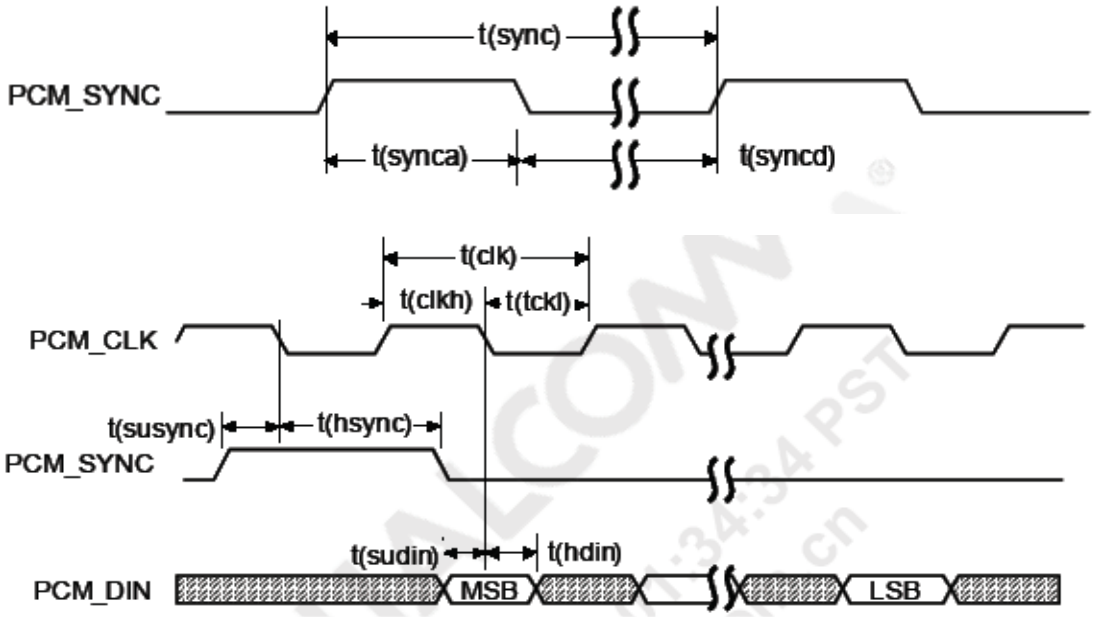
Figure 4-5 Audio interface circuit reference design principle diagram

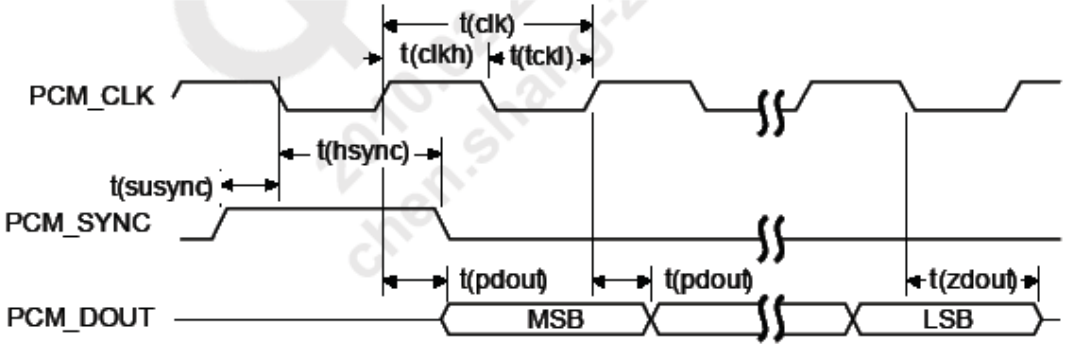


- Codec audio interface design on the headset

The two microphone interfaces MIC_N and MIC_P are both differential interfaces, which could also be used for single-end input. It's recommended to use differential mode to reduce the noises. Refer to the connection of EAR left/right channel in the figure.

See the time sequence of PCM interface in figure 4-5.





Parameter		Comments	Min	Typ	Max	Unit
t(sync)	PCM_SYNC cycle time		–	125	–	µs
t(synca)	PCM_SYNC asserted time		–	488	–	ns
t(syncd)	PCM_SYNC de-asserted time		–	124.5	–	µs
t(clk)	PCM_CLK cycle time		–	488	–	ns
t(clkh)	PCM_CLK high time		–	244	–	ns
t(clkl)	PCM_CLK low time		–	244	–	ns
t(sync_offset)	PCM_SYNC offset time to PCM_CLK falling		–	122	–	ns

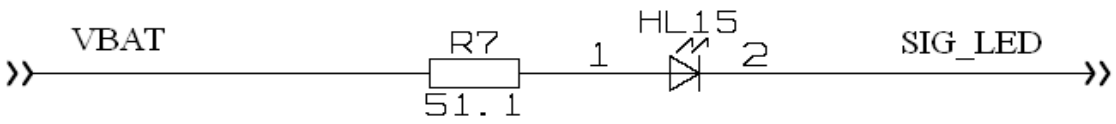
4.5 Work Status Indicators

The SIG_LED PIN output status is defined by the software. The SIG_LED PIN is MPP port, which can drive 20mA current. See the reference design of indicators in figure 4-5.

Table 4-4 Description of work status indicators

Module status	Indicator status	Frequency
Power-on status	Slow flash	1Hz
Network searching status	Standard flash	3Hz
IDLE status	Slow flash	1Hz
Traffic status	Fast flash	5Hz

Figure 4-5 Indicator reference design principle diagram



5 Mechanical Design

5.1 Appearance Diagram

See MW3736 module's appearance in figure 5-1.

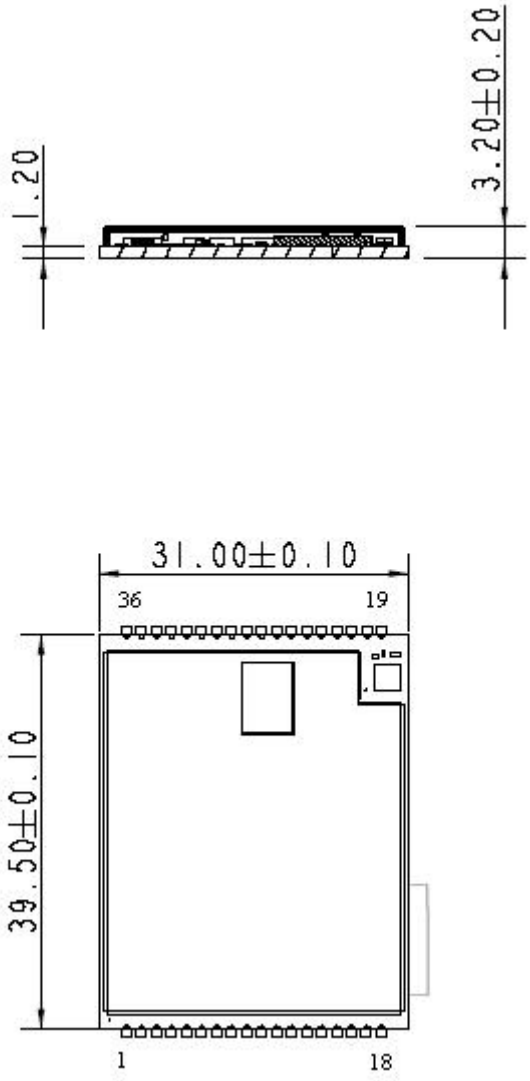
Figure 5-1 MW3736 module's appearance diagram

- Dimensions: 39.50mm×31.00mm×2.65mm
- Weight: 10g

5.2 Module's Assembly Diagram

See the assembly diagram of the module in figure 5-2.

Figure 5-1 Module's assembly diagram



5.3 Module's PCB Encapsulation Dimensions

See the module's PCB encapsulation dimensions in figure 5-3.

Figure 5-2 PCB encapsulation diagram of relevant female socket (top view)

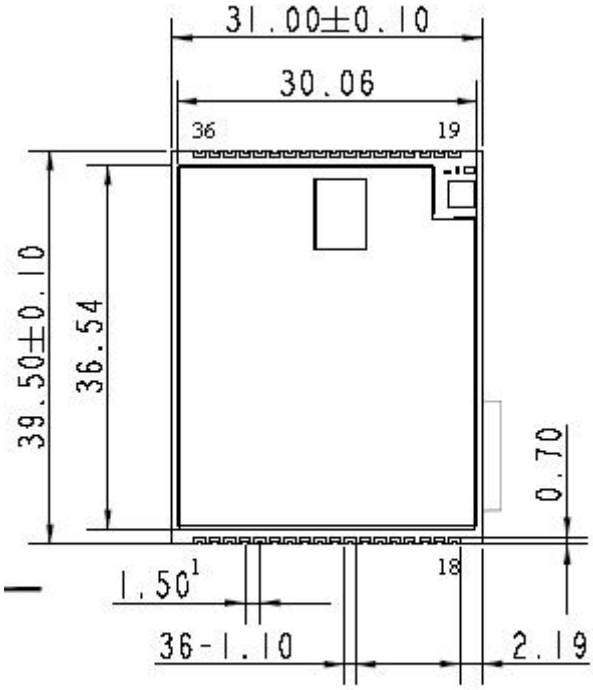
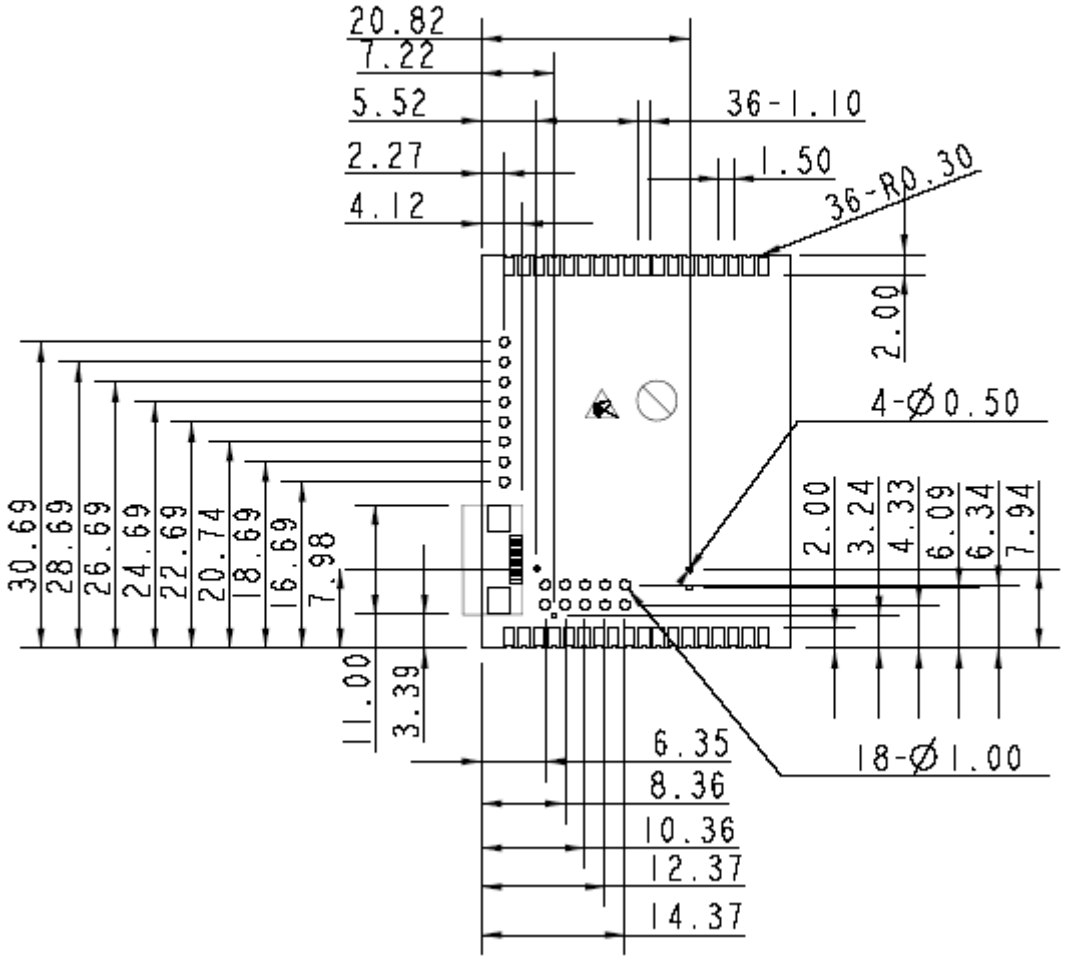


Figure 5-4 PCB encapsulation diagram of relevant female socket (bottom view)



Precautions while designing PCB:

1）Copper-clad and wiring are forbidden on each layer of the PCB at the area below the RF test points.

2）For the convenience of testing and maintenance, it might be necessary to drill holes on the PCB to expose J-TAG test points.