

- **Ideal for 916.500 MHz Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Tape and Reel Standard per ANSI/EIA-481**
- **Moisture Sensitivity Level: 1**
- **AEC-Q200 Qualified**

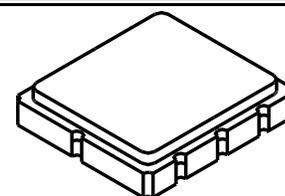
The RO3144C-1 is a true one-port, surface-acoustic-wave (SAW) resonator in a surface-mount, ceramic case. It provides reliable, fundamental-mode, quartz frequency stabilization of local oscillators operating at approximately 916.500 MHz. This SAW was designed for automotive-keyless-entry applications operating in the USA under FCC Part 15, in Canada under DoC RSS-210, and in Italy.

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	0	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +85	°C
Soldering Temperature (10 seconds / 5 cycles max.)	260	°C

RO3144C-1

**916.500 MHz
SAW
Resonator**



**SM5050-8 Case
5 X 5**

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Frequency (+25 °C) Nominal Frequency	f_C		916.350		916.650	MHz
Tolerance from 916.500 MHz	Δf_C				±150	kHz
Insertion Loss	IL			1.2	2.5	dB
Quality Factor	Unloaded Q	Q_U		6975		
	50W Loaded Q	Q_L		900		
Temperature Stability	Turnover Temperature	T_O	10	25	40	°C
	Turnover Frequency	f_O		f_C		
	Frequency Temperature Coefficient	FTC		0.032		ppm/°C ²
Frequency Aging	Absolute Value during the First Year	$ f_A $		10		ppm/yr
DC Insulation Resistance between Any Two Terminals			1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	R_M		12.7		Ω
	Motional Inductance	L_M		17.6		μH
	Motional Capacitance	C_M		1.7		fF
	Shunt Static Capacitance	C_O		2.2		pF
Test Fixture Shunt Inductance	L_{TEST}			13.5		nH
Lid Symbolization	B12, YWWS					
Standard Reel Quantity	Reel Size 7 Inch	500 Pieces / Reel				
	Reel Size 13 Inch	3000 Pieces / Reel				



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

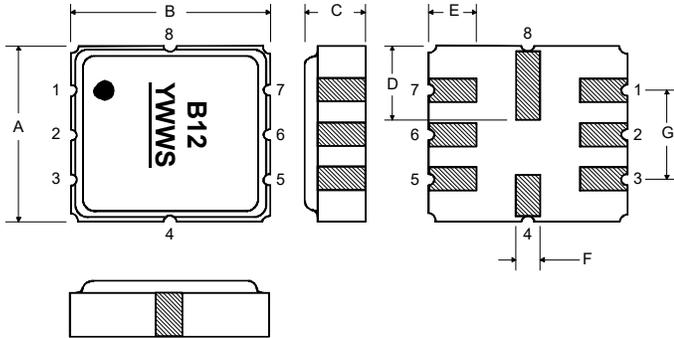
NOTES:

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

Electrical Connections

The SAW resonator is bidirectional and may be installed with either orientation. The two terminals are interchangeable and unnumbered. The callout NC indicates no internal connection. The NC pads assist with mechanical positioning and stability. External grounding of the NC pads is recommended to help reduce parasitic capacitance in the circuit.

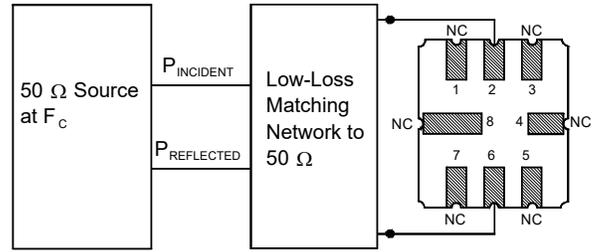
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	NC
6	Terminal
7	NC
8	NC



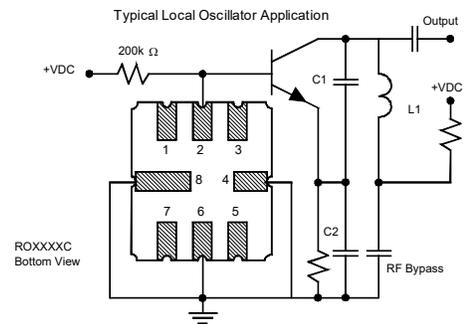
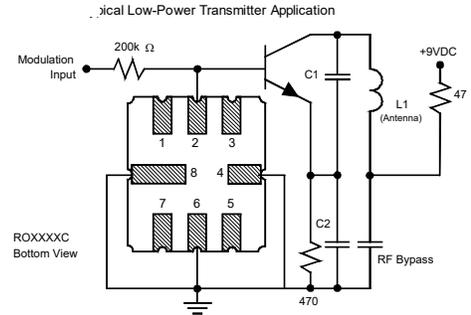
Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.8	5.0	5.2	0.189	0.197	0.205
B	4.8	5.0	5.2	0.189	0.197	0.205
C			1.7			0.067
D		2.08			0.082	
E		1.17			0.046	
F		0.64			0.025	
G	2.39	2.54	2.69	0.094	0.100	0.106

Power Test



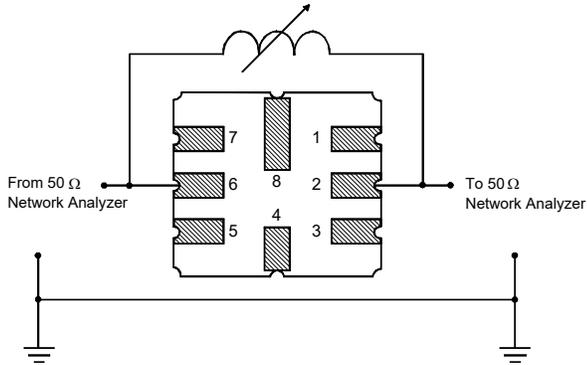
Typical Application Circuits



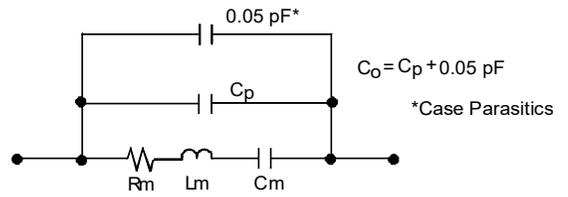
Typical Test Circuit

The test circuit inductor, L_{TEST} , is tuned to resonate with the static capacitance, C_O , at F_C .

Electrical Test

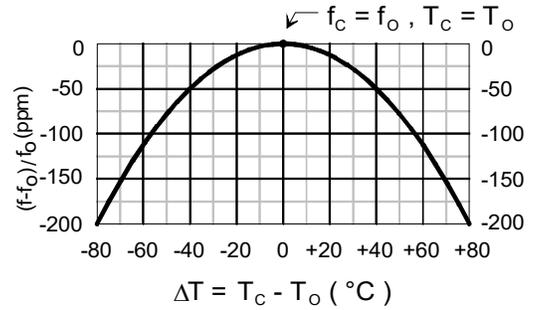


Equivalent LC Model



Temperature Characteristics

The curve shown on the right accounts for resonator contribution only and does not include LC component temperature contributions.



Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
4. Time: 5 times maximum.

