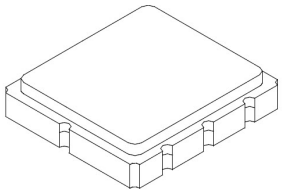
RFMi
A BRAND OF AKOUSTIS

RoHS compliant

RO2131D

314.370 MHz SAW Resonator

- ***Ideal for 314.370 MHz Automotive Keyless Entry Transmitters***
- ***Very Low Series Resistance***
- ***Quartz Stability***
- ***Complies with Directive 2002/95/EC (RoHS)***
- ***Tape and Reel Standard per ANSI/EIA-481***
- ***Moisture Sensitivity Level: 1***



SM3838-6 Case

The RO2131D 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 local oscillators operating at approximately 314.370 MHz. This SAW was designed for AM transmitters in automotive keyless entry applications operating in the USA under FCC Part 15 and in Canada under DoC RSS-210.

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	0	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +85	°C
Soldering Temperature, 10 seconds / 5 cycles maximum	260	°C

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Frequency, +25 °C	Absolute Frequency	f_C		314.320		314.420	MHz
	Tolerance from 314.370 MHz	Δf_C				±50	kHz
Insertion Loss		IL			1.6	2.5	dB
Quality Factor	Unloaded Q	Q_U			6516		
	50 Ω Loaded Q	Q_L			1066		
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			20.00		Ω
	Motional Inductance	L_M			65.00		µH
	Motional Capacitance	C_M			4.00		fF
	Shunt Static Capacitance	C_O		2.0	3.6		pF
Test Fixture Shunt Inductance		L_{TEST}			64.6		nH
Lid Symbolization		440, 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.
3. RoHS compliant from the first date of manufacture.

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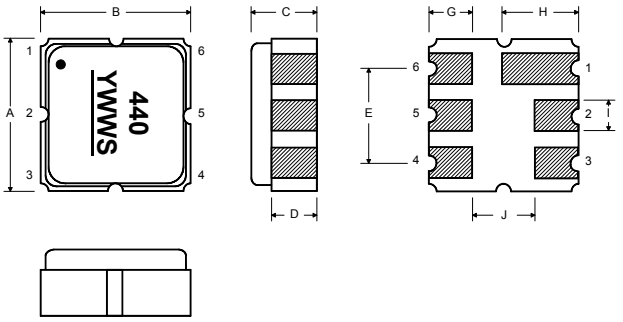
Electrical Connections

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.

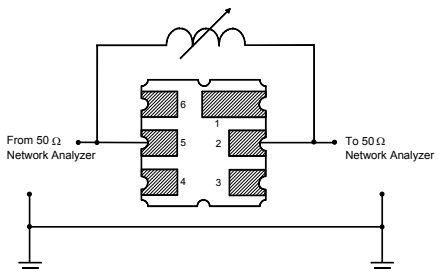
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	Terminal
6	NC



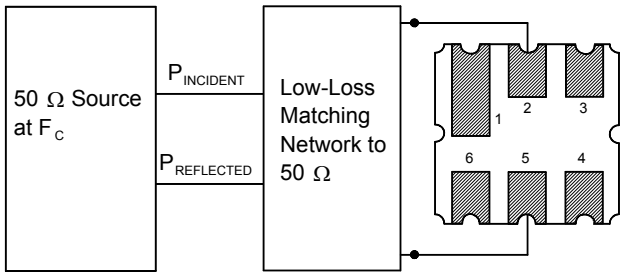
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	3.60	3.80	4.0	0.14	0.15	0.16
B	3.60	3.80	4.0	0.14	0.15	0.16
C	1.00	1.20	1.40	0.04	0.05	0.055
D	0.95	1.10	1.25	0.037	0.043	0.05
E	2.39	2.54	2.69	0.090	0.10	0.110
G	0.90	1.0	1.10	0.035	0.04	0.043
H	1.90	2.0	2.10	0.75	0.08	0.83
I	0.50	0.6	0.70	0.020	0.024	0.028
J	1.70	1.8	1.90	0.067	0.07	0.075

Typical Test Circuit

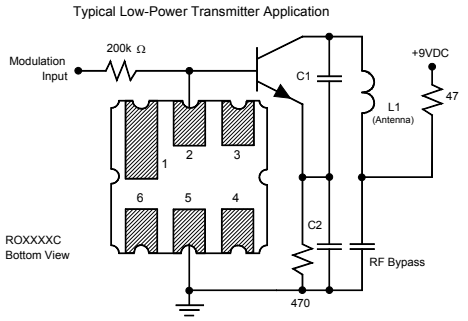
The test circuit inductor, L_{TEST}, is tuned to resonate with the static capacitance, C_O, at F_C.

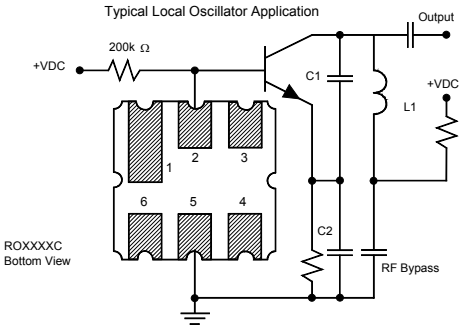


Power Test

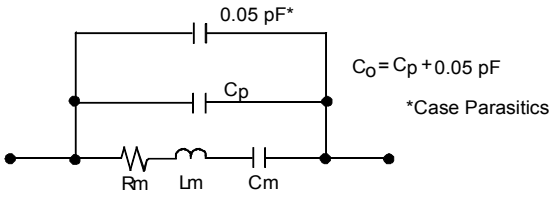


Typical Application Circuits



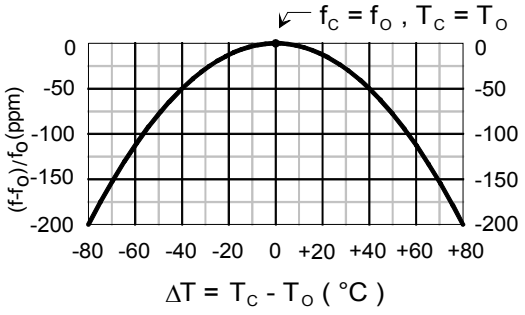


Equivalent RLC Model



Temperature Characteristics

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



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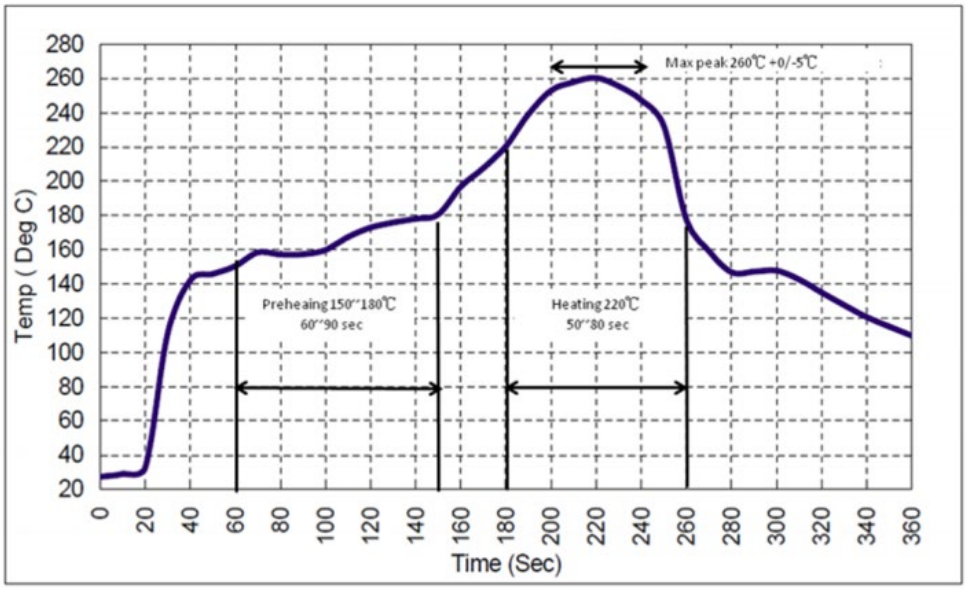
Recommended Reflow Profile

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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