

BX_RF08

Features

- Complies with Bluetooth 5.0 with 1M / 2M bps data rates.

■ Radio Transceiver

- -93 dBm RX sensitivity at 1Mbps mode
- -90 dBm RX sensitivity at 2Mbps mode
- RF output power levels: -20dBm, 0dBm, 3dBm and 8dBm
- 50dB RSSI dynamic range

■ Supply Current

- 4.3mA in RX and 4.4mA in TX with On Chip DCDC Converter@4.3V
- 5.5mA in RX and 5.7mA in TX with On Chip DCDC Converter@3.3V

■ Ultralow Current Mode

- Sleep current : 2.5uA ~ 6uA, SRAM (16 KB ~ 208 KB) retention
- Average current: 20uA , during 1.28 sec cycle time (Active / Sleep)
 Notice: Active (Broadcasting ADV) / Sleep (208 KB SRAM retention)

■ Analog Interfaces

- **1** Battery monitoring function from 5.5V to 2.0V
- **3** External channel of ADC (ENOB = 10) with average capability (Oversampling up to ENOB = 12)
- Temperature sensor from -40°C to 125°C

BT 5.0 – BLE / MESH SoC

■ Digital Interfaces

- Up to **18** GPIOs
- 1 Internal Quad-SPI Flash interface
- 1 General SPI interface
 - ◆ Support both SPIM / SPIS Mode
- 2 UART -
Flow control up to 1Mbps and supports all the baud rate under 1Mbps, IRDA is supported
- 2 IIC -
Master / Slave programmable and speed up to 1Mbps
- 2 Timers and 1 Watch-dog Timer
- 5 PWM Outputs

■ Integrated 32-bit MCU

- Clock frequency: 16MHz, **32MHz (Major)** , 48MHz, 64MHz, 80MHz and **96MHz (Max)**
- CPU Benchmarking : 2.07 Coremark / MHz
- SWD debug interface
- AHB / APB bus matrix with speed up to 96MHz

■ Memories

- 8Mb Flash
- 128 KB ROM (Boot ROM and BLE stack)
- 208 KB SRAM
 - ◆ Composed of **6 pages of 32KB** and **1 page of 16KB** , with retention capability
 - ◆ Each 32KB can be set into retention state separately and exchange memory for BLE connection data
 - ◆ 16KB of 4 way cache controller for external SPI flash which enable CPU run on the external SPI flash, this 16KB cache can be also used as system SRAM when cache is disabled

Power Management

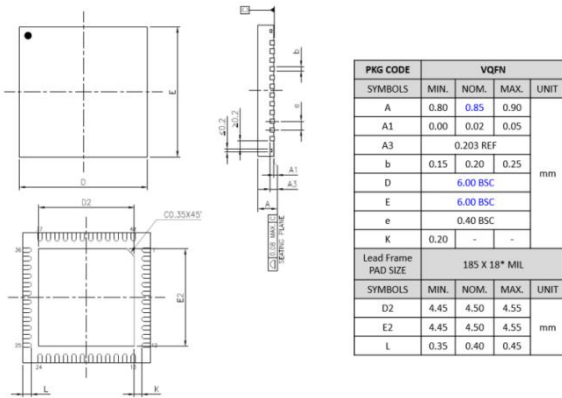
- 2.3-5.0V power input
- One 1.2V Integrated DCDC buck converter
- One 1.8V LDO with 40mA output
- Two 3.3V LDO with 50mA & 25mA output each

Cryptographic Engine

- ECC
- AES-128

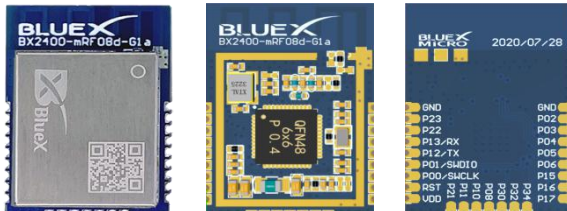
Package

- QFN48 (6 X 6 mm²)



Module

- BX2400-mRF08d-G1a



Size	Pin out	IO	Component	TX PWR	RX SEN	Interface	Functions
23.5*16.75 mm ² (4 layer)	25 Pins	18 GPIO	33 pcs (Standard) 3 Ext. ADC	2 pcs (Added)	0 dBm (default)	-93dBm @1Mbps	(1) SWD (2) UART (3) RST (4) DC Buckler
		9 pcs (Reduced)		8 dBm (Max)	-90dBm @2Mbps		

Pin Description

Pin	Symbol	Type	Description	Pin	Symbol	Type	Description
1	P02	DIO	spim0_cs1/FUNC_IO00/GPIO02	26	VDD_AW0	PO	VDD_AW0 output
2	P03	DIO	spim0_cs0/SPIS_CS/FUNC_IO01/GPIO03	27	P21	DIO	FUNC_IO19/GPIO21
3	P04	DIO	spim0_clk/SPIS_CLK/FUNC_IO02/GPIO04	28	P22	DIO	FUNC_IO20/GPIO22
4	P05	DIO	spim0_miso/SPIS_MISO/FUNC_IO03/GPIO05	29	P23	DIO	FUNC_IO21/GPIO23
5	P06	DIO	spim0_mosi/SPIS_MOSI/FUNC_IO04/GPIO06	30	XTAL32KP	AI	32.768 kHz Crystal input (+)
6	P15	DIO	FUNC_IO13/GPIO15	31	XTAL32KN	AI	32.768 kHz Crystal input (-)
7	P16	DIO	FUNC_IO14/GPIO16	32	VDD_3V2	PO	Supply to external 3.3V
8	P17	DIO	FUNC_IO15/GPIO17	33	VDD_BAT2	PI	Guard ring power supply
9	P08	DIO	spim1_cs0/FUNC_IO06/GPIO08	34	VDD_VCO	PI	VCO power supply
10	P10	DIO	spim1_miso/FUNC_IO08/GPIO10	35	LOOP_C	AIO	PLL loop filter external capacitor.
11	P11	DIO	spim1_mosi/FUNC_IO09/GPIO11	36	VDD_CP	PI	PLL power supply
12	P12	DIO	FUNC_IO10/GPIO12	37	PA_Output	PO	8dBm TX Output
13	P13	DIO	FUNC_IO11/GPIO13	38	VDD_RF1	PI	RF power supply
14	VDD_SRAM	PO	VDD_SRAM output	39	RF_P	AIO	RF input/output
15	VDD_3V_1	PO	Supply to external 3.3V	40	RF_N	AIO	RF input/output
16	VDD_1V8	PO	Supply to external 1.8V	41	VDD_A	PI	Power supply for an analog circuit
17	VDD_DIG	PI	Digital circuit power supply	42	VDD_BAT1	PI	ADC power supply
18	GND_D	GND	Ground for digital circuit	43	P30	AI	ADC Input Channel 0
19	VDD_1V2	PO	DC/DC Converter output	44	P32	AI	ADC Input Channel 2
20	VDD_BAT	PI	Battery supply voltage	45	P34	AI	ADC Input Channel 4
21	VDD_BUS	N/A	N/A. Floating.	46	NC	N/A	N/A Floating
22	Ext Reset	DI	Pull low internally. High active.	47	XTAL32MP	AI	32 MHz Crystal input (+)
23	P00	DIO	swck/GPIO00	48	XTAL32MN	AI	32 MHz Crystal input (-)
24	P01	DIO	swd/GPIO01	IC Ground pad	GND		Backside GND plane. Must be connected to the GND.
25	VDD_CPU	PO	VDD_CPU output				

NOTE: AI : analog input AO : analog output AIO : analog input/output

DI : digital input DIO : digital input/output PI : power input PO : power output

Operating Temperature

- -25°C to 85°C



Ver 2.6