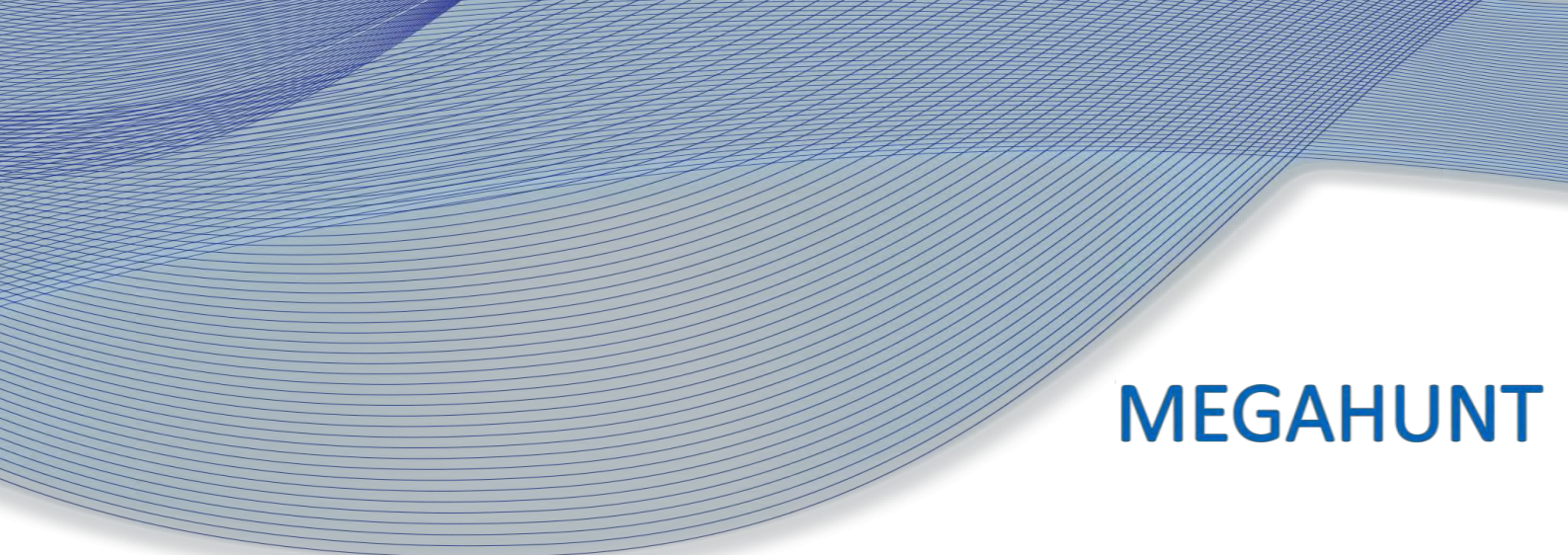




MEGAHUNT

MH8200H

Brief Introduction

BLE SOC

Version: 1.8

Date: 2022-10-01



Megahunt Technologies Inc.

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Short-form Datasheet of MH8200H

MH8200H is the SOC which supports Bluetooth BR + BLE4.2 dual-mode. The on-chip Balun does not need any RF matching and external crystal oscillator, which can save BOM cost and is suitable for industrial applications such as the Internet of Things, data transparent transmission and wearable equipments.

1.Features

·Microcontroller

- 32-Bit RISC Core
- 16MHz crystal clock

·Peripherals

- 19×GPIO, LED drive
- 1×UART, supports hardware flow control
- Integrated temperature sensor
- 12MHz clock output
- High precision 32kHz RC oscillator
- 10bits universal ADC

·RF section

- Single-ended RF interface
- -95dBm BLE sensitivity
- -91dBm BR sensitivity
- -20dBm~+4.5dBm programmable output power

·Package

- 4mm×4mm QFN32

·Software Features

- Low power BLE 4.2
- Built-in ROM protocol stack

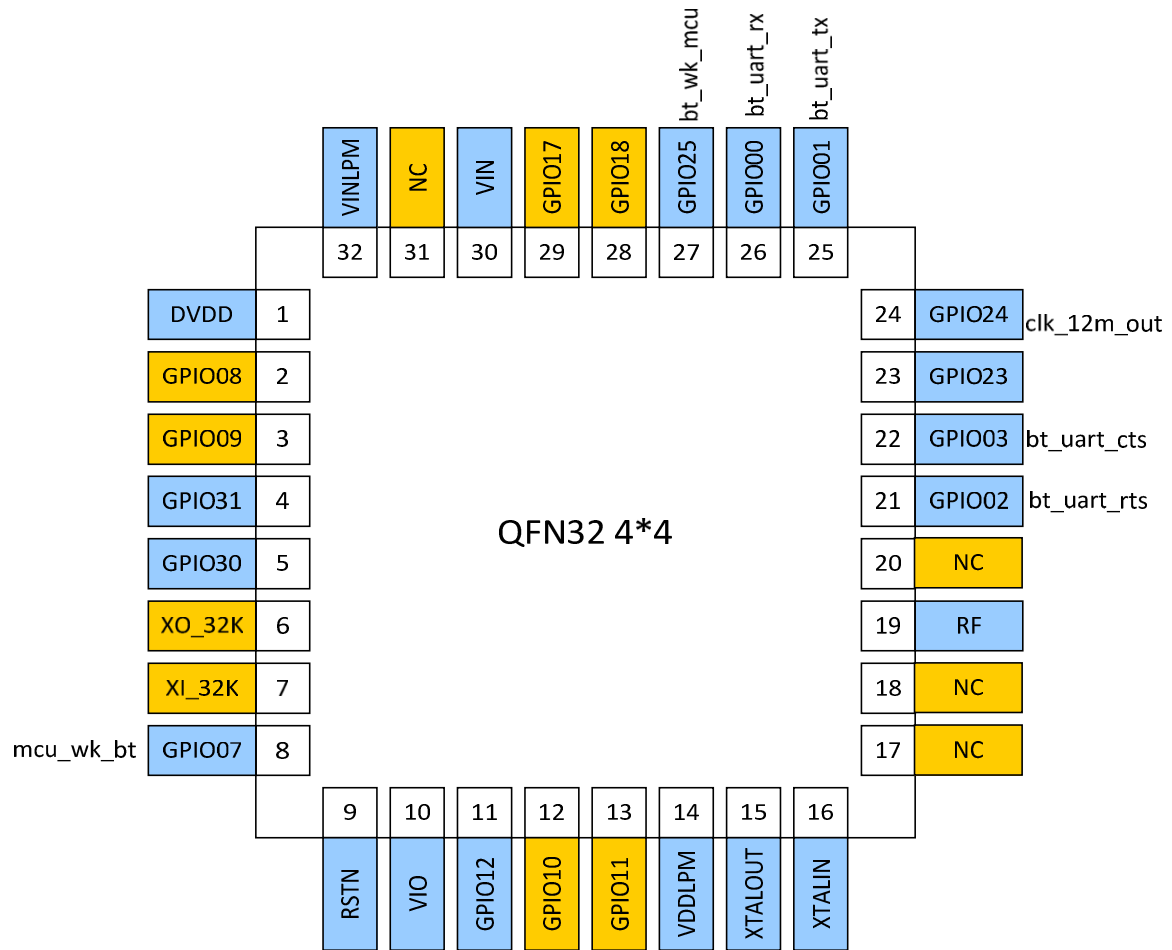
·Power Consumption

- Operating voltage range:1.8~3.6V
- MCU active mode 3.3V:
 - 1.1mA(w/o 12MHz output)
 - 1.5mA(12MHz output)
- MCU low power mode 3.3V:
 - Deep Sleep: 4.8uA (32k RC on)
 - CPU Sleep: 700uA
- RX 3.3V:
 - 18 mA (w/o DCDC)
- TX 3.3V:
 - 22 mA@+0dbm (w/o DCDC)

·Temperature

- -40~+85℃

2.PIN Layout(4mm*4mm)



3.PIN Definition

4x4 32L	PIN Name	Type	Description of Function	Examples
32	VINLPM	Power_I	Input Power, 1.8~3.6V	3.3V
1	DVDD	Power_O	Internal LDO output, 1.2V, connect bypass 1uF capacitor	Isolation capacitor
2	GPIO08	Dig_IO		NC
3	GPIO09	Dig_IO		NC
4	GPIO31	Dig_IO		NC
5	GPIO30	Dig_IO		NC
6	XO_32K	Ana_O	Crystal oscillator output	crystal oscillator
7	XI_32K	Ana_I	Crystal oscillator input	crystal oscillator
8	GPIO07	Dig_IO		mcu_wk_bt
9	RSTN	Dig_I	Reset, active-low	External Reset
10	VIO	Power_I	IO power supply, 1.8~3.6V, connect 100nF/10pF bypass capacitor	3.3V

11	GPIO12	Dig_IO		NC
12	GPIO10	Dig_IO		NC
13	GPIO11	Dig_IO		NC
14	VDDLPM	Power_O	Internal LDO output, 1.2V, connect to 100nF bypass capacitor	Isolation capacitor
15	XTALOUT	Ana_O	Crystal oscillator output	crystal oscillator
16	XTALIN	Ana_I	Crystal oscillator input	crystal oscillator
17	NC			NC
18	NC			NC
19	RF	RF Port	RF antenna	antenna
20	NC			NC
21	GPIO02	Dig_IO	Serial port RTS	bt_uart_rts
22	GPIO03	Dig_IO	Serial port CTS	bt_uart_cts
23	GPIO23	Dig_IO		NC
24	GPIO24	Dig_IO	12MHz output(Short trace, away from RF)	clk_12m_out
25	GPIO01	Dig_IO	Serial port TX	bt_uart_txd
26	GPIO00	Dig_IO	Serial port RX	bt_uart_rxd
27	GPIO25	Dig_IO		bt_wk_mcu
28	GPIO18	Dig_IO	ADC	
29	GPIO17	Dig_IO	ADC	
30	VIN	Power_I	Input Power, 1.8~3.6V, connect 100nF/5pF bypass capacitor	3.3V
31	NC			NC

4.Crystal Oscillator

Name	Parameter (Condition)	Minimum	Typical Case	Maximum	Unit
Frequency			16		MHz
Frequency Accuracy	@25℃		±10	±30	ppm
Temperature Stability	@-40 to +85℃		±10	±30	ppm
Temperature Range		-40		+85	degree
Drive Ability			100		uW
ESR	Equivalent Series Resistance	40		85	Ω
Cload	Load Capacitor	8	15	20	pF
Cshut	Parasitic Parallel Capacitance		5		pF

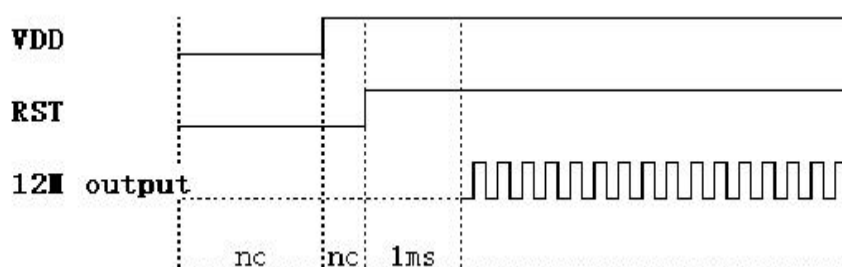
5. Electrical Characters

Name	Parameter(Condition)	Minimum	Typical	Maximum	Unit
Power Supplies					
VIN	Voltage Input, typically 1uF decouple cap	1.5	3.3	3.6	V
VINLPM	Voltage Input	1.8	3.3	3.6	V
VIO	Voltage Input	1.8	3.3	3.6	V
DVDD	Voltage Output, typically 1uF decouple cap	1.1	1.2	1.3	V
VDDLPM	Voltage Output, typically 1uF decouple cap	1.1	1.2	1.3	V
Operate Temperature					
Ambient temperature range	Temperature	-40		85	℃
Storage Temperature					
Tstg	Temperature	-40		125	℃
Welding temperature					
Twld	J-STD-020_C	-	-	260	℃
ESD					
HBM	TAMB=25℃	-	-	±4000	V
CDM	TAMB=25℃	-	-	±1000	V
Digital Input Pin					
VIH	High Level	VIO-0.3		VIO+0.3	V
VIL	Low Level	VSS		VSS+0.3	V
Digital Onput Pin					
VOH	High Level	VIO-0.3		VIO+0.3	V
VOL	Low Level	VSS		VSS+0.3	V
Digital Onput Pin					
VOH	High Level	VIO-0.3		VIO+0.3	V
VOL	Low Level	VSS		VSS+0.3	V
Serial port baud rate					
111111	±4%	105555	115200	116666	bps

6.RF Characteristics

Name	Parameter(Condition)	Minimum	Typical	Maximum	Unit
FOP	Operating Frequency	2400		2480	MHz
FXTAL	Crystal Frequency		16		MHz
Transmitter Characteristics					
PRF	RF output power	-20	0	6	dBm
CD	Carrier Drift Rate		5		kHz/50us
BW	20dB bandwidth		0.9		MHz
Receiver Characteristics					
BT4.2 (BLE)					
SEN	High Gain mode, Sensitivity @0.1%		-94		dBm
MaxIn	Maximum Input Power		0		dBm
C/ICO	Co-channel C/I, Basic Rate, GFSK		7		dBm
C/I1ST	ACS C/I 1MHz, Basic Rate, GFSK		5.5	7	dBm
C/I1STI	ACS C/I Image channel, Basic Rate, GFSK		-34		dBm
C/I2NDI	C/I 1 MHz adjacent to image channel, Basic Rate, GFSK		-28		dB
BT3.0 (BR)					
SEN	Basic Rate, GFSK, BER<0.1%, Dirty Tx on		-90		dBm
MaxIn	Maximum Input Power		0		dBm

7.12M Output Timing Diagram



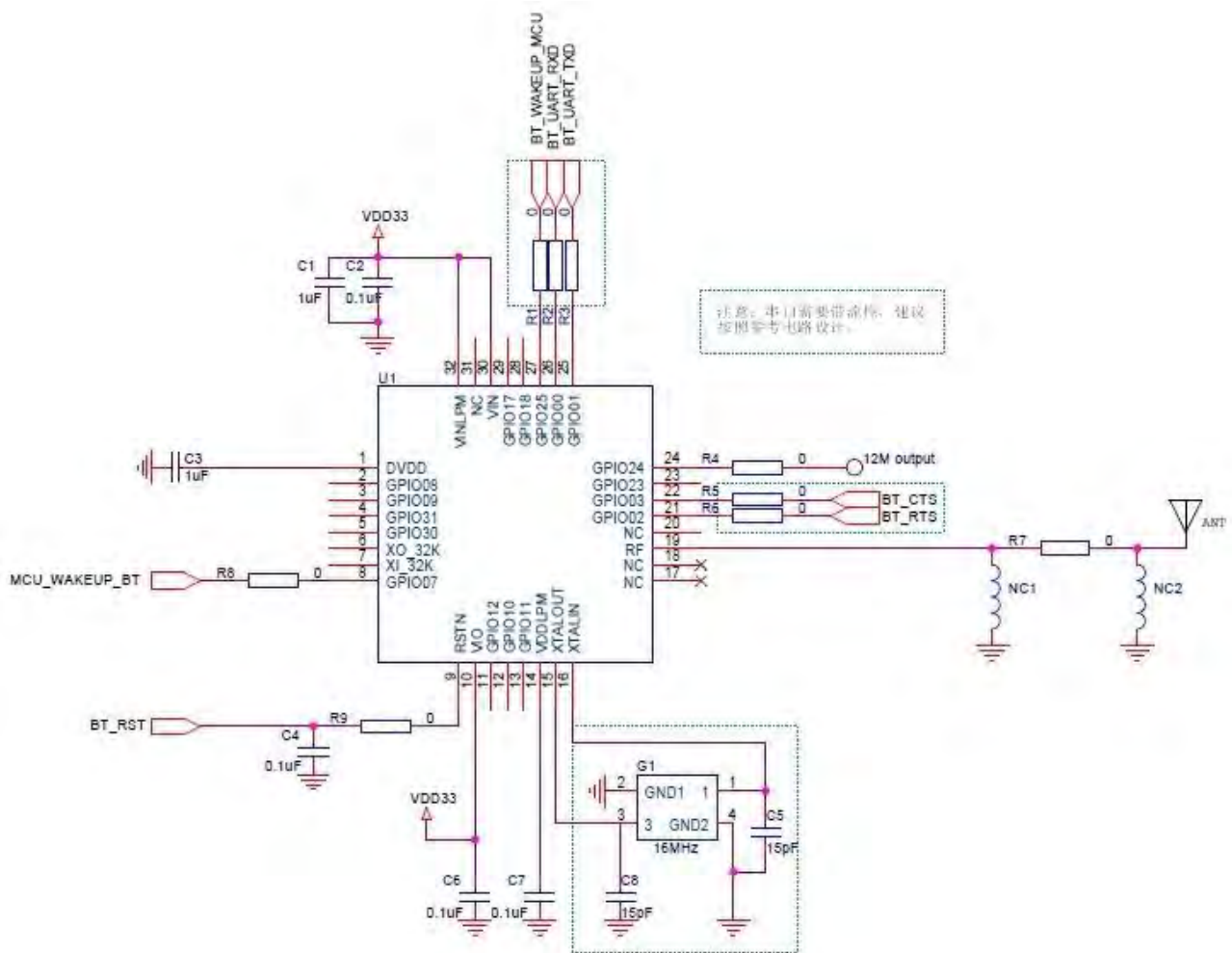
8.Packaging Information

Package Type	Package Drawing	Pins	Eco Plan	Lead/Ball Finish	MSL Peak Temp
QFN	RSM	32	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-3-260C-168 HR

9.Ordering Information

Part number	Package Type	Packing	Minimum Order Quantity(MOQ)
MH8200H	QFN32	Tray	4900

10.Schematic Diagram of Reference Design



11.Package Information

