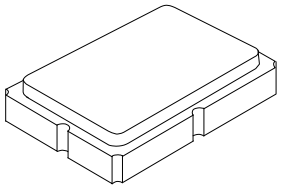
RFMi
A BRAND OF AKOUSTIS

RoHS compliant

RO3073A-16

315.050 MHz SAW Resonator



SM5035-4

- ***Designed for 315.050 MHz Transmitters***
- ***Very Low Series Resistance***
- ***Quartz Stability***
- ***Surface-mount Ceramic Case***
- ***Complies with Directive 2002/95/EC (RoHS)***
- ***Tape and Reel Standard per ANSI/EIA-481***
- ***Moisture Sensitivity Level: 1***
- ***AEC-Q200 Qualified***

The RO3073A-16 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 315.050 MHz. This SAW is designed specifically for remote control and wireless security transmitters.

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

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency, +25 °C	Absolute Frequency Tolerance	f_C		314.950		315.130	MHz
	from 315.050 MHz	Δf_C		-100		+80	kHz
Insertion Loss		IL			1.5	2.2	dB
Quality Factor	Unloaded Q	Q_U			8000		
	50 Ω Loaded Q	Q_L			1300		
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			19.4		Ω
	Motional Inductance	L_M			78.4		µH
	Motional Capacitance	C_M			3.3		fF
	Shunt Static Capacitance	C_O			4.1		pF
Test Fixture Shunt Inductance		L_{TEST}			64.2		nH
Lid Symbolization (YY = year, WW = week, S = shift)		783, YYWWS					

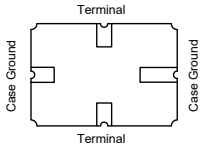
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

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.

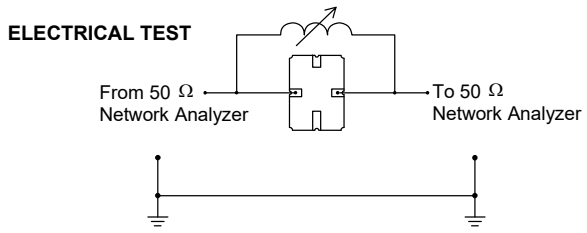
Electrical Connections

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.

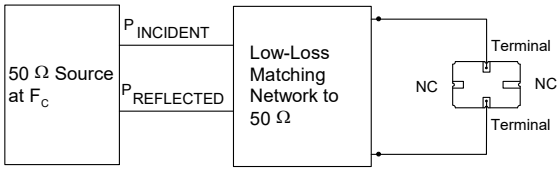


Typical Test Circuit

The test circuit inductor, L_{TEST}, is tuned to resonate with the static capacitance, C_O, at F_C.



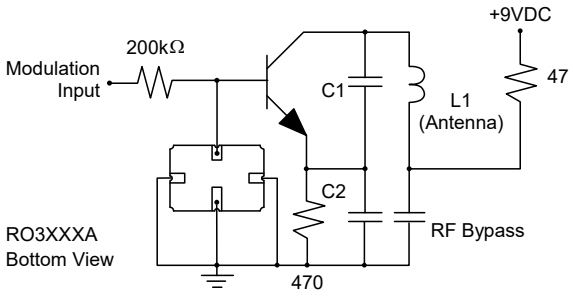
POWER TEST



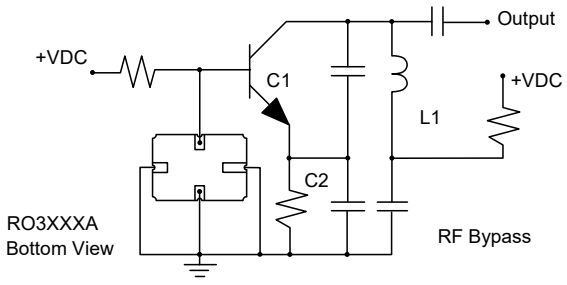
CW RF Power Dissipation = $P_{INCIDENT} - P_{REFLECTED}$

Typical Application Circuits

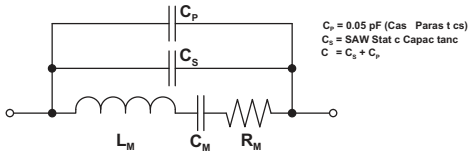
Typical Low-Power Transmitter Application



Typical Local Oscillator Applications

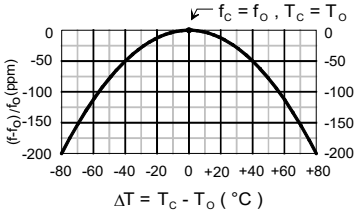


Equivalent RLC Model

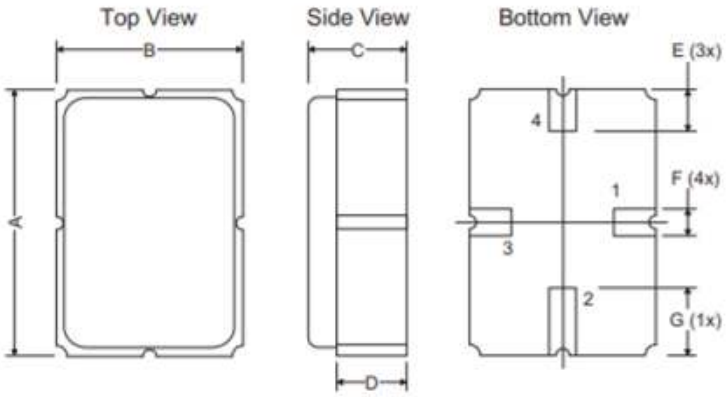


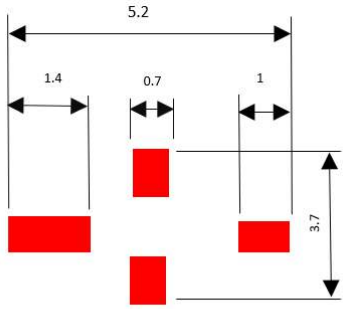
Temperature Characteristics

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		
	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 150~180ºC 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.