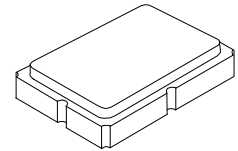


RO3101A-12

**433.92 MHz
SAW
Resonator**



SM5035-4

- **Ideal for European 433.92 MHz Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Surface-Mount Ceramic Case**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Moisture Sensitivity Level: 1**
- **AEC-Q200 Qualified**

The RO3101A-12 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 and in Germany under FTZ 17 TR 2100.

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 max.)	260	°C

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency (+25 °C) Absolute Frequency	f_C		433.870		433.970	MHz
	Δf_C				±50	kHz
Insertion Loss	IL			1.5	1.7	dB
Quality Factor Unloaded Q	Q_U			9000		
	Q_L	50 Ω Loaded Q		1458		
Temperature Stability Turnover Temperature	T_O		10	25	40	°C
	f_O	Turnover Frequency		f_C		
	FTC	Frequency Temperature Coefficient		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	R_M			19.4		Ω
	L_M	Motional Inductance		63.8		μ H
	C_M	Motional Capacitance		2.11		fF
	C_O	Shunt Static Capacitance		2.4		pF
Test Fixture Shunt Inductance	L_{TEST}			55.1		nH
Lid Symbolization (Y = Year, WW = Week, S = Shift)			791, YWWS			

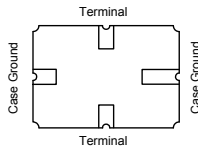
 **CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

NOTES:

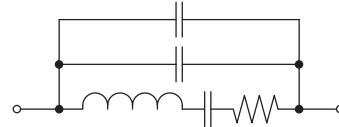
1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

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.

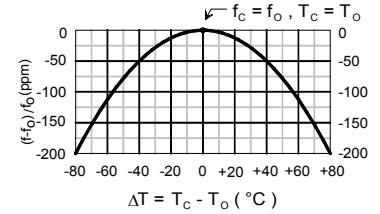


Equivalent RLC Model

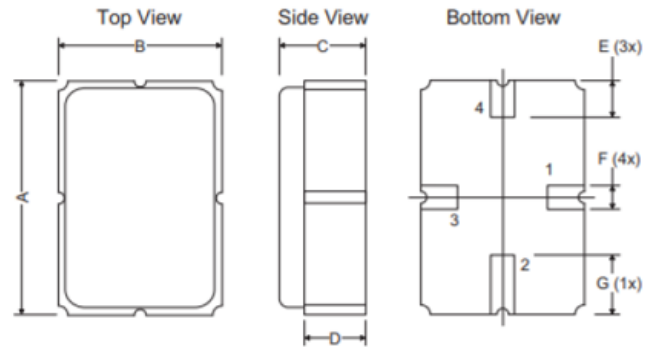


Temperature Characteristics

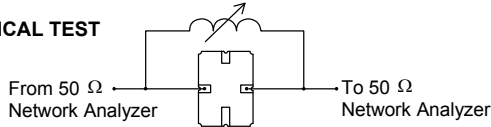
The curve shown on the right accounts for resonator contribution only and does not include LC component temperature contributions.



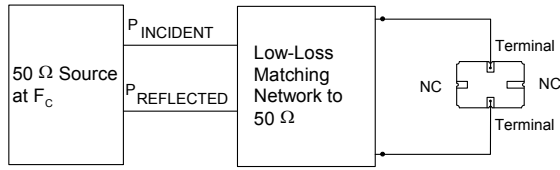
Case



ELECTRICAL TEST



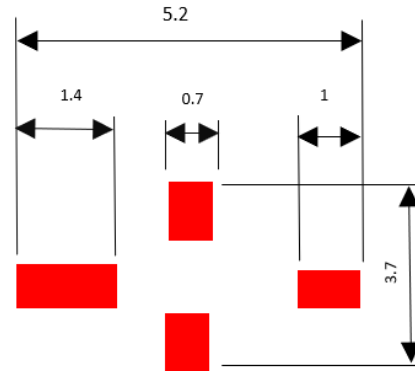
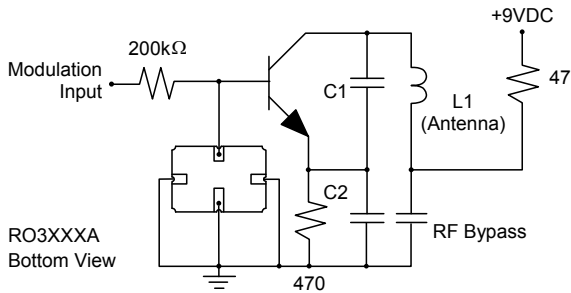
POWER TEST



$$CW \text{ RF Power Dissipation} = P_{INCIDENT} - P_{REFLECTED}$$

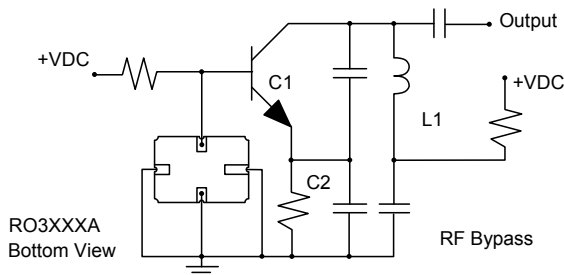
Typical Application Circuits

Typical Low-Power Transmitter Application



PCB Footprint

Typical Local Oscillator Applications



Dimensions	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.87	5.00	5.13	0.191	0.196	0.201
B	3.37	3.50	3.63	0.132	0.137	0.142
C	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.

