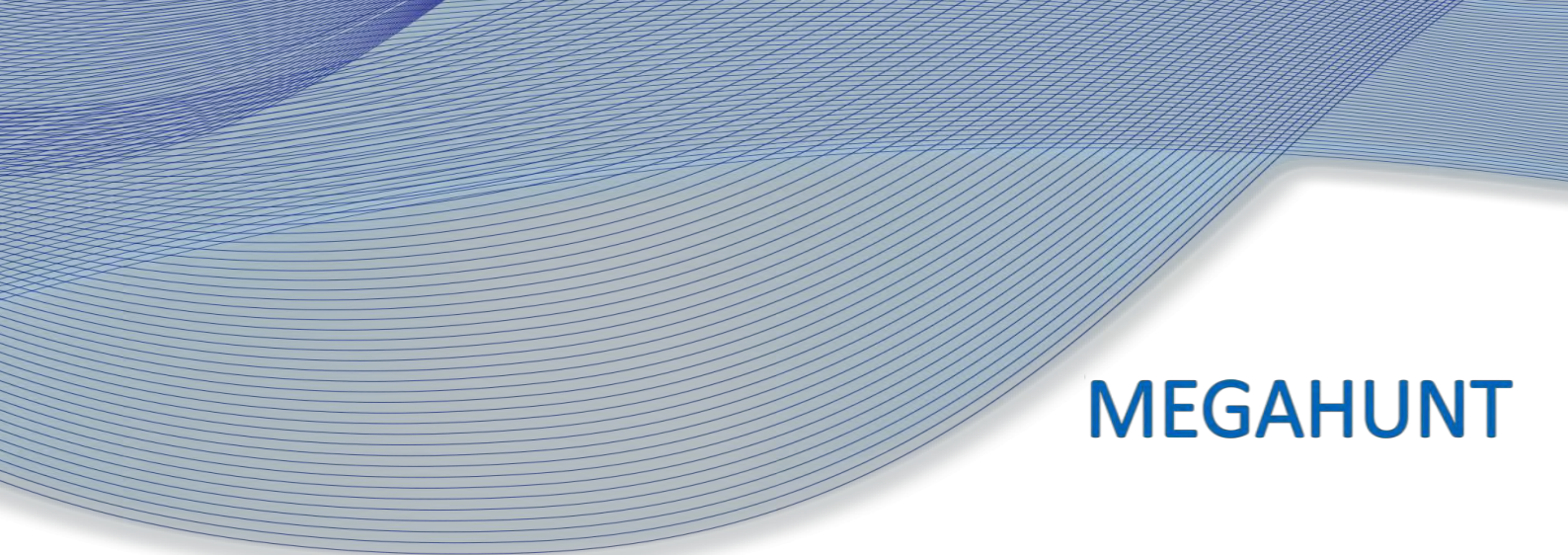




MEGAHUNT

MH8100

Brief Introduction

BLE SOC

Version: 1.6

Date: 2020-23-04



Megahunt Technologies Inc.

MH8100 BLE SOC

The chip is fit for low power application, such as wearable devices, internet of things, remote controller, data communication, POS, Homelift, Beacon.

The BOM cost is lowest, because the on-chip balun does not require any RF matching, the crystal load capacitor is internal programmable, and the 32kHz oscillator is integrated. The high efficiency on-chip DC-DC converter allows for a ultralow power consumption.

Features

·Microcontroller

- 32-Bit RISC Core
- 16MHz / 32MHz crystal Clock
- 512KB/1MB Flash
- 40KB of SRAM for Cache
- 2-Pin JTAG and JTAG Debugging
- Supports Over-The-Air Upgrade (OTA)

·Peripherals

- All Digital Peripheral Can Be Routed to Any GPIO
- 2×UART, supports hardware flow control (CTS/RTS)
- 2×SSI (SPI, MICROWIRE, TI)
- I2C
- Four General-Purpose Timer Modules
- Real-Time Clock (RTC)
- Quadrature Decoder (QDEC)
- AES-128 Security Module
- Integrated Voltage Detector
- Integrated Temperature Sensor
- 10-Bit ADC, 1.3MSPS, 8-Channel Analog MUX
- GPIO Can Output 16/12MHz Clock
- High Precision 32kHz RC Oscillator

·RF Section

- 2.4GHz RF transceiver Compatible With Bluetooth Low Energy (BLE) 5.0 Specification
- -97dBm Receiver Sensitivity
- -20dBm ~ +7dBm Programmable Output Power
- Single-Ended RF Interface

·Low Power

- Wide Supply Voltage Range: 1.8 to 3.6V

- On-chip internal DC-DC Converter
- MCU Active Mode: 1.4mA @ 16MHz
- MCU Low Power Mode:
 - 0.6uA (IO wake up)
 - 1.0uA (32KHz on, 8K RAM on)
 - 1.1uA (32KHz on, 24K RAM on)
- RX: 8.5mA
- TX: 9.5mA @ +0dBm, 16mA @ +7dBm

·Low Power Mode Average Current

- Broadcast (interval=1S, nonconnectable): 15uA
- Broadcast (interval=1S, connectable): 24uA
- Keep connection, interval=1S: 12uA

·Packages

- 7mm×7mm QFN48 (32GPIOs)
- 4mm×4mm QFN32 (17GPIOs)

·Development Environment

- Keil Compiler
- JLINK Debugger

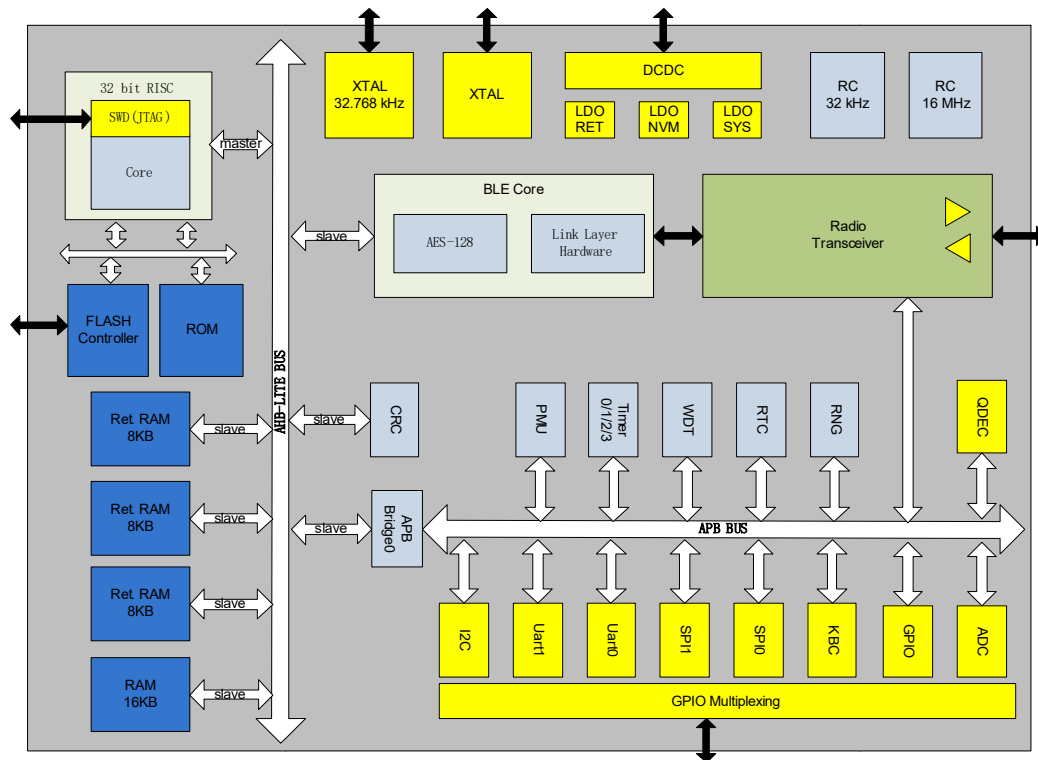
·Software

- Integrated Host and Controller

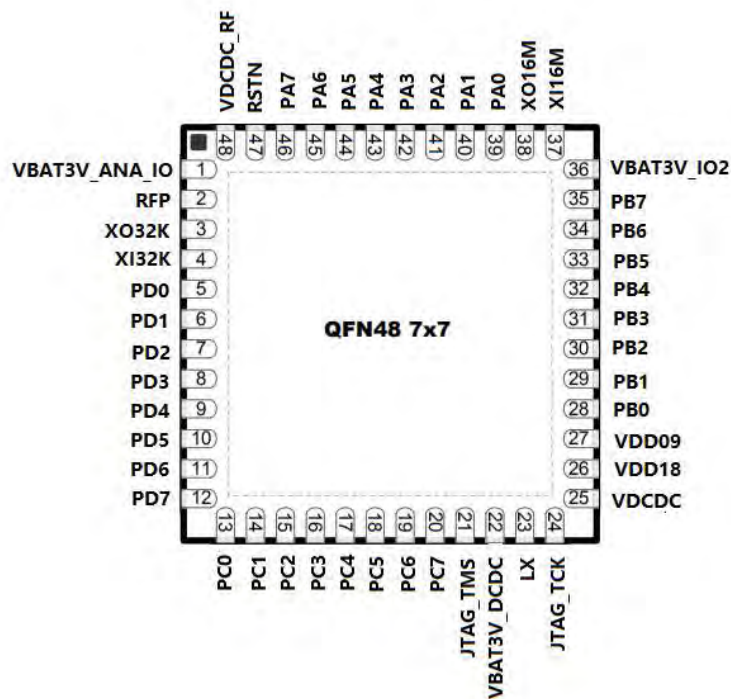
·Applications

- Keyboard and Mouse
- Bluetooth Remote Control
- Mesh Smart LED
- Anti_Lost
- Wearable Devices
- Wireless Toys
- Medical Equipment
- Industrial Control
- POS, Bluetooth Key
- ETC Vehicle-Mounted Unit

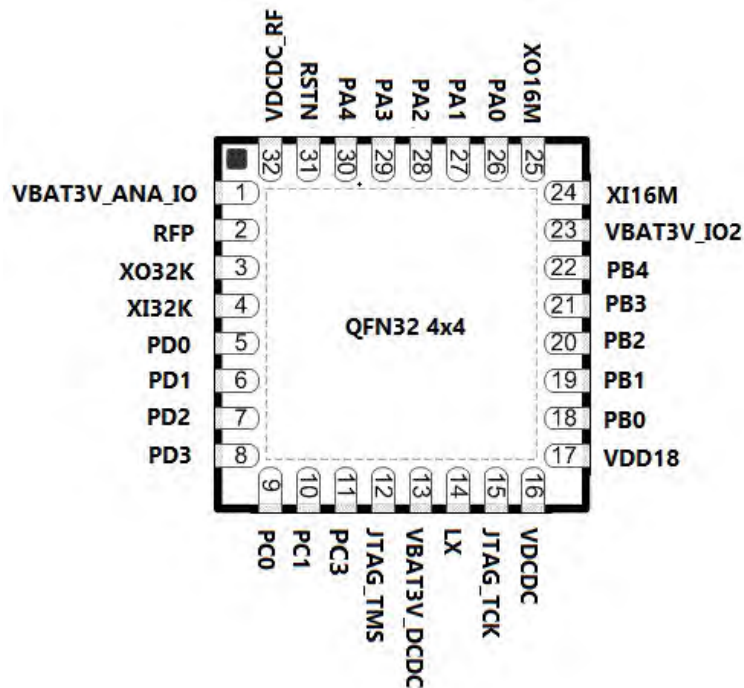
Block Diagram



Pin Diagram(7mm*7mm)



Pin Diagram(4mm*4mm)

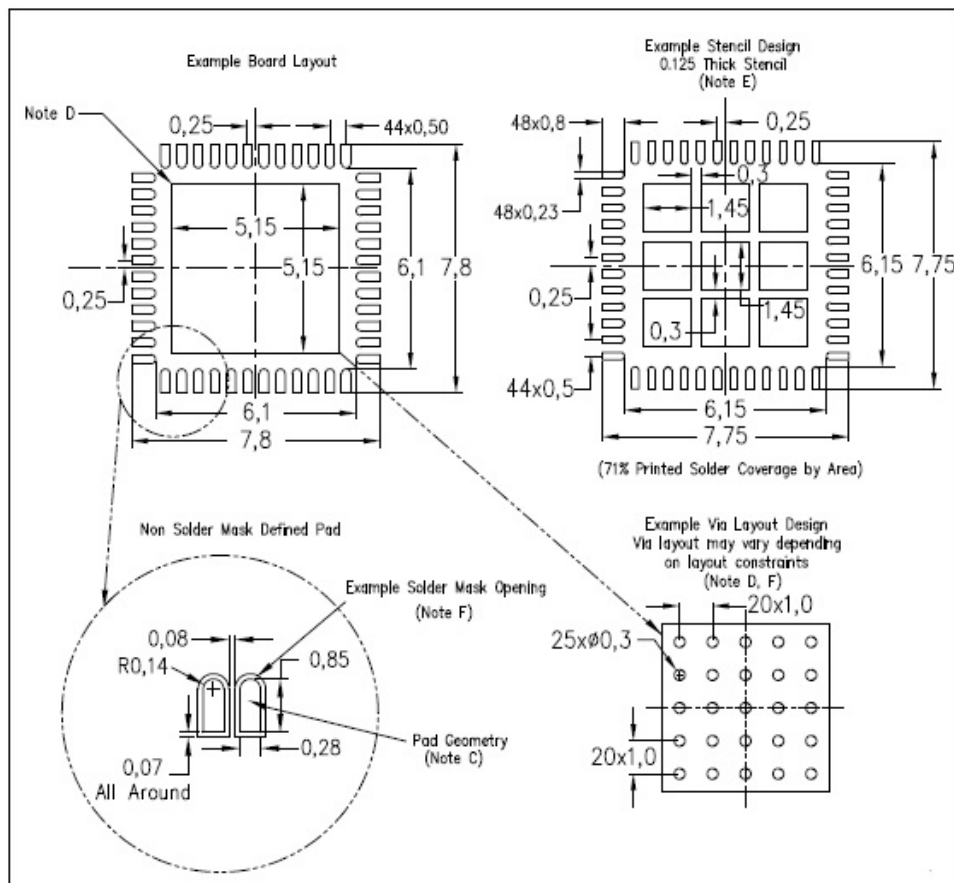
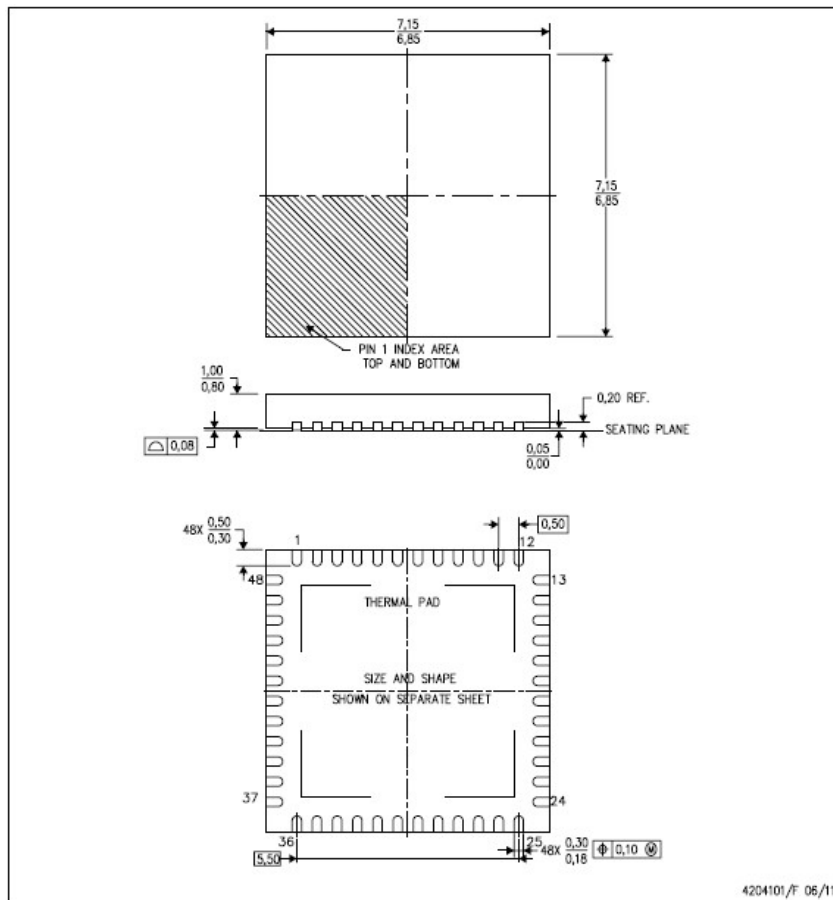


Pin Descriptions

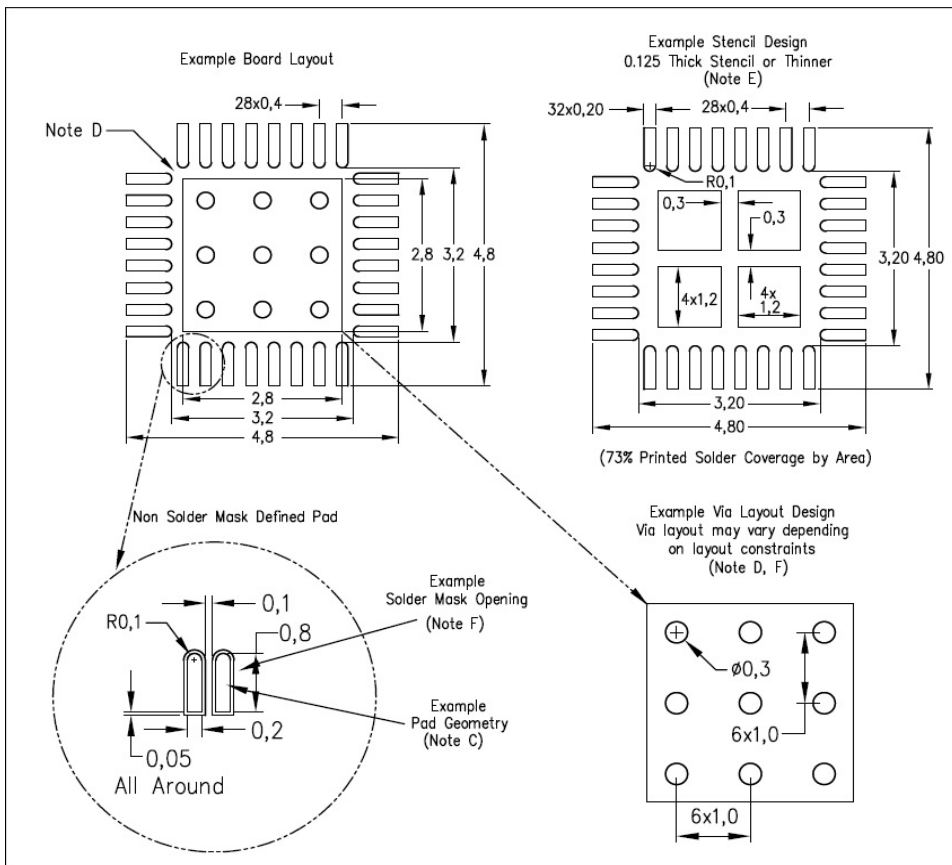
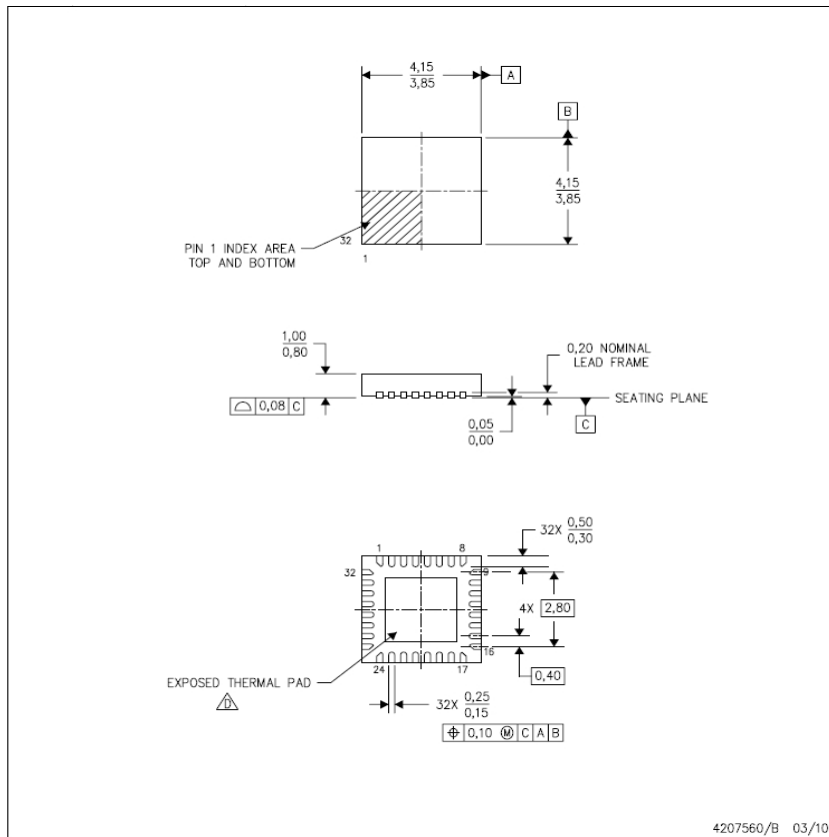
QFN32	QFN48	PIN name	PIN TYPE	PIN DESCRIPTIONS
1	1	VBAT3V_A NA_IO	Power	1.8-3.6V supply
2	2	RFP	Analog pin	RF Input / Output
3	3	XO32K	Analog pin	32kHz crystal oscillator output
4	4	XI32K	Analog pin	32kHz crystal oscillator input
5	5	PD0	Digital I/O	GPIO
6	6	PD1	Digital I/O	GPIO
7	7	PD2	Digital I/O	GPIO
8	8	PD3	Digital I/O	GPIO
	9	PD4	Digital I/O	GPIO
	10	PD5	Digital I/O	GPIO
	11	PD5	Digital I/O	GPIO
	12	PD7	Digital I/O	GPIO
9	13	PC0	Digital I/O	GPIO
10	14	PC1	Digital I/O	GPIO
	15	PC2	Digital I/O	GPIO
11	16	PC3	Digital I/O	GPIO
	17	PC4	Digital I/O	GPIO
	18	PC5	Digital I/O	GPIO
	19	PC5	Digital I/O	GPIO
	20	PC7	Digital I/O	GPIO

12	21	JTAG_TMS	Digital I/O	JTAG
13	22	VBAT3V_D CDC	Power	1.8-3.6V DC-DC supply
14	23	LX	Analog IO	Output from internal DC-DC, typically connect to VDCDC with 10uH inductor and 10uF capacitor
15	24	JTAG_TCK	Digital I/O	JTAG
16	25	VDCDC	Power	1.4V-1.5V supply, typically connect to output of internal DC-DC
17	26	VDD18	Power	1.8V internal power output, only for test
	27	VDD09	Power	1.2V internal power output, only for test
18	28	PB0	Digital I/O	GPIO
19	29	PB1	Digital I/O	GPIO
20	30	PB2	Digital I/O	GPIO
21	31	PB3	Digital I/O	GPIO
22	32	PB4	Digital I/O	GPIO
	33	PB5	Digital I/O	GPIO
	34	PB6	Digital I/O	GPIO
	35	PB7	Digital I/O	GPIO
23	36	VBAT3V_IO 2	Power	1.8-3.6V supply
24	37	XI16M	Analog pin	16MHz crystal oscillator input
25	38	XO16M	Analog pin	16MHz crystal oscillator output
26	39	PA0	Analog&Digital IO	GPIO
27	40	PA1	Analog&Digital IO	GPIO
28	41	PA2	Analog&Digital IO	GPIO
29	42	PA3	Analog&Digital IO	GPIO
30	43	PA4	Analog&Digital IO	GPIO
	44	PA5	Analog&Digital IO	GPIO
	45	PA6	Analog&Digital IO	GPIO
	46	PA7	Analog&Digital IO	GPIO
31	47	RSTN	Digital Pin	Reset, active-low
32	48	VDCDC_RF	Power	1.4V-1.5V supply, typically connect to output of internal DC-DC

Package Information



QFN32 Package



SOURCE

VBAT3V, VBAT3V_ANA_IO, VBAT3V_IO2, VBAT3V_DCDC

C3 10uF, C4 0.1uF, C5 0.1uF, C8 0.1uF, C12 10uF

C3离VBAT3V就近放置
C4离芯片引脚VBAT3V_ANA_IO就近放置
C5离芯片引脚VBAT3V_IO2就近放置
C8 C12离芯片引脚VBAT3V_DCDC就近放置

XTAL

G1, G2, NC, NC, NC, NC

XO18M, XI18M, XI32K, XO32K

默认用内部32K, 外部32K预留

DCDC

LX, VDDC, RF, VDDC

L1 10uH, C9 10uF, C10 0.1uF, C11 0.1uF

Murata IQM21FN100M80/70
TAIYO YUDEN CMS125L100M-T

L1, C9离芯片引脚LX就近放置
C10离芯片引脚VDDC_RF就近放置
C11离芯片引脚VDDC就近放置

UART

VBAT3V, UART_RX, UART_TX

R3 10K, X1, HEADER3x1

UART_RX外接10K上拉电阻

RESET

RSTN, SW2, SW PUSHBUTTON

Jlink INTERFACE

JTAG TMS, JTAG TCK, J1, HEADER2x2

LED

PD4, R2, 1K, HL1, LED

BUTTON

VBAT3V, SW1, SW PUSHBUTTON, PB6

U1

VBAT3V_ANA_IO, VBAT3V_IO2, VBAT3V_DCDC, JTAG_TMS, JTAG_TCK, LX

1 RFP, 2 RFP, 3 XO32K, 4 XI32K, 5 PD0, 6 PD1, 7 UART_RX, 8 UART_TX, 9 PD4, 10 PD5, 11 PD6, 12 PD7

13 PC0, 14 PC1, 15 PC2, 16 PC3, 17 PC4, 18 PC5, 19 PC6, 20 PC7, 21 JTAG_TMS, 22 JTAG_TCK, 23 LX, 24 JTAG_TCK

25 VDDC, 26 VDDC, 27 VDDC, 28 VDDC, 29 PB7, 30 PB8, 31 PB9, 32 PB10, 33 PB11, 34 PB12, 35 PB13, 36 PB14, 37 PB15, 38 PB16, 39 PB17, 40 PB18, 41 PB19, 42 PB20, 43 PB21, 44 PB22, 45 PB23, 46 PB24, 47 PB25, 48 PB26, 49 PB27

49 GNDPAD, 48 VDDC_RF, 47 VDDC_RF, 46 VDDC_RF, 45 VDDC_RF, 44 VDDC_RF, 43 VDDC_RF, 42 VDDC_RF, 41 VDDC_RF, 40 VDDC_RF, 39 VDDC_RF, 38 VDDC_RF, 37 VDDC_RF, 36 VDDC_RF, 35 VDDC_RF, 34 VDDC_RF, 33 VDDC_RF, 32 VDDC_RF, 31 VDDC_RF, 30 VDDC_RF, 29 VDDC_RF, 28 VDDC_RF, 27 VDDC_RF, 26 VDDC_RF, 25 VDDC_RF

Table

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QFN32Application Circuit

