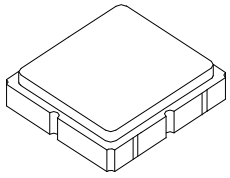
AEC-Q200
This component was always RoHS compliant from the first date of manufacture.

RO3164E-3

868.35 MHz SAW Resonator

- ***Designed for European 868.35 MHz Transmitters***
- ***Very Low Series Resistance***
- ***Quartz Stability***
- ***Complies with Directive 2002/95/EC (RoHS)***
- ***Tape and Reel Standard per ANSI/EIA-481***



SM3030-6 Case
3.0 X 3.0

The RO3164E-3 is a one-port surface-acoustic-wave (SAW) resonator packaged in a surface-mount ceramic case. It provides reliable, fundamental-mode quartz frequency stabilization of fixed-frequency transmitters operating at 868.35 MHz. This SAW is designed specifically for remote-control and wireless security transmitters operating under ETSI EN 300 220-2.

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

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Nominal Frequency, +25 °C		f_C		868.275		868.425	MHz
Tolerance from 868.35 MHz		Δf_C				±75	kHz
Insertion Loss		IL			1.3	2.0	dB
Quality Factor	Unloaded Q	Q_U			27000		
	50 Ω Loaded Q	Q_L			4000		
Temperature Stability	Turnover Temperature	T_O		10	25	40	°C
	Turnover Frequency	f_O			f_C		kHz
	Frequency Temperature Coefficient	FTC			0.032		ppm/°C^2
Frequency Aging	Absolute Value during the First Year	|fA|			<±10		ppm/yr
DC Insulation Resistance between Any Two Terminals				1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	R_M			16		Ω
	Motional Inductance	L_M			20		µH
	Motional Capacitance	C_M			1.7		fF
	Shunt Static Capacitance	C_O			1.6		pF
Test Fixture Shunt Inductance		L_{TEST}			20		nH
Lid Symbolization (in addition to Lot and/or Date Codes)		934, YYWW					
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.

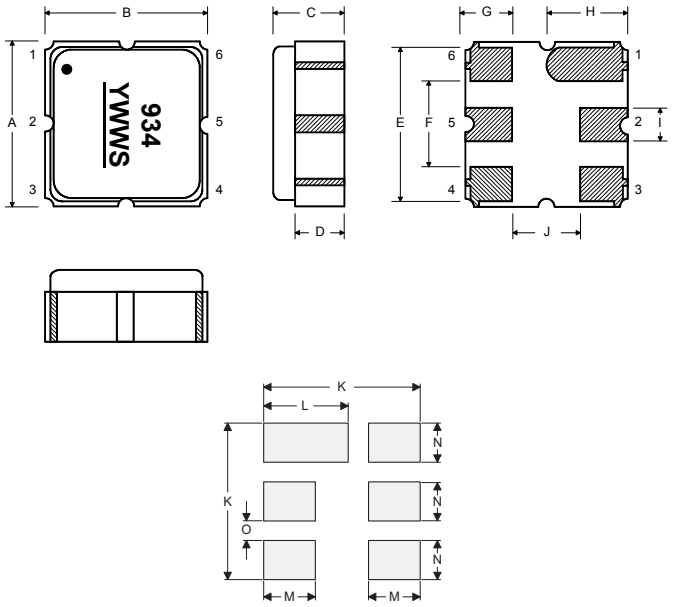
NOTES:

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.

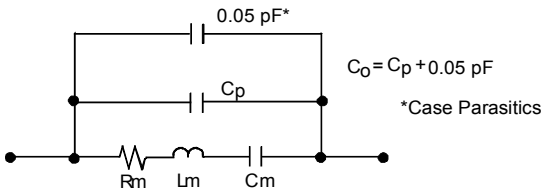
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	Terminal
6	NC



Case and Typical PCB Land Dimensions

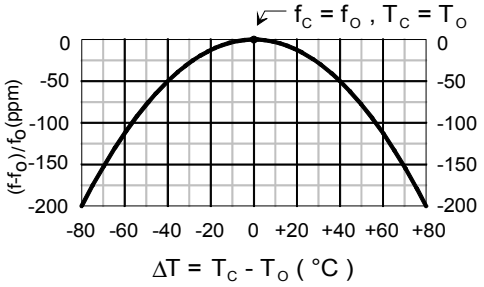
Ref	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.00	3.13	0.113	0.118	0.123
B	2.87	3.00	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.60	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.50	1.63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



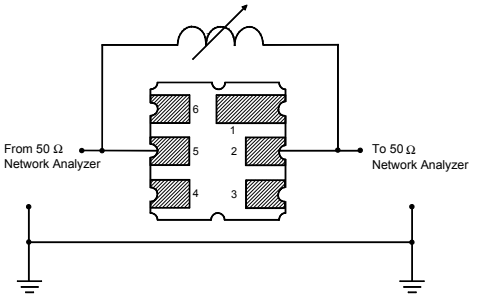
Temperature Characteristics

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

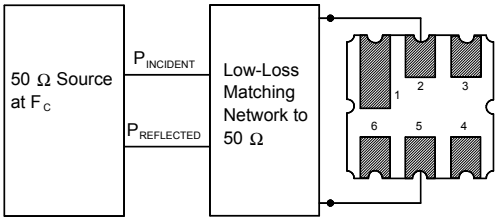


Characterization Test Circuit

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

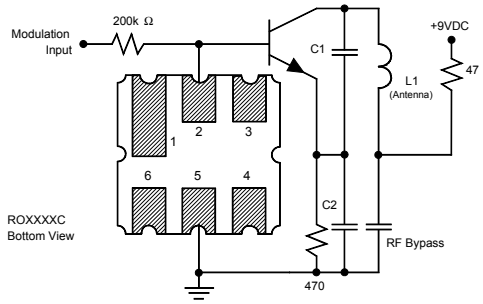


Power Dissipation Test

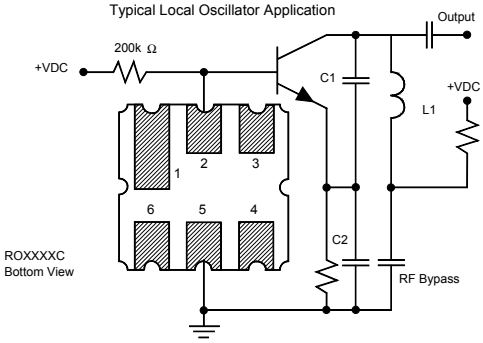


Example Application Circuits

Typical Low-Power Transmitter Application

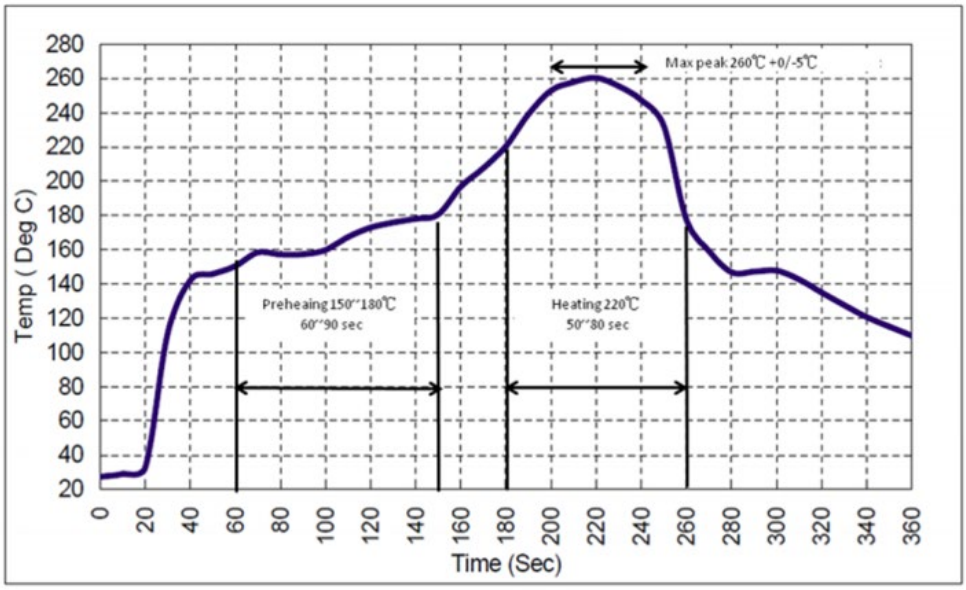


Typical Local Oscillator Application



Recommended Reflow Profile

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



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