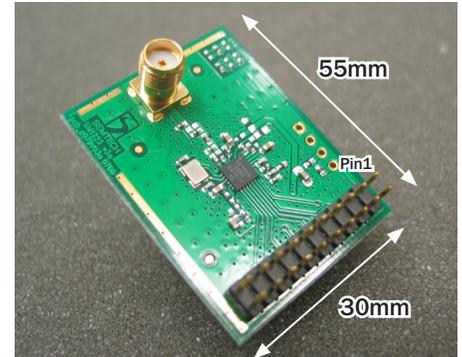


Product Brief



SEMTECH ADVANCED COMMUNICATIONS & SENSING



SM1223 - E433/868/915

433, 868 and 915 MHz RF Transmitter Evaluation Module

General Description:

The SM1223s are complete Radio Transmitter Modules operating either in the 433 or 868 or 915 MHz license free ISM (Industrial Scientific and Medical) frequency bands. Based on the SX1223 Transmitter, the SM1223 radio module is suitable for applications seeking to satisfy the European (ETSI EN300-220-1 and EN301 439-3) or the North American (FCC part 15.247 and 15.249) regulatory standards.

SX1223 is a single chip transmitter highly integrated architecture allows for minimum external components while maintaining design flexibility. All major RF communication parameters are programmable and most of them can be set dynamically. The SX1223 offers the advantage of high data rate communication at rates of up to 153.6 kbit/s. The SX1223 is optimized for low cost applications while offering high RF output power. The device is suitable for applications which have to satisfy either the European (ETSI-300-220) or the North American (FCC part 15) Regulatory standards.

Key Product Features:

- No RF knowledge required
- Direct digital interface
- Fully assembled and tested
- Easy connection using connectors
- Optimized low cost design 2 layers PC-Board
Small footprint – 15 mm x 20 mm
- Supply voltage 2.2 V – 3.6 V
- Fully integrated VCO and frequency synthesizer
- Output power is programmable up to 10 dBm
- Data rate up to 153.6 kbit/s
- Current consumption Tx = 25.8 mA at 10 dBm

Applications:

- Active RFID
- Wireless remote control
- Automated Meter Reading (AMR)
- Home automation and access control
- High-quality speech, music and data over RF

Product Brief

SM1223- 433, 868 and 915 MHz RF Transmitter Evaluation Module

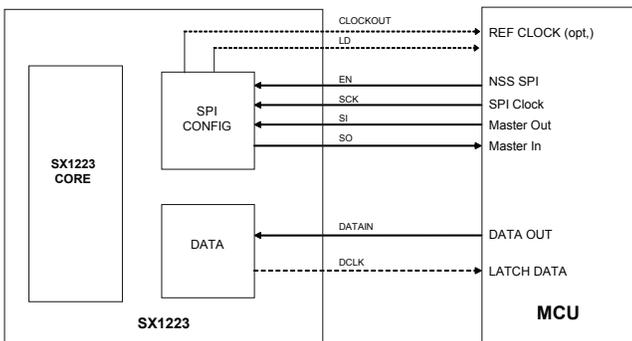
Symbol	Parameter	Condition	Min	Typ	Max	Unit
FR	Synthesizer frequency range	SM1223C433T	433	-	435	MHz
		SM1223C868T	868	-	870	
		SM1223C915T	902	-	928	
IDDSL	Sleep mode supply current		-	0.2	1	μ A
IDDST	Standby mode supply current	16 MHz running	-	0.2	0.3	mA
IDDFS	Supply current in FS Mode	16 MHz running		4.2	6	
IDDT	TX mode supply current	$P_{RF} = 0$ dBm		12		mA
		$P_{RF} = 10$ dBm		25		mA
FDA	Frequency deviation	Programmable	5		255 ⁽¹⁾	kHz
BR	Bit rate ⁽²⁾	Programmable	1.2	4.8	19.2	Kb/s
RFOP	Max RF output power	Programmable (3 dB step)	8	10		dBm
TS_STR	Transmitter wake-up time	From oscillator enabled	-	250	500	μ s
TS_OS	Quartz oscillator wake up time	Fundamental	-	1	2	ms
XTAL	Quartz oscillator frequency			16		MHz
PHN	Phase noise	10dBm unmodulated (50 kHz from carrier)		-79	-	dBc/Hz
VIH	Digital input level high	% VDD	75	-	-	%
VIL	Digital input level low	% VDD	-	-	25	%

(1): 250 kHz max at 433 MHz band

(2): Loop filter would have to be optimized to guaranty performances at other than typical bit rate and center frequency.

The Bit rate could be increased up to 153.6 kbps providing the loop filter be modified for mw1 or mw2 modulation modes.

Pin Schematic



Pin Configuration

Pin #	Name	I/O	Description
	RFOUT	I/O	SMA RF Antenna connector
1	SCK	I	Configuration SPI Clock
2	VDD_EXT	I	Power Supply 3.3V
3	SI	I	Configuration Data SPI Slave In
4	GND		Ground
5	SO	O	Configuration Data SPI Slave Out
6	-		Not used – no connect
7	EN	I	SPI Select
8	-		Not used – no connect
9	-		Not used – no connect
10	CLKOUT	O	Clock to MCU (optional). NC if not used
11	GND		Ground
12	-		Not used – no connect
13	GND		Ground
14	-		Not used – no connect
15	DCLK	O	Data clock – connect to MCU (optional : NC if not used)
16	-		Not used – no connect
17	LD	O	PLL Lock Detect – connect to MCU (optionnal : NC if not used)
18	-		Not used – no connect
19	DATAIN	I	Data input from MCU
20	-		Not used – no connect

Ordering Information

Part Number	Frequency band	Pin Package
SM1223E433T	433 - 435 MHz	Module Board 10 Pin Dual Inline header
SM1223E915T	902 - 928 MHz	
SM1223E868T	868 - 870 MHz	

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