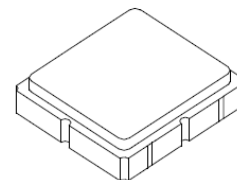


RO3321E

309.925 MHz SAW Resonator



SM3030-6

- **Designed for Low Power 304 MHz Transmitters**
- **Very Low Series Resistance**
- **Quartz Frequency Stability**
- **Miniature 3.0 x 3.0 mm Surface-mount Case**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Tape and Reel Standard per ANSI/EIA-481**
- **Moisture Sensitivity Level: 1**

The RO3321E 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 fixed-frequency transmitters operating at 309.925 MHz. This SAW is designed specifically for transmitters used in wireless security and remote control applications.

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation (See Typical Test Circuit)	0	dBm
DC Voltage Between Terminals (Observe ESD Precautions)	5	VDC
Case Temperature	-40 to +85	°C
Maximum Soldering Profile Temperature (10 s, 5 cycles maximum)	+260	°C

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Frequency, +25 °C	Nominal Frequency	f_C		309.865	309.925	309.985	MHz
	Tolerance from 309.925 MHz	Δf_C				±60	kHz
Insertion Loss		IL			1.2	2.0	dB
Quality Factor	Unloaded Q	Q_U			8847		
	50 Ω Loaded Q	Q_L			1052		
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			M Ω
RF Equivalent RLC Model	Motional Resistance	R_M			14.82		Ω
	Motional Inductance	L_M			62.05		μ H
	Motional Capacitance	C_M			4.25		fF
	Transducer Static Capacitance	C_O			3.33		pF
Test Fixture Shunt Inductance		L_{TEST}			79.2		nH
Lid Symbolization: Y - Year, WW = Week, S = Shift				B90, <u>YWWS</u>			
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.

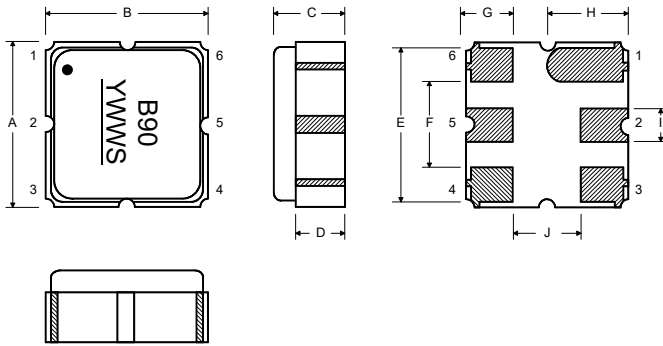
NOTES:

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

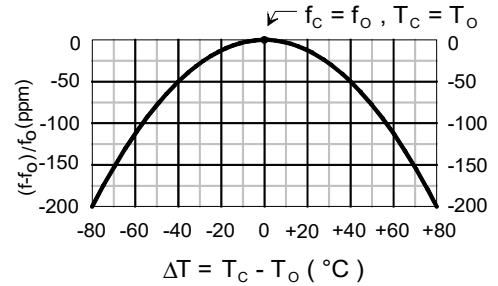
The SAW resonator is bidirectional and may be installed with either orientation. The two terminals are interchangeable and unnumbered. The callout NC indicates no internal connection. The NC pads assist with mechanical positioning and stability. External grounding of the NC pads is recommended to help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

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



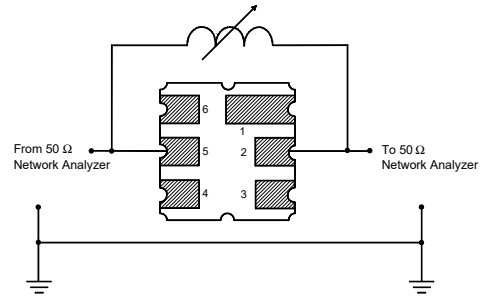
Temperature Characteristics

The curve shown accounts for resonator contribution only and does not include external LC component temperature effects.

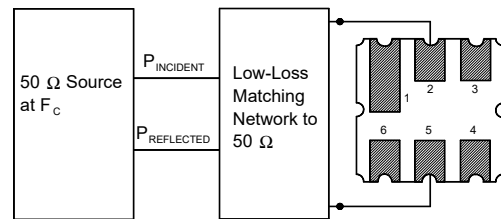


Characterization Test Circuit

Inductor L_{TEST} is tuned to resonate with the static capacitance, C_O , at F_C .



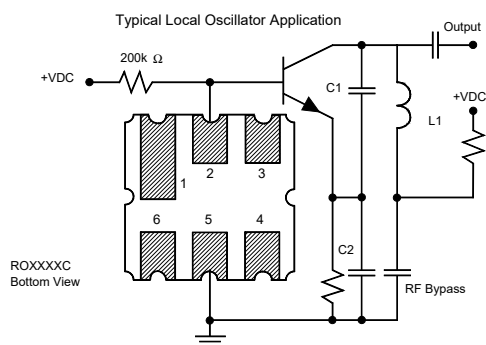
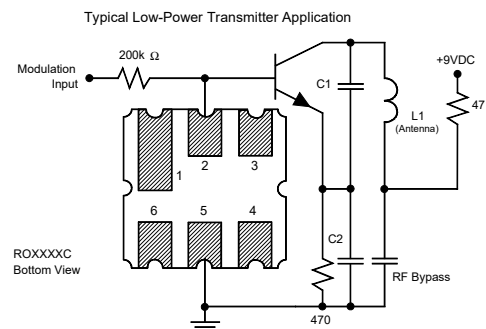
Power Dissipation Test



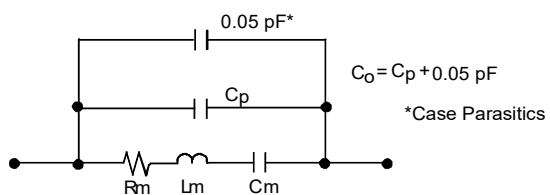
Case and Typical PCB Land Dimensions

Ref	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.00	3.13	0.113	0.118	0.123
B	2.87	3.00	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.60	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.50	1.63	0.054	0.059	0.064
I	0.47	0.60	0.73	0.019	0.024	0.029
J	1.17	1.30	1.43	0.046	0.051	0.056
K		3.20			0.126	
L		1.70			0.067	
M		1.05			0.041	
N		0.81			0.032	
O		0.38			0.015	

Example Application Circuits



Equivalent RLC Model



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.

