



**THE DATASHEET OF
RO3144E-2**



- Ideal for 916.5 MHz Remote Control and Data Telemetry 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

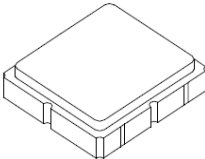
The RO3144E-2 is a true one-port, surface-acoustic-wave (SAW) resonator in a surface-mount ceramic case. It provides reliable, fundamental-mode stabilization of fixed-frequency transmitters operating at 916.5 MHz. This SAW is designed specifically for remote control and data telemetry transmitters operating in the USA under FCC Part 15 regulations and in Canada under DoC RSS-210.

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	0	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +125	°C
Operating Temperature Range	-40 to +125	°C
Soldering Temperature	260	°C

RO3144E-2

**916.5 MHz
SAW
Resonator**



**SM3030-6 Case
3.0 X 3.0**

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Frequency, +25 °C		f_C		916.400		916.600	MHz
Tolerance from 916.5 MHz						±100	
		Δf_C					
Insertion Loss				IL			1.2
Quality Factor	Unloaded Q	Q_U			6400		
	50 Ω Loaded Q	Q_L			780		
Temperature Stability	Turnover Temperature	T_O		15	25	40	°C
	Turnover Frequency	f_O			f_C		MHz
	Frequency Temperature Coefficient	FTC			0.032		ppm/°C ²
Frequency Aging	Absolute Value during the First Year	fA			10		ppm
DC Insulation Resistance between Any Two Terminals				1.0			M Ω
RF Equivalent RLC Model	Motional Resistance	R_M			14		Ω
	Motional Inductance	L_M			15.4		μ H
	Motional Capacitance	C_M			1.9		fF
	Transducer Static Capacitance	C_O			1.9		pF
Test Fixture Shunt Inductance		L_{TEST}			16		nH
Lid Symbolization: Y = Year, WW = Week, S = Shift			770, 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.**

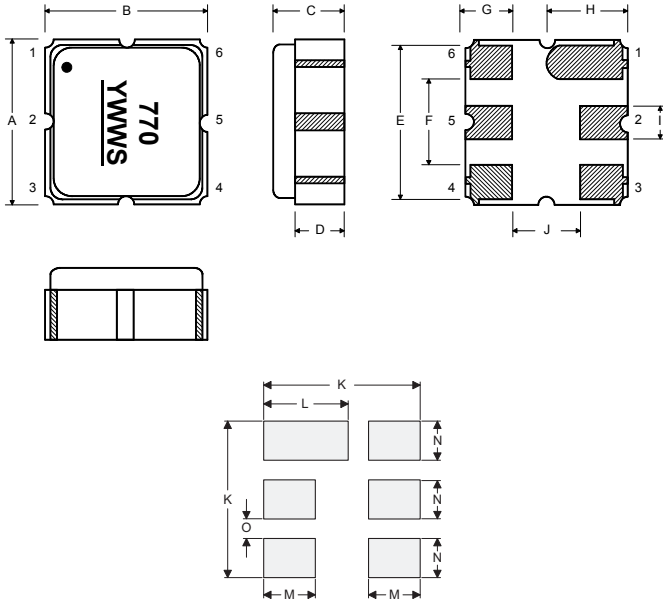
NOTES:

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.

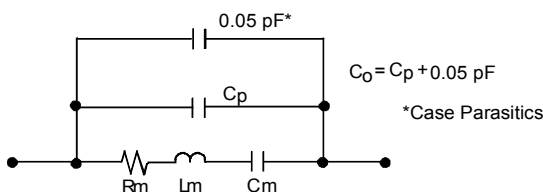
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	Terminal
6	NC



Case and Typical PCB Land Dimensions

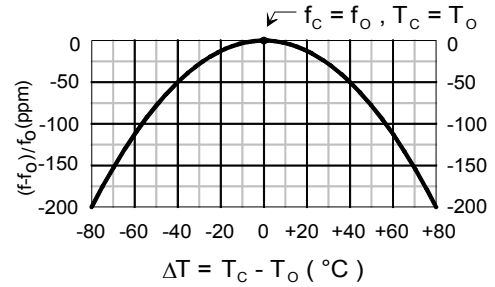
Ref	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.00	3.13	0.113	0.118	0.123
B	2.87	3.00	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.60	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.50	1.63	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	

Equivalent RLC Model



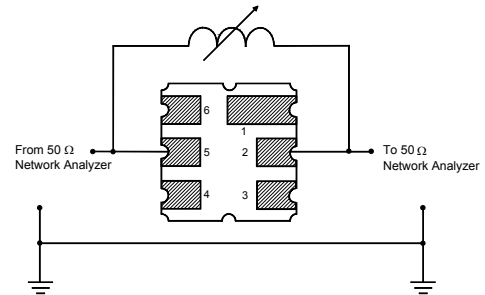
Temperature Characteristics

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

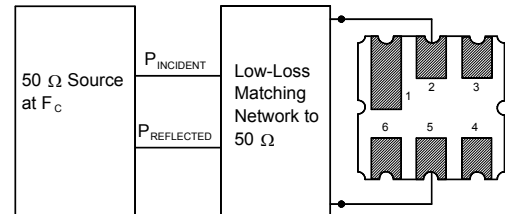


Characterization Test Circuit

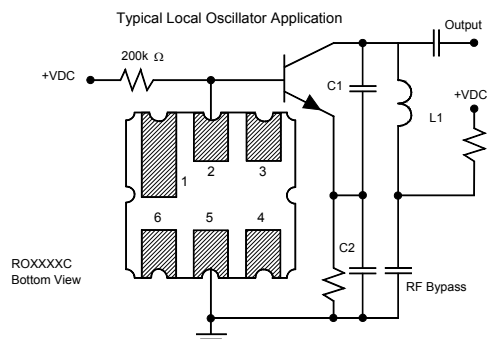
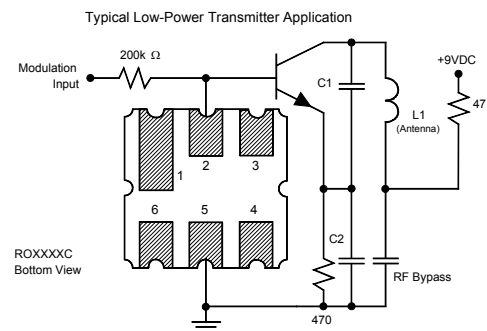
Inductor L_{TEST} is tuned to resonate with the static capacitance, C_0 , at F_c .



Power Dissipation Test

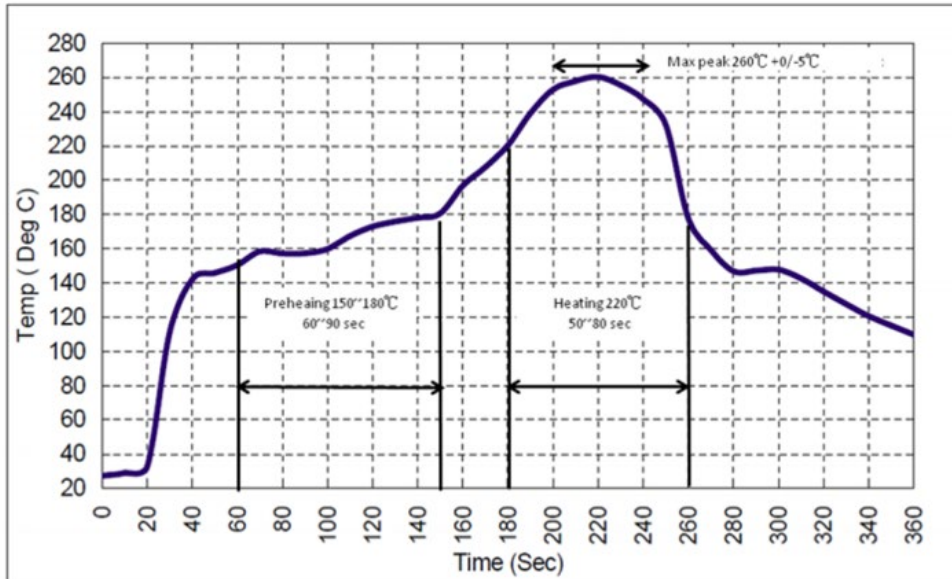


Example Application Circuits



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.



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