

*RADIO MODULE*  
**MXR-1201**

**UHF FSK TRANSCEIVER MODULE**

PRELIMINARY

**DATA SHEET**

***Radios, Inc.***

April 17, 2006 Preliminary Data Sheet

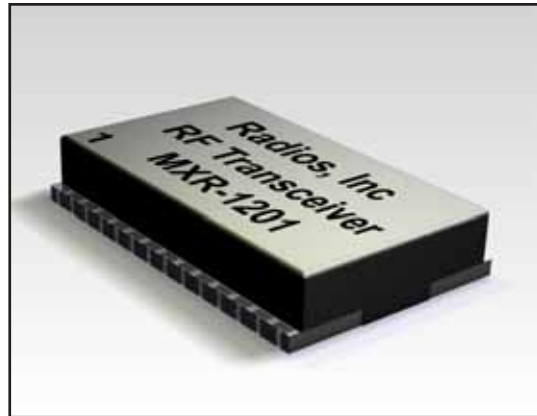
# MXR-1201

## UHF FSK TRANSCEIVER MODULE

The MXR-1201 is a half-duplex FSK transceiver for operation in the 433MHz ISM band and in the 300-500MHz band with a data rate up to 64 kbit/s. The modulation used is the continuous phase, 2 level Frequency Shift Keying (CPFSK).

The receiver integrates an LNA, a down converter function as well as channel filtering and demodulator which provide a fully integrated receiver from antenna to data stream. The architecture used is a direct conversion (zero-IF) that provides image filtering.

The transmitter provides a complete path from data stream to antenna. The architecture is a direct up-conversion with a programmable frequency deviation. The RF output power level can also be controlled.



### Typical Applications:

- Remote controls
- Door openers
- Telemetry
- RF security systems
- Wireless data link
- Wireless sensing

### Key Features:

- Half-duplex operation
- Data rate up to 64 kbit/s
- High sensitivity
- Internal bit synchronizer
- Programmable output power

### PRODUCT ORDER INFORMATION

Part Number	Description
MXR-1201-315(T)(S)	315 MHz FM/FSK Transceiver Module
MXR-1201-390(T)(S)	390 MHz FM/FSK Transceiver Module
MXR-1201-418(T)(S)	418 MHz FM/FSK Transceiver Module
MXR-1201-433.92(T)(S)	433.92 MHz FSK Transceiver Module

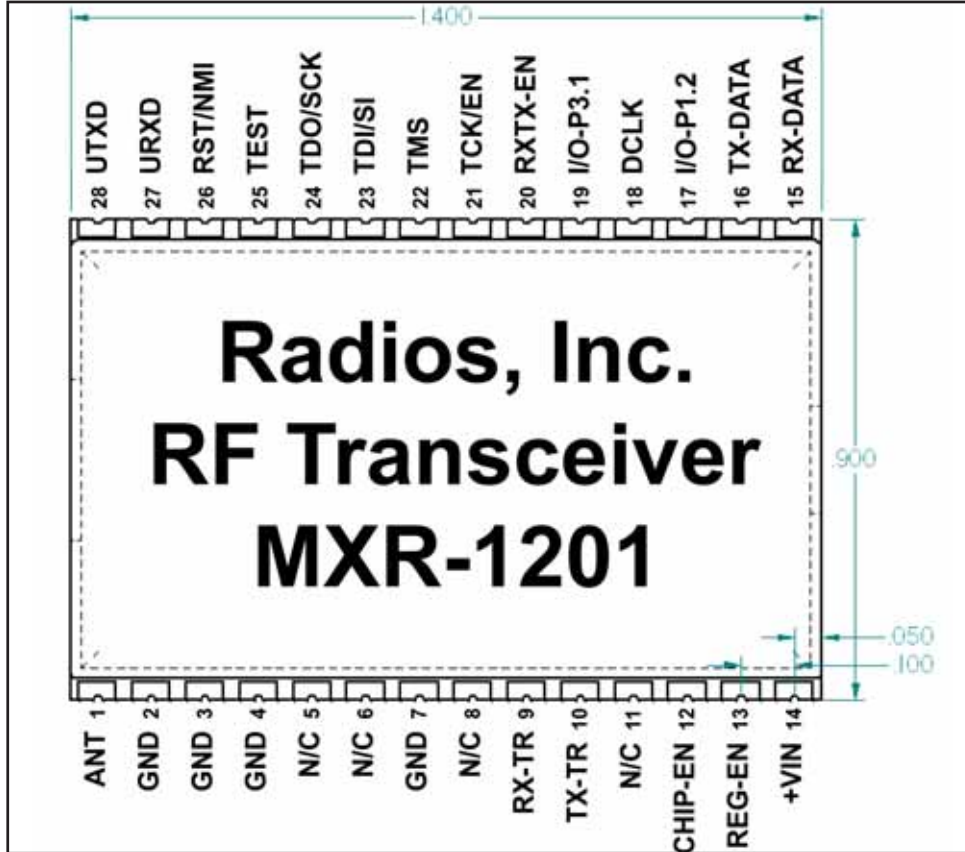
### Contact Information

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## UHF FSK TRANSCEIVER MODULE

### Mechanical and Pin Diagram



### Pin Description

Pin Num	Pin Name	Description	Pin Num	Pin Name	Description
Pin 1	Ant	RF Input/Output	Pin 15	RX-DATA	Received Data Output
Pin 2	Gnd	Ground	Pin 16	TX-DATA	Data Input Stream
Pin 3	Gnd	Ground	Pin 17	I/O-P1.2	Input or Output Pin
Pin 4	Gnd	Ground	Pin 18	DCLK	Transmitter or Receiver Clcok
Pin 5	N/C	No Connect	Pin 19	I/O-P3.1	Input or Output Pin
Pin 6	N/C	No Connect	Pin 20	RXTX-EN	Receiver / Transmitter Enable
Pin 7	Gnd	Ground	Pin 21	TCK/EN	SPI Test Clock / Bus Data Enable
Pin 8	N/C	No Connect	Pin 22	TMS	SPI Test Mode Select
Pin 9	RX-TR	Receive TR Switch	Pin 23	TDI/SI	SPI Data Input / Bus Data Input
Pin 10	TX-TR	Transmit TR Switch	Pin 24	TDO/SCK	SPI Data Output / Bus Clock
Pin 11	N/C	No Connect	Pin 25	TEST	Selects Test Mode for JTAG
Pin 12	CHIP-EN	Chip Enable	Pin 26	RST/NMI	Reset/Nonmaskable Interrupt Input
Pin 13	REG-EN	Regulator Enable	Pin 27	URXD	Receive UART Pin
Pin 14	+VIN	Positive Supply Pin	Pin 28	UTXD	Transmit UART Pin

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## UHF FSK TRANSCEIVER MODULE

### Electrical Limits

Sym	Parameters	Min	Typ	Max	Unit	Notes
<b>Absolute Maximum Ratings</b>						
VDD	Supply Voltage	2.7		16	V	
	Storage Temperature Range	-40		85	°C	
V <sub>EN</sub>	Enable Input Voltage	-20		+20	V	
<b>Operating Ratings</b>						
V <sub>EN</sub>	Enable Input Voltage	0		TBD	V	
TA	Ambient operating temperature	-40		70	°C	

### Electrical Characteristics

This device is ESD sensitive. Do not operate or store near strong electrostatic fields. Use appropriate ESD precautions. All voltages are with respect to Ground.

Parameters	Test Conditions	Min	Typ	Max
Power Supply		2.4	3	5.5
Reception supply current		4.5	6	7.5
Transmission supply current	-15 dBm output power -5 dBm output power +2.5 dBm output power +5 dBm output power		5.5 8 11 13.5	
Standby current	Clock running Clock stopped		55 0.2	65 1
Quiescent Current	V <sub>EN</sub> <= 0.4V (shutdown) V <sub>EN</sub> <= 0.18V (shutdown)		0.01	1 5
Reference Frequency		300		500
Transmitter Output Power	C13 = 0 ; C12 = 0 C13 = 0 ; C12 = 1 C13 = 1 ; C12 = 0 C13 = 1 ; C12 = 1		-15 -5 2 5	
RF sensitivity	BER=1%, Rsource = 50ohms 8 kbit/s 16 kbit/s 64 kbit/s	-106 -104 -99	-109 -107 -102	
RF input impedance	Parallel real part Parallel capacitive part		1 4	
RF output impedance	Parallel capacitive part		2.4	
Co-channel rejection	Funw = FLO ±125 kHz RFlevel = RFS+3dB	-12	-7	
Blocking immunity	Funw = FRF ±1MHz RFlevel = RFS+3dB	39	43	
Maximum receiver input level	1 channel, BER=1%	0		
Baseband filter bandwidth	3 dB cutoff frequency	250	330	410
Local oscillator drift	-40 < Tamb < +70° C		-4	
Local oscillator shift	2.4 V < Vdd < 3.6 V		+/-8	+/-15
DDS anti-alias filter bandwidth			160	

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### Electrical Characteristics - CONT.

Frequency deviation	programmable	+/-4		+/-200	kHz
Data rate	programmable	4		64	kbit/s
Digital input/output low level		0		0.4	V
Digital input/output high level		2.6		3	V
Clock wake-up time	from cold start		2	3.5	ms
Receiver wake-up time	from oscillator running bit synchronizer bypassed		60	75	µs
Transmitter wake-up time	from oscillator running		60	75	µs
Data set-up time		125			ns
Receive to transmit switching time			15	25	µs
Transmit to receive switching time	bit synchronizer bypassed		60	75	µs
SC bus clock rise time				50	ns
SC bus clock fall time				50	ns
SC bus clock frequency				4	MHz

Note 1. Exceeding the absolute maximum rating may damage the device.

Note 2. The device is not guaranteed to function outside its operating rating.

Note 3. Devices are ESD sensitive. Handling precautions recommended. Human body model, 1.5k in series with 100pF.

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### **UHF FSK TRANSCEIVER MODULE**

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# **UHF FSK TRANSCEIVER MODULE**

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### **Editorial Information:**

	(Date)
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