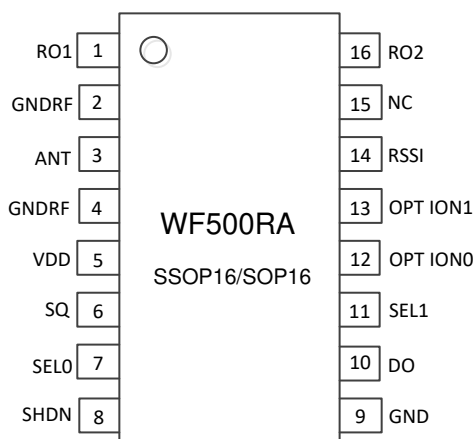


HIGH-SENSITIVITY, LOW-POWER 315/433MHZ ASK/OOK RF RECEIVER CHIP

1. Characteristics

- -118 dBm receive sensitivity (BER < 1% at 1 kbps)
 - Features an image-rejection mixer
 - Receive frequency range: 300 – 450 MHz
 - Fast startup time (typical: 1.5 ms)
 - Wide operating voltage range: DC 1.8 V – 5.5 V
 - Power consumption: 5.38 mA/3.3 V @ 433.92 MHz; 4.58 mA/3.3 V @ 315 MHz;
- analog RSSI output
- Integrated IF filter
 - Excellent selectivity and noise rejection
 - Minimal external components
 - SSOP16/SOP16 package

2. Pin Description



16 Pin SSOP	Pin name	Pin Functions
1	RO1	Crystal oscillator input pin
2	GNDRF	RF ground
3	ANT	RF signal enters via the antenna and is internally AC-coupled. An inductor-to-ground matching network is recommended to enhance ESD protection.
4	GNDRF	RF ground
5	VDD	Power supply, DC 2 – 5.5V

6	SQ	Squelch control logic: grounding enables squelch, while leaving the pin floating disables the squelch function.
7	SEL0	Logic control input with active internal pull-up; used in conjunction with SEL1 to control the demodulation low-pass filter bandwidth.
8	SHDN	Chip disable pin, active low.
9	GND	Grounding
10	DO	Demodulated data output
11	SEL1	Logic control input with active internal pull-up; used in conjunction with SEL0 to control the demodulation low-pass filter bandwidth.
12	OPTION0	Reserved grounding pad; left floating by default.
13	OPTION1	Reserved grounding pad; left floating by default.
14	RSSI	Received Signal Strength Indication output
15	NC	Not connected
16	R02	Crystal oscillator input

3. Reception Characteristics

mark	parameter	mode	Min	Typ	Max	unit
I _{DD}	Operating power consumption	433.92MHz	/	5.38	/	mA
		315MHz		4.58		
I _{SHDN}	Power Off			0.1		uA
RF/IF Section						
	Receiver sensitivity @1kbps	F _{RX} =433.92MHz, BER=0.01	/	-118	/	dBm
		F _{RX} =315MHz, BER=0.01		-118		
	Receive modulation duty cycle	/	20	/	90	%
Reference crystal oscillator						
	Reference crystal oscillator frequency	F _{RX} =433.92MHz	/	13.52313	/	MHz
		F _{RX} =315MHz		9.81713		
	Reference crystal oscillator input impedance	/	/	300	/	KΩ
	Reference crystal oscillator frequency accuracy	/	/	±20	/	ppm
	Reference crystal load capacitance	/	/	15	/	pf
	Reference crystal oscillator input range	/	0.2	/	1.5	V _{p-p}
	Reference crystal oscillator power consumption	V (REFOSC) =0V	/	3.5	/	uA
Demodulator						
	Demodulation filter	SEL0=0, SEL1=0	1	/	3	Kbps

	Bandwidth @433.92MHz	SEL0=1, SEL1=0	1		4	
		SEL0=0, SEL1=1	2		8	
		SEL0=1, SEL1=1	5		19	
	Demodulation filter Bandwidth @315MHz	SEL0=0, SEL1=0	1		3	Kbps
		SEL0=1, SEL1=0	1		4	
		SEL0=0, SEL1=1	2		6	
		SEL0=1, SEL1=1	4		18	
RSSI						
	RSSI DC voltage range	-110dBm 到 -40dBm		0.42-1.68		V
	RSSI response slope	-110dBm 到 -40dBm		18		mV/dB

4. Typical Applications

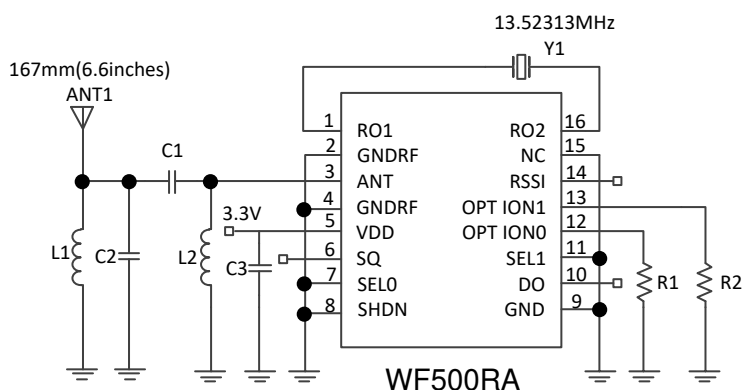
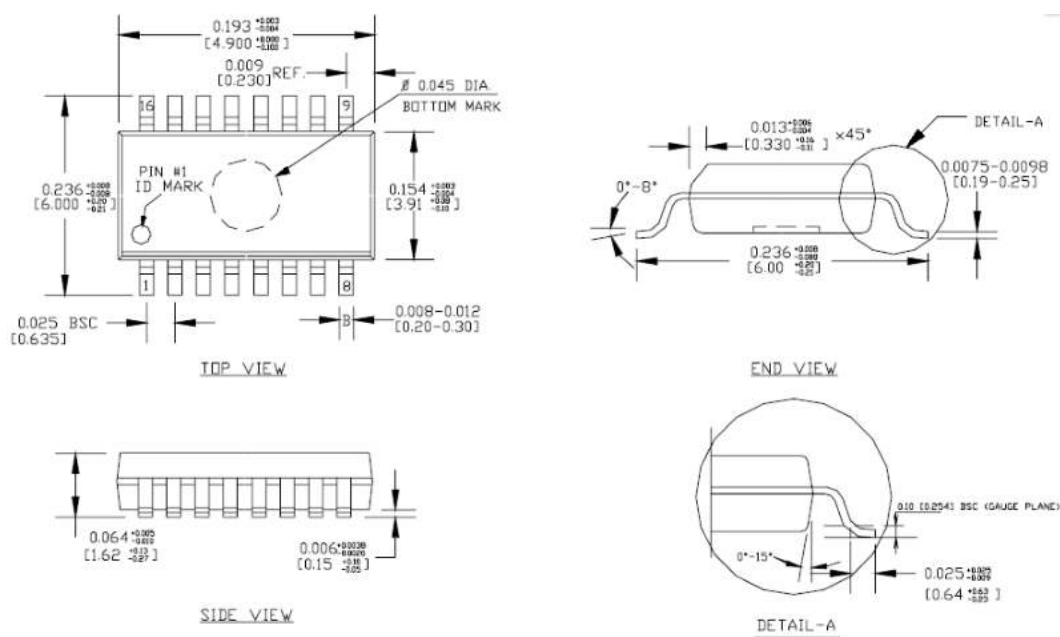


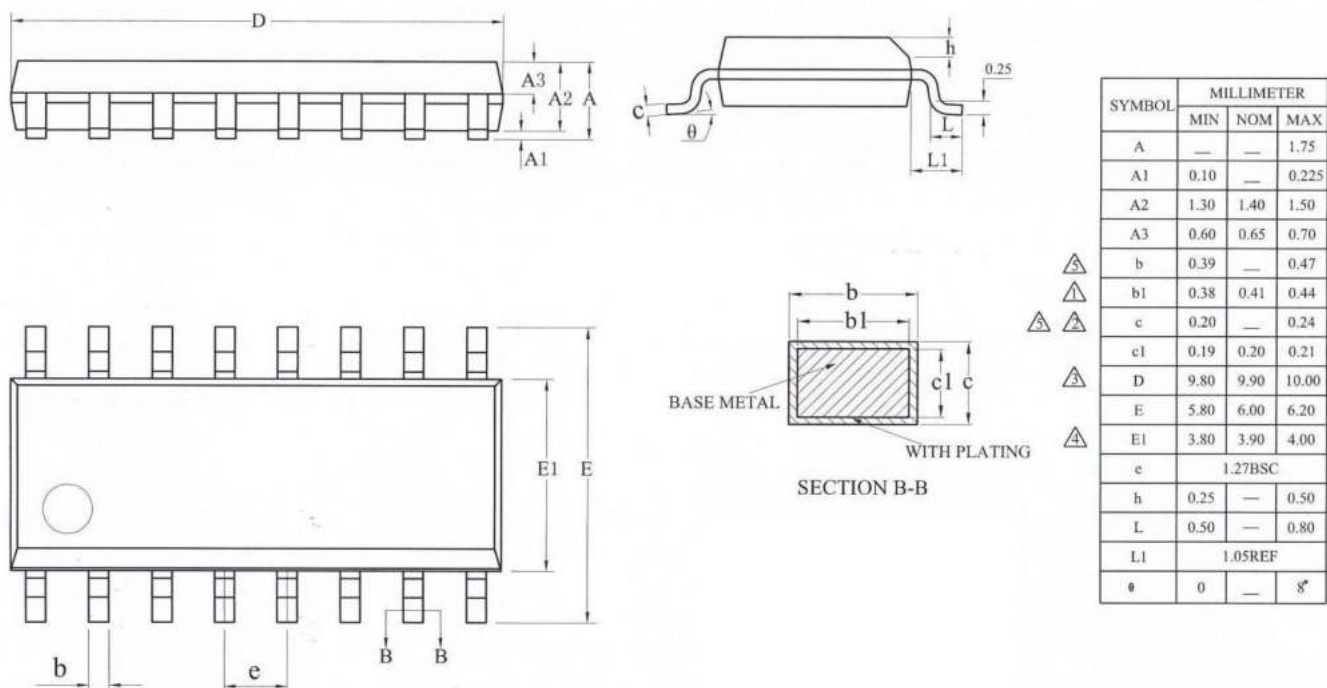
Table 2: BOM for Typical 315 MHz/433.92 MHz Applications

component	Descriptive	Component values		Unit
		315MHz	433.92MHz	
L2	±5%, 0603 Multilayer Inductor	68	39	nH
C1	±5%, 0603 NP0, 50V	1.5	1.5	pF
C2	±5%, 0603 NP0, 50V	6.8	5.6	pF
L1	±5%, 0603 Multilayer Inductor	39	27	nH
R1、R2		floating	floating	
C3	±5%, 0603 NP0, 50V	0.1	0.1	uF

5. Package Structure



SSOP16 Package Outline Drawing



SOP16 Package Dimension Drawing