



AEC-Q200

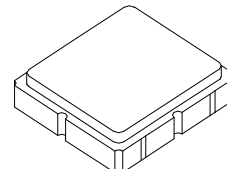
This component was always RoHS compliant from the first date of manufacture.

- **Designed for European 433.92 MHz Remote Control and Security Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Tape and Reel Standard per ANSI/EIA-481**



RO3101E-1

**433.92 MHz
SAW
Resonator**



**SM3030-6 Case
3.0 X 3.0**

The RO3101E-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 fixed-frequency transmitters operating at 433.92 MHz. This SAW is designed specifically for remote control and wireless security transmitters operating in Europe under ETSI I-ETS 300 220 regulations.

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	0	dBm
DC voltage	12	VDC
Storage Temperature Range	-40 to +125	°C
Operating Temperature Range	-40 to +105	°C
Soldering Temperature (10 seconds / 5 cycles maximum)	260	°C

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency, +25 °C Absolute Frequency Tolerance from 433.920 MHz	f_C		433.870		433.970	MHz
	Δf_C				± 50	kHz
Insertion Loss	IL			1.4	2.2	dB
Quality Factor Unloaded Q 50 Ω Loaded Q	Q_U			8280		
	Q_L			1228		
Temperature Stability Turnover Temperature Turnover Frequency Frequency Temperature Coefficient	T_O		10	25	35	°C
	f_O			f_C		
	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 Motional Inductance Motional Capacitance Shunt Static Capacitance	R_M			17.5		Ω
	L_M			53.5		μH
	C_M			2.5		fF
	C_O			2.5		pF
Test Fixture Shunt Inductance	L_{TEST}			53.2		nH
Lid Symbolization (in addition to Lot and/or Date Codes)	750, 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.

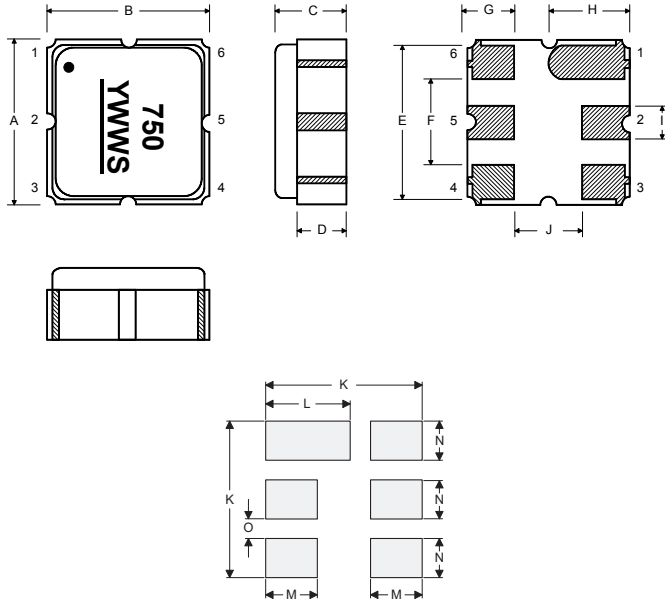
NOTES:

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.

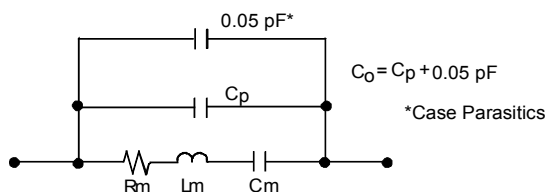
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	Terminal
6	NC



Case and Typical PCB Land Dimensions

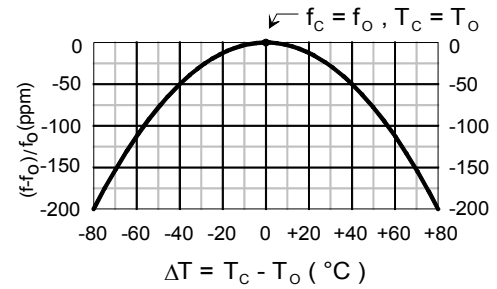
Ref	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.00	3.13	0.113	0.118	0.123
B	2.87	3.00	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.60	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.50	1.63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



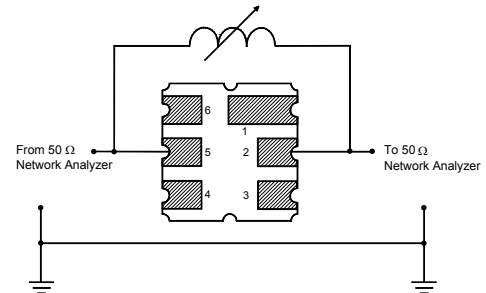
Temperature Characteristics

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

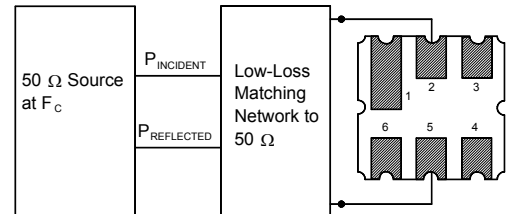


Characterization Test Circuit

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

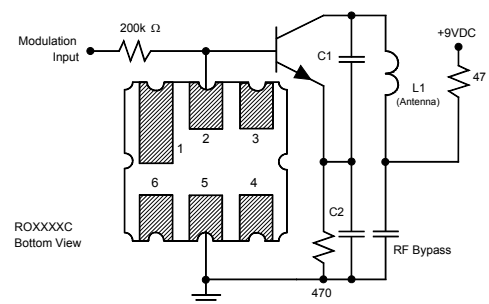


Power Dissipation Test

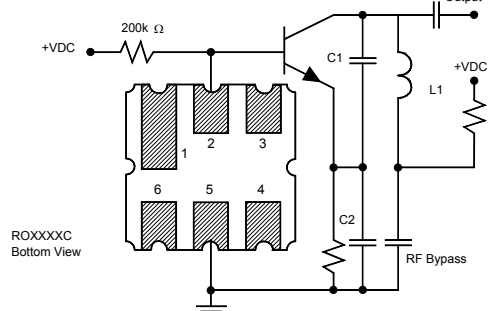


Example Application Circuits

Typical Low-Power Transmitter Application



Typical Local Oscillator Application



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.

