



Fihonest Communication Co.,Ltd.

JS-BTM256

Fihonest Bluetooth Module Instruction Manual

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Revision History

Date	Version	Description	Author
2013-09-10	V1.0	n First Release	
2014-04-10	V1.01	n Add Installation Method(Page 4)	



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NOTE:

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID:2AB2RJS-BTM256, IC: 11877A-JSBTM256" any similar wording that expresses the same meaning may be used.

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 not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

l'appareil hôte doit porter une étiquette donnant le numéro de certification du module d'Industrie Canada, précédé des mots « Contient un module d'émission », du mot « Contient » ou d'une formulation similaire exprimant le même sens, comme suit



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1. INTRODUCTION

The JS-BTM256 Bluetooth® module is a perfect solution for smart phones and portable devices. It can be connected with any Bluetooth® devices in an operating range. It is slim and light so the designers can have better flexibilities for the product shapes.

The JS-BTM256 Bluetooth® module complies with Bluetooth® specification version 4.0(dual mode). It supports multiple profiles.It supports maximum bluetooth data rates over HCI UART interface and provides audio PCM interface for bluetooth.

the user manual must state the following items:

- a. The module is limited to OEM installation ONLY;
- b. The OEM integrators is responsible for ensuring that end-user has no manual instructions to remove or install module;
- c. The module is limited to installation in mobile or fixed application
- d. The separate approval is required for all other operating configurations, including portable configuration with respect to Part 2.1093 and different antenna configurations;
- e. the host manufacturer is responsible for ensuring that after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements

Installation Method:

- a. About the operating environment of wireless Bluetooth, the wireless signals include the Bluetooth application are affected largely by the environment around, such as trees,metals.etc. The barriers will absorb the wireless signals partly and the distance of the data-transmission will be affected partly in the real application.
- b. Module serial port level is 1.8V. You need to increase level translator chip if you need to connect with 3.3V level system.
- c. The Bluetooth module need to be matched with the existing system.put in the outer shell. Because the wireless radio-frequency signal will be shield by metal shell. You'd better not to install in the metal shell.
- d. PCB Design:The metal will weaken radio,you'd better not to set the gound and wire under the antenna.

Contact us:

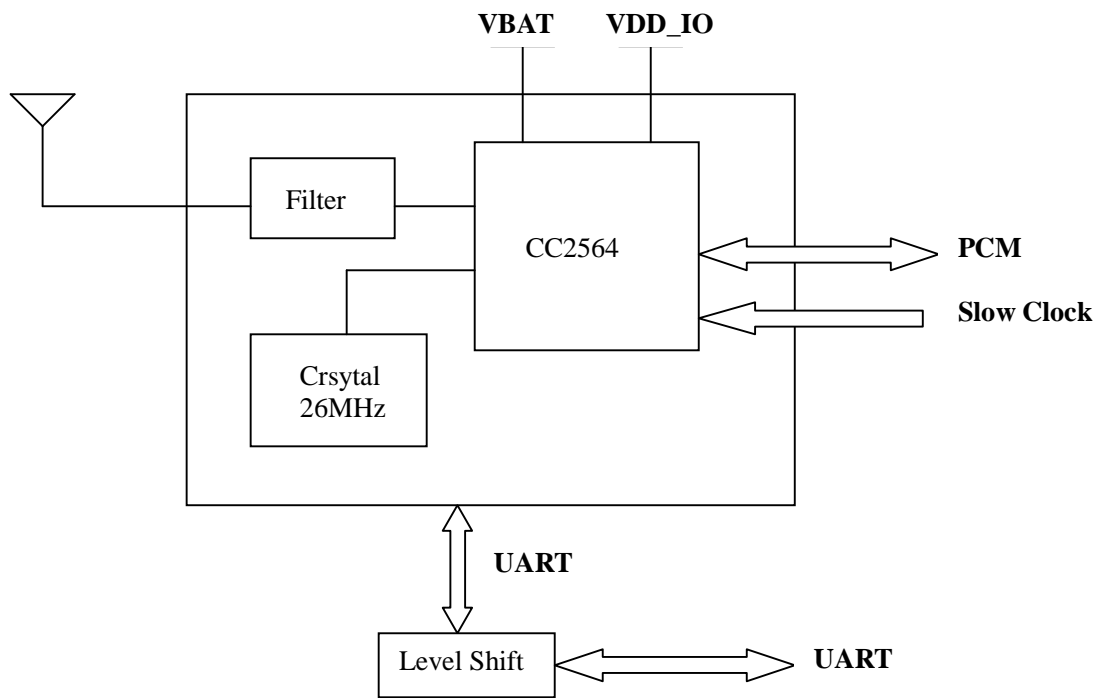
We supply with the whole Bluetooth data-transmission solution, various kinds of Bluetooth data-transmission, industrial application areas, PC Bluetooth drive software development technology support.



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The detail information of JS-BTM256 Bluetooth® module is presented in this document below.

1.1 Block Diagram





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1.2 Features

- ü Small overall dimension
- ü Bluetooth Specification V4.0(dual mode)
- ü Class 1.5 support(high output power)
- ü Support multiple profiles
- ü Small size with low power consumption
- ü Supports maximum Bluetooth data rates over HCI UART interface
- ü Lead Free design which is compliant with RoHS requirements
- ü Physical connection as SMD type
- ü No radio signal interference, support for 802.11 co-existence
- ※ *Some features are optional for customization on demand.*



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1.3 Application

- ü Smart Phones
- ü MID
- ü Portable Devices
- ü High Quality Stereo Bluetooth Headsets
- ü High Quality Wired Stereo Headset and Headphones
- ü Bluetooth Speakers



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2. GENERAL SPECIFICATION

General Specification				
Chip Set	TI CC2564			
Module ID	JS-BTM256			
BT Standard	Bluetooth® V4.0 specification			
Frequency Band	2.402GHz~2.480GHz ISM Band			
Modulation	FHSS,GFSK,DPSK,DQPSK			
Number of channels	79 channels for Classic Bluetooth 40 channels for Bluetooth Low Energy			
Baseband Crystal OSC	26MHz			
RF Input Impedance	50 ohms			
Host Interface	I PCM I HCI UART			
Profile	Multiple Profiles by Host Bluetooth Stack			
Operating Environment				
Temperature	-40°C to +85°C			
Humidity	10%~95% Non-Condensing			
Environmental	RoHS Compliant			
Bluetooth Specification				
Characteristics	Condition	TYP	BT Spec.	Unit
Output Power	Class 1.5	9.9	10.5	dBm
Modulation GFSK	dF1 avg	161	140 ~ 175	KHz
	dF2 max	129	>115	KHz
	dF2 _{avg} /dF1 _{avg}	86	80	%
Modulation EDR @ 8DPSK	RMS DEVM	5	13	%
	%99 DEVM	10	20	%
	Peaj DEVM	12	25	%
Sensitivity @ Dirty Tx On	GFSK@ BER=0.1%	-91	-70	dBm
	Π/4-DQPSK@ BER=0.1%	-91	-70	dBm
	8DPSK@ BER=0.1%	-84	-70	dBm
Maximum Input Level	GFSK@ BER=0.1%	-10	-20	dBm
	Π/4-DQPSK@ BER=0.1%	-10	-20	dBm
	8DPSK@ BER=0.1%	-10	-20	dBm

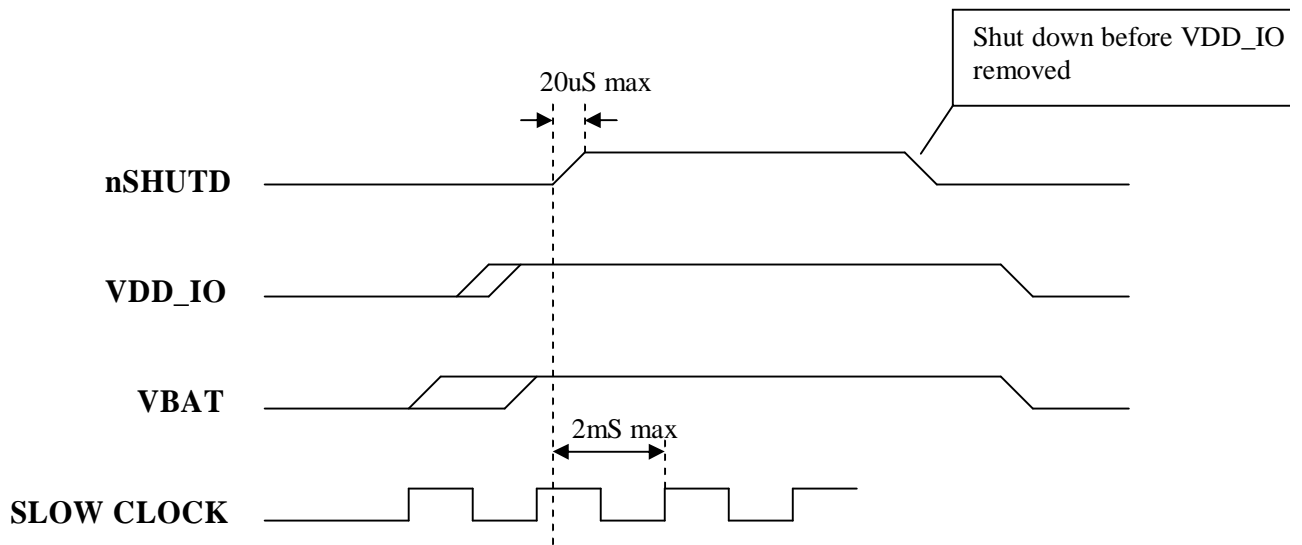


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3. PHYSICAL INTERFACE

3.1 Power

Device Power Up/Down Sequencing



nSHUTD Requirements

Parameter	Sym	Min.	Max.	Unit
Operation mode level	Vih	1.42	1.98	V
Shutdown mode level	Vil	0	0.4	V
Minimum time for nSHUT_DOWN low to reset the device		5		ms
Rise/fall times	Tr/Tf		20	us



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3.2 External clock reference

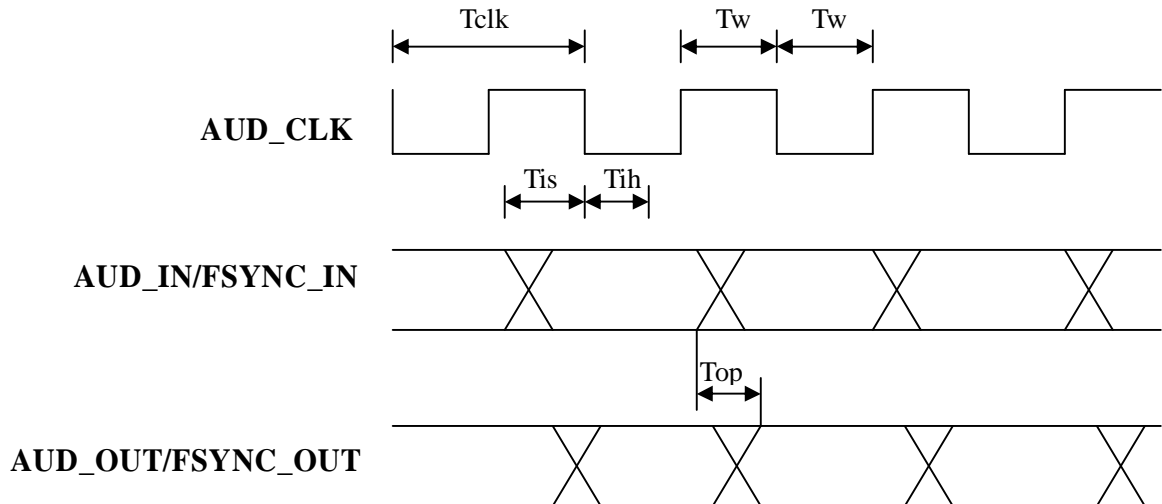
External Slow Clock signal characteristics

Characteristics	Condition	Sym	Min	Typ	Max	Unit
Input slow clock frequency				32768		Hz
Input slow clock accuracy					+/-250	ppm
Input transition time tr/tf-10% to 90%		tr/tf			100	ns
Frequency input duty cycle			15%	50%	85%	
Phase noise	At 1KHz_				-125	dBc/Hz
Jitter	Integrated over 300 to 15000Hz				1	Hz
Slow clock input voltage limits	Square wave, DC coupled	Vih	$0.65 \cdot V_{DD_IO}$		V_{DD_IO}	V peak
		Vil	0		$0.35 \cdot V_{DD_IO}$	V peak
Input impedance			1			Mohm
Input capacitance					5	pF



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3.3 Audio Codec/PCM



3.3.1 PCM Master

Symbol	Parameter	Condition	Min	Max	Unit
Tclk	Cycle time		62.5(16MHz)		ns
Tw	High or low pulse width		40% of Tclk		
Tis	AUD_IN setup time		8		
Tih	AUD_IN hold time		0		
Tis	AUD_FSYNC setup time		8		
Tih	AUD_FSYNC hold time		0		
Top	AUD_OUT propagation time	40pF load	0	21	

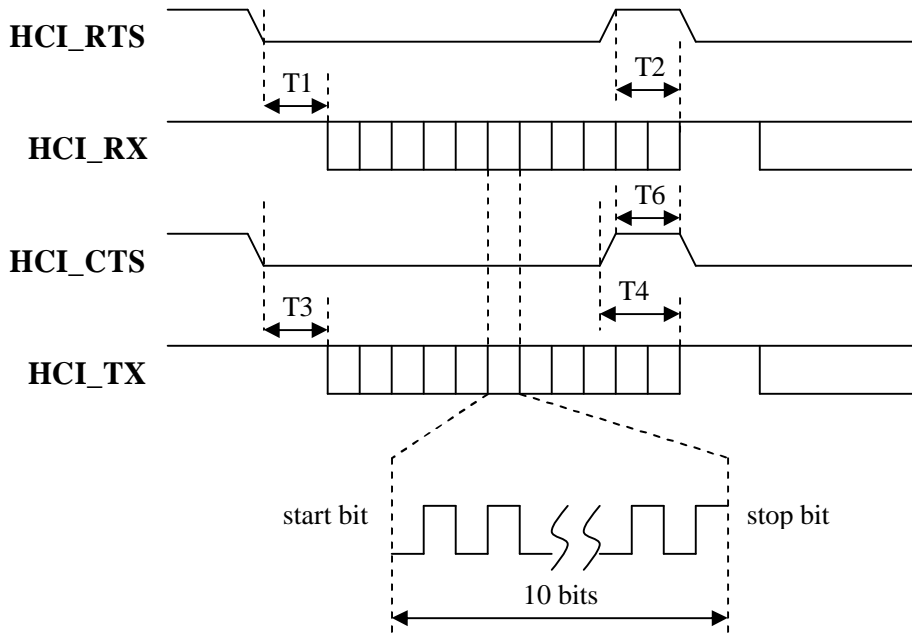
3.3.2 PCM Slave

Symbol	Parameter	Condition	Min	Max	Unit
Tclk	Cycle time		62.5(16MHz)		ns
Tw	High or low pulse width		40% of Tclk		
Tis	AUD_IN setup time		8		
Tih	AUD_IN hold time		0		
Tis	AUD_FSYNC setup time		8		
Tih	AUD_FSYNC hold time		0		



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3.4 UART Interface Timing



Symbol	Characteristics	Condition	Min	Type	Max	Unit
	Baudrate		37.5		4000	kbps
	Baudrate accuracy		-2.5%		1.5%	
T3	CTS low to TX_DATA on		0	2		us
T4	CTS high to TX_DATA off	Hardware flow controll			1	byte
T6	CTS-high pulse width		1			bit
T1	RTS low to RX_DATA on		0	2		us
T2	RTS high to RX_DATA off				16	byte



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4. ELECTRICAL CHARACTERISTIC

4.1 Absolute Maximum Ratings

Symbol	Description	Min	Max	Unit
VBAT	Input Supply Voltage	-0.5	5.5	V
VDD_IO	Digital Bluetooth I/O Voltage	-0.5	2.145	V

Table 1

4.2 Recommended Operating Ratings

Symbol	Min.	Typ.	Max.	Unit
VBAT	2.2	3.3	4.8	V
VDD_IO	1.62	1.8	1.92	V

Table 2

4.3 Power consumptions

Test conditions: VBAT=3.3V; Temp=25 °C
Current @ VBAT

Item	Typ.(Target)	Max.	Unit
idle + sleep	0.04		mA
ACL	27		mA
ACL sniff	6.8		mA
ACL sniff + sleep	0.04	0.6 (peak)	mA
eSCO 2EV3(ACL connection on)	30		mA
eSCO 2EV3 + ACL sniff	13.5		mA
eSCO 2EV3 + ACL sniff + sleep	11.1	12.2	mA
Inquiry_scan and page_scan	398		μA
Inquiry_scan	99		μA
page_scan	256		μA
Adertising,nonconnectable (one time/1s)	107		μA
Adertising,discoverable (one time/1s)	113		μA
Scanning (one time/1s)	319		μA
Connected (master role) (one time/500ms)	125		μA



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5. RECOMMENDED TEMPERATURE REFLOW PROFILE

The soldering profile depends on various parameters necessitating a set up for each application. The data here is given only for guidance on solder reflow.

Peak Temperature : <math> < 250^{\circ}\text{C}</math>

Number of Times : _2 times

