



AEC-Q200

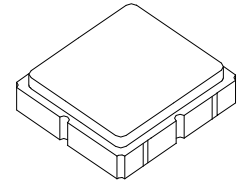
This component was always RoHS compliant from the first date of manufacture.

- 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



**RO3144D-1**

**916.5 MHz  
SAW  
Resonator**



**SM3838-6 Case  
3.8 X 3.8**

The RO3144D-1 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 resonator is designed specifically for use in 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	10	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +85	°C
Soldering Temperature (10 seconds / 5 cycles maximum)	260	°C

**Electrical Characteristics**

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units						
Frequency, +25 °C	f <sub>C</sub>		916.350		916.650	MHz						
Tolerance from 916.5 MHz					±150		kHz					
	Δf <sub>C</sub>											
Insertion Loss			IL			1.20	2.5	dB				
Quality Factor	Unloaded Q	Q <sub>U</sub>										
							50Ω Loaded Q	Q <sub>L</sub>		700		
Temperature Stability	Turnover Temperature	T <sub>O</sub>	10	25	40	°C						
							Turnover Frequency	f <sub>O</sub>		fc		MHz
Frequency Aging	Absolute Value during the First Year	fA		10		ppm						
DC Insulation Resistance between Any Two Terminals			1.0			MΩ						
RF Equivalent RLC Model	Motional Resistance	R <sub>M</sub>				Ω						
							Motional Inductance	L <sub>M</sub>		11.8		μH
							Motional Capacitance	C <sub>M</sub>		14		fF
							Transducer Static Capacitance	C <sub>O</sub>		2.1		pF
Test Fixture Shunt Inductance		L <sub>TEST</sub>		14.3		nH						
Lid Symbolization			767, 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.**

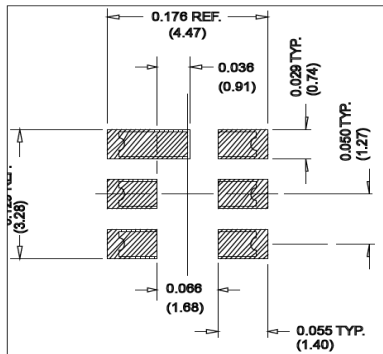
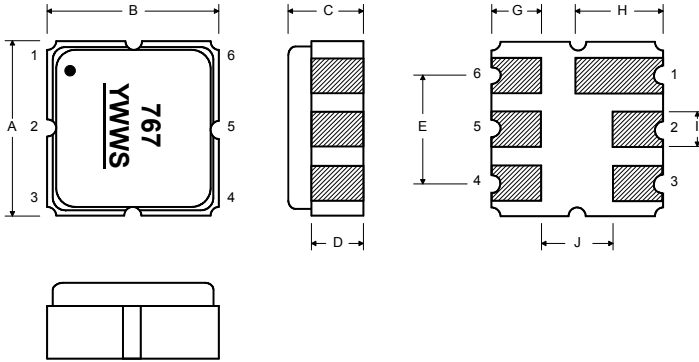
**NOTES:**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.

## 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.

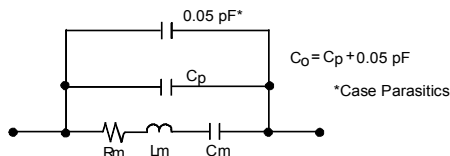
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	NC
6	Terminal
7	NC
8	NC



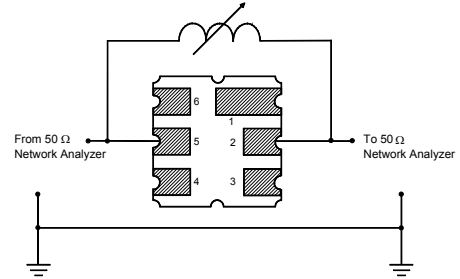
## Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	3.60	3.80	4.00	0.142	0.150	0.157
B	3.60	3.80	4.00	0.142	0.150	0.157
C	1.10	1.30	1.50	0.043	0.050	0.060
D	0.95	1.10	1.25	0.037	0.043	0.049
E	2.39	2.54	2.69	0.094	0.100	0.106
G	0.90	1.00	1.10	0.035	0.040	0.043
H	1.90	2.00	2.10	0.748	0.079	0.083
I	0.50	0.60	0.70	0.020	0.024	0.028
J	1.70	1.80	1.90	0.067	0.071	0.075

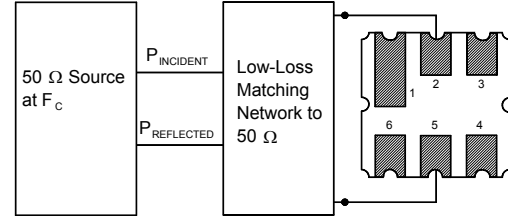
## Equivalent RLC Model



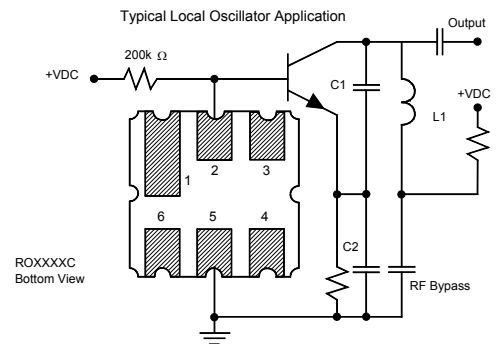
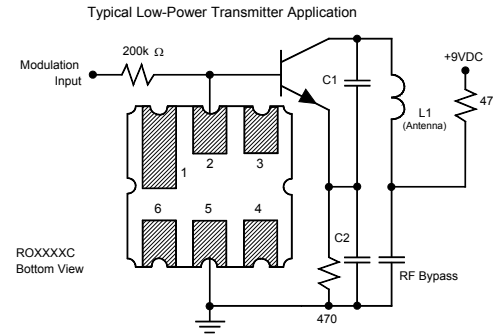
## Parameter Test Circuit



## Power Test Circuit

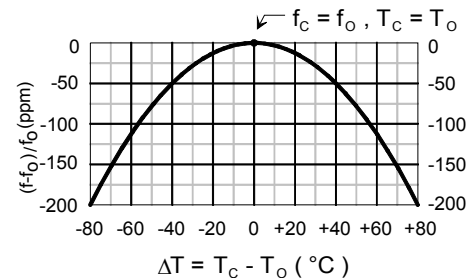


## Example Application Circuits



## 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.

