



- Designed for 303.825 MHz Transmitters
- · Very Low Series Resistance
- · Quartz Stability
- Surface-mount Ceramic Case
- Complies with Directive 2002/95/EC
- Tape and Reel Standard per ANSI/EIA-481
- Moisture Sensitivity Level: 1
- AEC-Q200 Qualified

The RO3104A 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 303.825 MHz. The RO3104A is designed specifically for remote-control and wireless security applications.

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation (See Typical Test Circuit)	0	dBm
DC Voltage Between Terminals (Observe ESD Precautions)	±30	VDC
Case Temperature	-40 to +85	°C
Soldering Temperature (10 seconds / 5 cycles maximum)	260	°C

RO3104A

303.825 MHz SAW Resonator



Electrical Characteristics

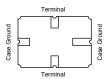
Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Frequency, +25 °C	Nominal Frequency	f _C		303.750		303.900	MHz
	Tolerance from 303.825 MHz	Δf_{C}				±75	kHz
Insertion Loss		IL			1.5	2.0	dB
Quality Factor	Unloaded Q	Q _U			11,000		
	50 Ω Loaded Q	Q_L			1,460		
Temperature Stability	Turnover Temperature	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			MΩ
RF Equivalent RLC Model	Motional Resistance	R_{M}			15.4		Ω
	Motional Inductance	L _M			88.4		μH
	Motional Capacitance	C _M			3.1		fF
	Transducer Static Capacitance	Co			3.3		pF
Test Fixture Shunt Inductane		L _{TEST}			82		nH
Lid Symbolization: YY = Year, WW = Week, S = Shift)		662, <u>YYWWS</u>					

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.

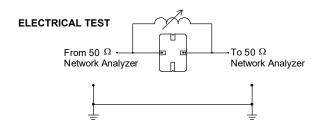
Electrical Connections

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.

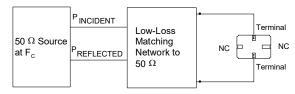


Typical Test Circuit

The test circuit inductor, L_{TEST} , is tuned to resonate with the static capacitance, C_{O} , at F_{C} .



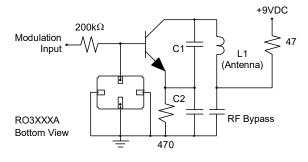
POWER TEST



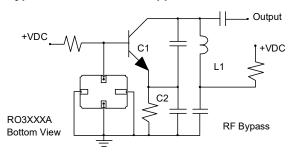
CW RF Power Dissipation = P INCIDENT - P REFLECTED

Typical Application Circuits

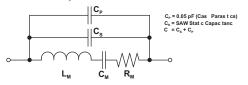
Typical Low-Power Transmitter Application



Typical Local Oscillator Applications

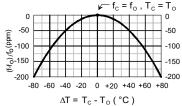


Equivalent RLC Model

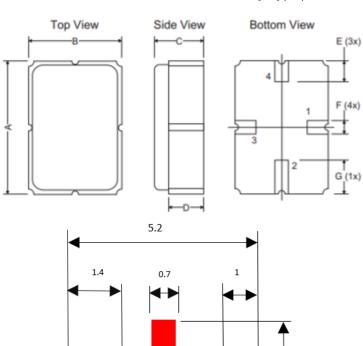


Temperature Characteristics

The curve shown on the right accounts for resonator contribution only and does not include LC component temperature contributions.



Case



PCB Footprint

Dimensions	Millimeters			Inches		
Dillielisions	Min	Nom	Max	Min	Nom	Max
Α	4.87	5.00	5.13	0.191	0.196	0.201
В	3.37	3.50	3.63	0.132	0.137	0.142
С	1.45	1.53	1.60	0.057	0.060	0.062
D	1.35	1.43	1.50	0.040	0.057	0.059
E	0.67	0.80	0.93	0.026	0.031	0.036
F	0.37	0.50	0.63	0.014	0.019	0.024
G	1.07	1.20	1.33	0.042	0.047	0.052

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.

