BG309

(2.4GHz RF Module)

Specification

Ver:1.0

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Product Description

The BG309 RF Module is a low-cost 2.4 GHz transceiver designed for very low-power wireless applications.

The circuit is intended for the 2400-2483.5 MHz ISM (Industrial, Scientific and Medical) and SRD (Short Range Device) frequency band.

The RF transceiver is integrated with a highly configurable baseband modem. The modem supports various modulation formats and has a configurable data rate up to 500 kBaud.

The main operating parameters and the 64-byte transmit/receive FIFOs of BG309 can be controlled via an SPI interface. In a typical system, the BG309 will be used together with a microcontroller and a few additional passive components.

Features

1. RF Chip:CC2500(TI)
2. Small Size:13*21mm(With PCB Antenna)
3. High sensitivity (-102 dBm at 2.4 kBaud,1% packet error rate)
4. Low current consumption (13.3 mA in RX,250 kBaud, input well above sensitivity limit)
5. Programmable output power up to +1 dBm Excellent receiver selectivity and blocking performance
6. Programmable data rate from 1.2 to 500kBaud
7. Frequency range: 2400 - 2483.5 MHz
8. OOK, 2-FSK, GFSK, and MSK supported
9. Suitable for frequency hopping and multichannel systems due to a fast settling frequency synthesizer with 90 us settling time
10. Automatic Frequency Compensation(AFC) can be used to align the frequency synthesizer to the received centre frequency
11. Digital RSSI output
12. Programmable channel filter bandwidth
13. Support for per-package Link Quality Indication (LQI)
14. Optional automatic whitening and de-whitening of data
15. 400 nA SLEEP mode current consumption
16. Fast startup time: 240 us from SLEEP to RX or TX mode (measured on EM design)
17. Wake-on-radio functionality for automatic low-power RX polling
18. Separate 64-byte RX and TX data FIFOs(enables burst mode data transmission)

Operating Range

Parameters	Min.	Typ.	Max.	Unit
supply voltage	2.0	3.0	3.6	V
Temperature ambient	0		50	‘C
Input frequency range	2400		2483	MHz
RX supply current , CW-mode (peak current)			17	mA
TX supply current, CW-mode (peak current)			22	mA
Supply current in standby mode			2	uA

Transmitter Part

Parameters	Min.	Typ.	Max.	Unit
TX data rate	2		500	Kbit/s
MAX. Output power (PTX)	-1	0	+1	dBm
Frequency deviation				
Data Rate=500KBit		10		KHz
Spurious Emission				
2’nd spurious emission			-40	dBm
3’rd spurious emission			-50	dBm
Modulation		FSK GFSK OOK MSK		

Receiver Part

Parameters	Min.	Typ.	Max.	Unit
Sensitivity BER ≤ 10-3 at 2.4KBit/s BER ≤ 10-3 at 250Kbit/s		 -100 -85	 -98 -83	dBm
IF frequency		4000 3000		KHz KHz
Maximum input power		-10		dBm
Spurious Emission 30MHZ~1GHz 1GHZ~12GHz		 -50 -40		dBm

Dimension and Pad Define