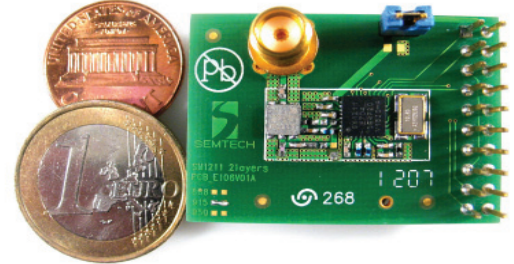SEMTECH ADVANCED COMMUNICATIONS & SENSING

SM1211

Ultra Low Power Integrated UHF Transceiver Module

General Description:

The purpose of this module is to provide a development platform of the SX1211. User can build his application prototype by simply connecting the module to his target microcontroller and start developing his application software. The SM1211 module integrates the SX1211 reference design (chip + external components) plus miscellaneous useful connectors.

SX1211 is a low cost single-chip transceiver operating in the frequency ranges from 863-870, 902-928 MHz and 950-960 MHz. The SX1211 is optimized for very low power consumption (3 mA in receiver mode). It incorporates a baseband modem with data rates up to 150 kb/s. Data handling features include a sixty-four byte FIFO, packet handling, automatic CRC generation and data whitening. Its highly integrated architecture allows for minimum external component count while maintaining design flexibility.

All major RF communication parameters are programmable and most of them may be dynamically set. It complies with European (ETSI EN 300-220 V2.1.1) and North American (FCC part 15.247 and 15.249) regulatory standards.

Note: This module is also used for the SX1211 Starter Kit.

Key Product Features:

- Small form factor design footprint <150 mm^2 Optimized Low-cost design – 2 layers PC-board
- Low Rx power consumption: 3 mA
- Low Tx power consumption: 25 mA @ +10 dBm
- Good reception sensitivity: down to -107 dBm at 25 kb/s in FSK, -113 dBm at 2 kb/s in OOK
- Programmable RF output power: up to +12.5 dBm in 8 steps
- Packet handling feature with data whitening and automatic CRC generation
- RSSI (Received Signal Strength Indicator) range from Rx noise floor to 0 dBm
- Bit rates up to 200 kb/s, NRZ coding
- On-chip frequency synthesizer
- FSK and OOK modulation
- Incoming sync word recognition
- Built-in bit-synchronizer for incoming data and clock synchronization and recovery

Applications:

- Active RFID PHY
- Battery powered remote sensors
- Wireless alarm and security systems
- Automated meter reading
- Home and building automation
- Industrial monitoring and control
- Remote wireless control

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SM1211 – Ultra-Low Power Integrated UHF Transceiver Module

Characteristics

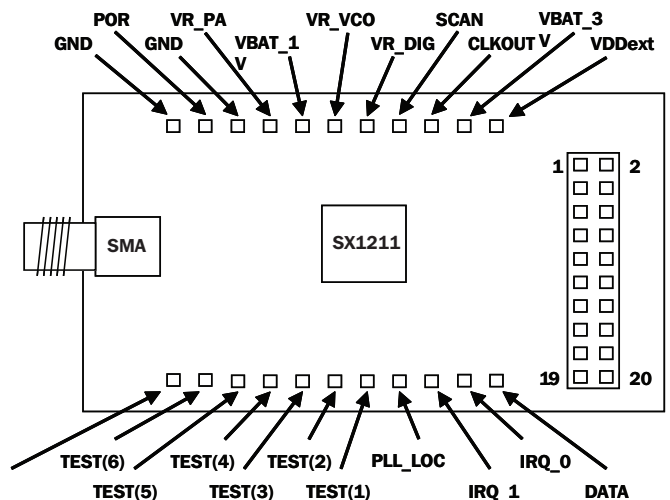| Parameter	Min	Typ	Max	Unit	Condition
Operating Conditions					
Operating temperature range	-20		+85	°C	
Operating supply voltage	2.1		3.6	V	
Digital input level high - VIH	75			%	Percentage of Vdd
Digital input level low - VIL			25	%	Percentage of Vdd
Current Consumption					
Max current consumption		30		mA	Tx Power = +12.5 dbm RLoad= 50 Ω
Rx mode current consumption		3		mA	All modules active
Sleep mode current consumption		0.1		μA	SPI port active
RF Characteristics					
Frequency range	863		870	MHz	Freq. and Channel BW are programmable 860-960 Mhz
	902		902		
Max input power			0	dBm	At the antenna port
Data rate	1.56		200	kbps	FSK Mode
	1.56		32	kbps	OOK Mode
Frequency deviation	33	50	200	Khz	FSK Mode
Spurious emission			-47	dBc	Offset = 200 - 600 kHz, unmodulated carrier, Fdev = 50 kHz
R_X sensitivity		-107		dBm	868 MHz, BR=25 kb/s, Fdev=50 kHz, fc=100 kHz
RSSI dynamic range		70		dB	Ranging from sensitivity
Adjacent channel rejection		27		dB	Offset = 300 Khz
Blocking immunity		-48		dBm	Offset = 1 Mhz
Conditions: Temp = 25°C, VDD = 3.3 V, crystal frequency = 12.8 MHz, unless otherwise specified.					

Pin Configuration

Pin #	Signal	Pin #	Signal
1	SCK	2	VDD (3.3 V)
3	MOSI	4	GND
5	IRQ_1	6	PLL_LOCK
7	NSS_CONFIG	8	MISO
9	CLKOUT	10	
11		12	IRQ_0
13		14	
15	IRQ_1	16	
17	DATA	18	
19	NSS_DATA	20	

Module layout

Ordering Information

Part Number	Pin Package
SM1211-C915	10 Pin DIL Header
SM1211-C868	

Visit our website to locate the most current product specifications, datasheets and contact information for your local Semtech Field Applications Engineer.

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