High frequency FM Receiver module (FSK)

. Frequency Range: 916.5 MHz
. Modulate Mode: FSK
. Circuit Shape: PLL
. Data Rate: 3K~100 Kbps
. Sensitivity: -112 dB
. Channel Spacing: 200 KHz
. Supply Voltage: 2.7~ 5.5 V
. High Sensitivity Passive Design
. Simple To Apply with Low External Count

LAIPAC
RLP 916 F

Applications

. Designed for Short-Range Wireless Control and Data Communications
. Supports RF Data Transmission Rates Up to 200 kbps
. 2.4 V, Low Current Operation plus Sleep Mode
. Stable, Easy to Use, Low External Parts Count

Description

The RLP -916F MODULE receiver is ideal for short-range wireless control and data applications where robust operation, small size, low power consumption and low cost are required. The RLP -916F MODULE All critical RF functions are contained in the MODULE, simplifying and speeding design-in. The RLP -916F is sensitive and stable. A wide dynamic range log detector, in combination with digital RSSI and a compound data slicer, provide robust performance in the presence of on-channel interference or noise. FCC 15.249 and similar regulations.
CAUTION: Electrostatic Sensitive Device. Observe precautions when handling. Notes:
1. OOK BER measured with no DS1 threshold (DS2 disabled), and data encoded for DC-balance with a run length

limited to 4 bit periods.
2. ASK BER measured with a 25 mV DS1 threshold, DS2 threshold 6 dB below peak, and data encoded for DC-balance with a run length limited to 4 bit periods.
3. Sleep to receive recovery time is for the sleep period and signal level indicated, -40 to 60 centigrade.Recovery time will increase at higher temperatures, for longer sleep intervals and lower signal levels.

Absolute Maximum Rating:

Rating	Value	Units
Power Supply and All Input/Output Pins	-0.3 to +4.0	V
Non-Operating Case Temperature	-50 to +100	centigrade
Soldering Temperature (10 seconds)	230	centigrade

Electrical Characteristics, 200 kbps On-Off Keyed, Low-Current RX Mode

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	fO			916.50		MHz
Modulation Type					FSK	
Receiver Performance (OOK @ 2.4 kbps)						kbp2000
					0.9	mA
Input urrent, 3.6 Vdc Supply Input	IR	1				-98dBm
Signal for 10 BER, 25 centigrade	RREJ		55	1		
Rejection, 30 MHz Sleep to Receive Switch Time (100 ms sleep, -85 dBm signal)	tSR	3		200		us
Sleep Mode Current	IS				5	uA
Power Supply Voltage Range	VCC		2.7		5	Vdc

Operating Ambient Temperature	TA		-40		+85	centigrade
Sensitivity					-112	dbm (2400bps)

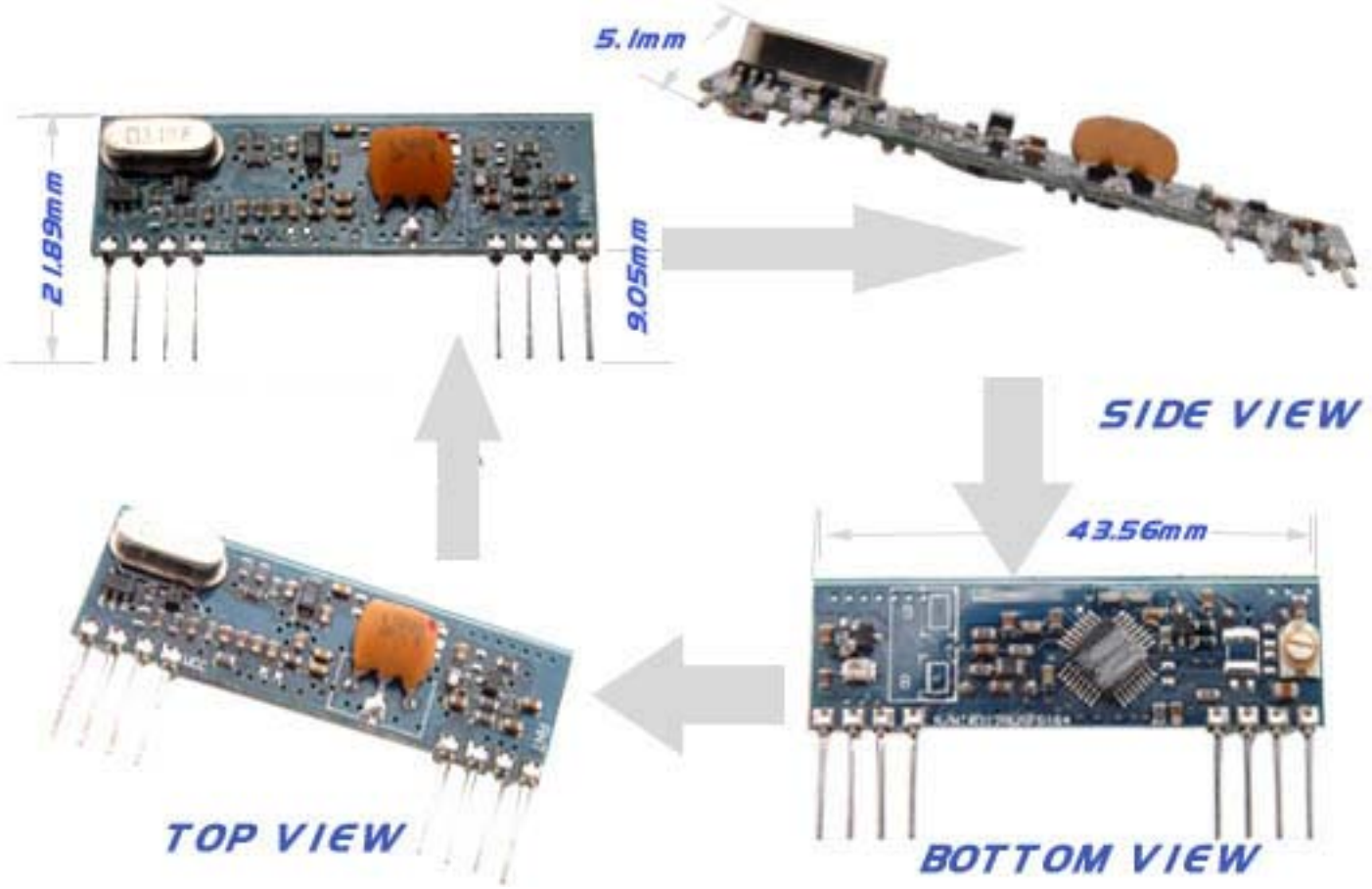
Electrical Characteristics, 19.2 kbps On-Off Keyed, High-Sensitivity RX Mode						
Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	fO		913.80		914.20	MHz
Modulation Type					OOK	
Data Rate					2.4	kbps
Input urrent, 3 Vdc Supply Input Signal for 10 BER, 25 centigrade		IR			1.8	mA
				1		-98dBm
Rejection, 30 MHz Sleep to Receive Switch Time (100 ms sleep, -85 dBm signal)	RREJ		55			dB
	tSR	3		200		us
Sleep Mode Current	IS				5	uA
Power Supply Voltage Range	VCC		2.7		3.5	Vdc
Operating Ambient Temperature	TA		-40		+85	centigrade

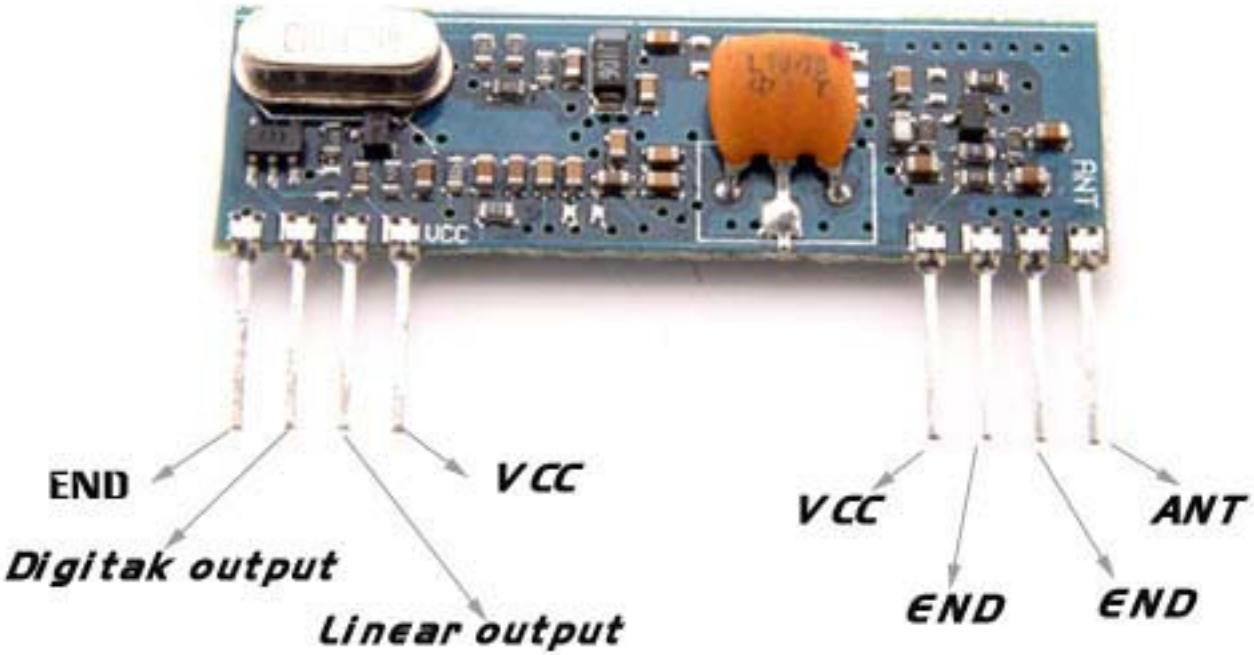
Electrical Characteristics, 115.2 kbps Amplitude-Shift Keyed, High-Sensitivity RX Mode						
Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	fO		913.80		914.20	MHz
Modulation Type					OOK	
Data Rate					2.4	kbps
Input urrent, 3 Vdc Supply Input Signal for 10 BER, 25		IR			1.8	mA

sleep, -85 dBm signal)				tSR	3		200	u s
Sleep Mode Current				IS			5	uA
Power Supply Voltage Range				VCC	2.7		3.5	Vdc
Operating Ambient Temperature				TA	-40		+85	centigrade

Receiver Set-Up, 3.0 Vdc, -40 to +85 centigrade

Item	Symbol	OOK	OOK	ASK	Units	Notes
Nominal NRZ Data Rate	DRNOM	2.4	19.2	115.2	kbps	see pages 1 &2
Minimum Signal Pulse	SPMIN	416.67	52.08	8.68	us	single bit
Maximum Signal Pulse	SPMAX	1666.68	208.32	34.72	us	4 bits of same value
AGCCAP Capacitor	CAGC	-	-	2200	pF	10% ceramic
PKDET Capacitor	CPKD	-	-	0.001	u F	10% ceramic
BBOUT Capacitor	CBBO	0.1	0.015	0.0027	u F	10% ceramic
LPFADJ Resistor	RLPF	240	30	12	K	5%
RREF Resistor	RREF	100	100	100	K	1%
THLD2 Resistor	RTH2	-	-	100	K	1%, for 6 dB below peak
THLD1 Resistor	RTH1	10	27	100	K	1%, typical values
PRATE Resistor	RPR	1100	330	160	K	5%
PWIDTH Resistor	RPW	270 to GND	270 to GND	1000 to VCC	K	5%
DC Bypass Capacitor	CDCB	10	10	10	F	tantalum
RF Bypass Capacitor 1	CRFB1	27	27	27	pF	5% NPO
Antenna Tuning Inductor	LAT	10	10	10	nH	50 ohm antenna
Shunt Tuning/ESD Indutor	LESD	100	100	100	nH	50 ohm antenna


5.1mm
21.89mm
9.05mm
SIDE VIEW
43.56mm
TOP VIEW
BOTTOM VIEW


END
Digitak output
Linear output
VCC
VCC
END
END
ANT
VCC
ANT

High frequency FM Transmitter module (FSK)

. Frequency Range:916.5 MHz
. Modulate Mode:FSK
. Circuit Shape:PLL
. Date Rate:4 ~ 40 Kbps
. Supply Voltage:2.7~ 5.5 V
. Power Supply and All Input / Output Pins: -0.3 to 4.0 V
. Non-Operating Case Temperature: -10 to +85 centigrade‘¦
. Soldering Temperature 230 centigrade(10 Seconds)
. Simple To Apply with Low External Count
. High Sensitivity Passive Design.

LAIPAC
TLP 916 F

Absolute Maximum Rating:		
Rating	Value	Units
Power Supply and All Input/Output Pins	-0.3 to +4.0	V
Non-Operating Case Temperature	-50 to +100	centigrade
Soldering Temperature (10 seconds)	230	centigrade

Elect rical Charact eristics, T=25? , Vcc=3.6v, Freq=916.5MHz						
Characteristic	Sym	Notes	Min.	Typ.	Max.	Units
Operating Frequency (200KHz)	Vcc		800		1000	MHz
Data Rate FM			200			Kbps
Transmitter Performance (OOK @ 2.4 kbps)						
Peak Input Current,12 Vdc Supply	ITP				13.5	mA
Peak Output Power	PO			-2.5		mW

Tum On/ Tum Off Time	TON/TOFF			2	4	us
Power Supply Vo ltage Range	Vcc		2.4		5	VDC
Operating Ambient Temperature	TA		-20		+65	?