

RADIO MODULE

MXR-1209

FM/FSK TRANSCEIVER MODULE

PRELIMINARY

DATA SHEET

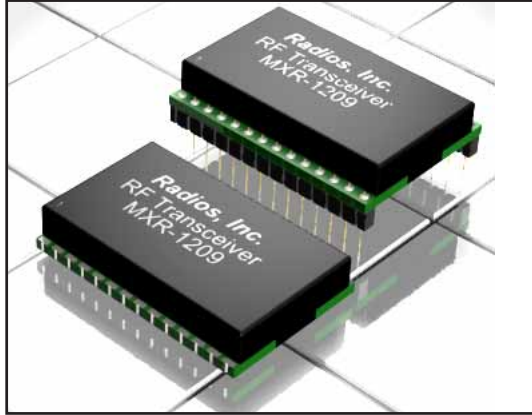
Radios, Inc.

May 23, 2005 Preliminary Data Sheet

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FM/FSK TRANSCEIVER MODULE

The MXR-1209 is a Frequency Shift Keyed (FSK) short range, half duplex, digital transceiver. This integrated modularized transceiver is primarily intended for use in part 15 systems. The transceiver is cost effective, reliable and small in size making it ideal for high volume OEM applications. It has extensive internal filtering making harmonic emissions and output power easy to control. It is a highly reliable wireless link. The MXR-1209 is a well designed transceiver suitable for a variety of RF applications.



Typical Applications:

- Remote controls
- Home / Industrial automation
- Continuous / Periodic data transfer
- Remote access
- Remote monitoring / telemetry
- Automated resource management
- Picture / Antique protection alarms
- General wire elimination
- Asset tracking

Key Features:

- Low cost
- Wide operating temperature range
- Easily integrated
- Low power consumption
- 3V operation
- Small size
- Logic compatible supply
- Up to 3 meter range

PRODUCT ORDER INFORMATION

Part Number	Description
MXR-1209(T)(S)	LF FM/FSK Transceiver Module

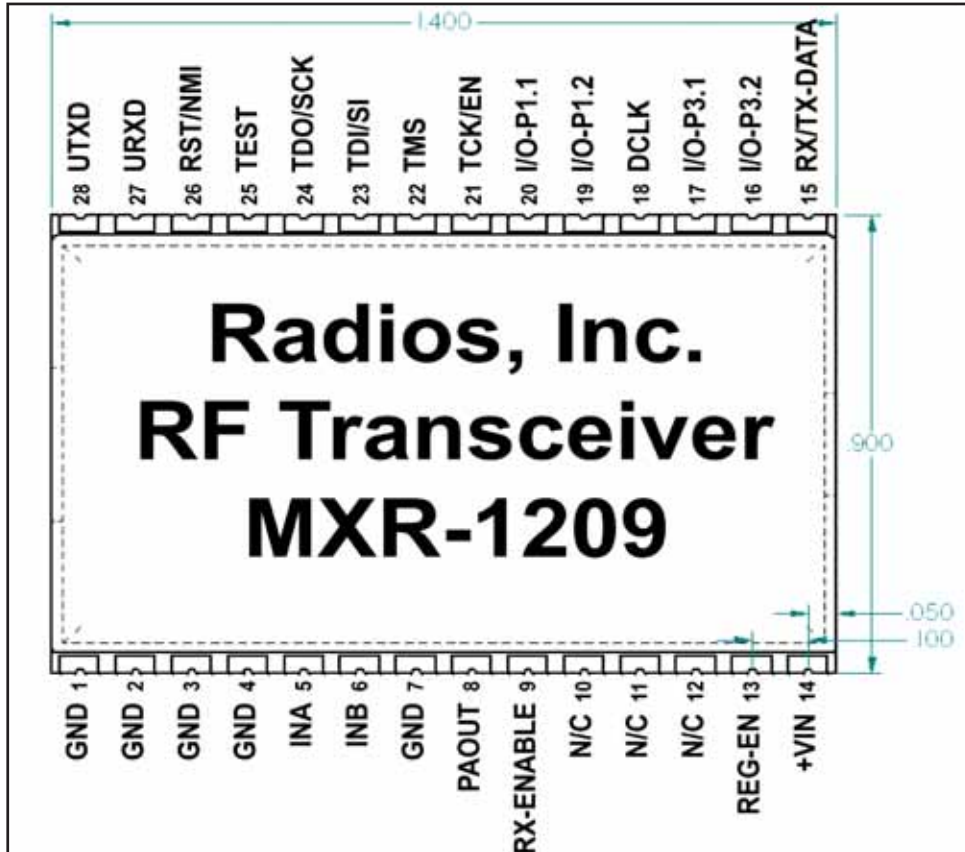
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Mechanical and Pin Diagram



Pin Description

Pin Num	Pin Name	Description	Pin Num	Pin Name	Description
Pin 1	N/C	No Connect	Pin 15	RX/TX-DATA	Transmit or Receive Data Pin
Pin 2	Gnd	Ground	Pin 16	I/O-P3.2	Input or Output Pin
Pin 3	Gnd	Ground	Pin 17	I/O-P3.1	Input or Output Pin
Pin 4	Gnd	Ground	Pin 18	DCLK	Transmitter or Receiver Clock
Pin 5	INA	RF Input Signal	Pin 19	I/O-P1.2	Input or Output Pin
Pin 6	INB	RF Input Signal	Pin 20	I/O-P1.1	Input or Output Pin
Pin 7	Gnd	Ground	Pin 21	TCK/EN	SPI Enable Pin
Pin 8	PAOUT	RF Power Amplifier Output	Pin 22	TMS	Input for Programming and Test
Pin 9	RX-ENABLE	Receiver Enable	Pin 23	TDI/SI	SPI Data Input Pin
Pin 10	N/C	No Connect	Pin 24	TDO/SCK	SPI Input Clock
Pin 11	N/C	No Connect	Pin 25	TEST	Selects Test Mode for JTAG
Pin 12	N/C	No Connect	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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Electrical Limits

Sym	Parameters	Min	Typ	Max	Unit	Notes
Absolute Maximum Ratings						
VDD	Supply Voltage	2.7		16	V	
	Storage Temperature Range	-40		85	°C	
V _{EN}	Enable Input Voltage	-20		+20	V	
Operating Ratings						
V _{EN}	Enable Input Voltage	0		TBD	V	
TA	Ambient operating temperature	-10	25	60	°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	Unit
Standby current	Oscillator active		1	2	μA
	Oscillator stopped		0.15	1	μA
Supply current in carrier detection mode (M2)	Temp = -10 to 60 °C		95	120	μA
Supply current in receiver mode (M4)	Temp = -10 to 60 °C		200	300	μA
Sink current transmitter mode	Load - resistance of 15 ohms	82	110	138	mA
		45	60	75	mA
		23	30	37	mA
		5.65	7.5	9.35	mA
		2.60	3.5	4.40	mA
		1.35	1.8	2.25	mA
Quiescent Current	V _{EN} <= 0.4V (shutdown)		0.01	1	μA
	V _{EN} <= 0.18V (shutdown)			5	μA
PLL reference frequency			32.768		kHz
PLL frequency	programmable	588.65	589.82	591.00	kHz
		719.45	720.90	722.35	kHz
RF differential input DC resistance		500	1000		k ohms
RF differential input capacitance			25		pF
RF sensitivity	R _{source} = 100 ohms BER = 10 ⁻⁴	200	70		μVp
Maximum RF effective input signal	Without any parasitic signal			15	mV
Transmission carrier frequency			36.86		kHz
			45.05		kHz
Adjacent channel rejection at f = 30.6 kHz	At RFSmin R _{source} = 100 ohms, BER = 10 ⁻⁴	11	23		dBc
Adjacent channel rejection at f = 110.58 KHz	At RFSmin R _{source} = 100 ohms, BER = 10 ⁻⁵	-1	3		dBc

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Electrical Characteristics - CONT.

DC Common mode rejection ratio	At RFSmin Rsource = 100 ohms, BER = 10 ⁻⁶	30				dB
Receiver -3dB bandwidth	FC = 36.86 kHz, DSB		5000			Hz
Data rate			1820			bit/s
Frequency deviation	FC = 36.86 kHz		1872			Hz
Carrier detector level	3 rising edges measured at output in a 900 µs time window	140 400	200 500	260 600		µVp µVp
Receiver activation time	from carrier-detector mode and with oscillator running		1.6	2.5		ms
Xtal oscillator activation time	at temp = -10 to 60 °C		0.2	2		s
Logical low level		VSS		0.2VDD		V
Logical high level		0.8VDD		VDD		V

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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Technical Support:

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Editorial Information:

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