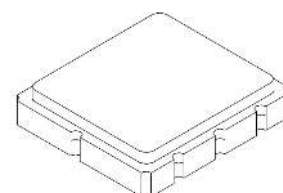


# RO2131D

## 314.370 MHz SAW Resonator



SM3838-6 Case

- **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**

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	$\Delta f_C$				±50	kHz
Insertion Loss		IL			1.6	2.5	dB
Quality Factor	Unloaded Q	$Q_U$			6516		
	50 $\Omega$ 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 <sup>2</sup>
Frequency Aging	Absolute Value during the First Year	$ f_A $			10		ppm/yr
DC Insulation Resistance between Any Two Terminals				1.0			M $\Omega$
RF Equivalent RLC Model	Motional Resistance	$R_M$			20.00		$\Omega$
	Motional Inductance	$L_M$			65.00		$\mu$ H
	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.**

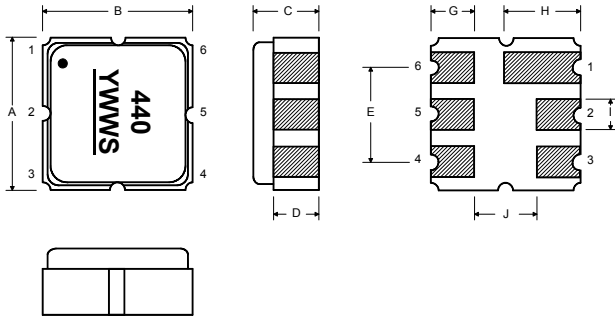
### NOTES:

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.

### Electrical Connections

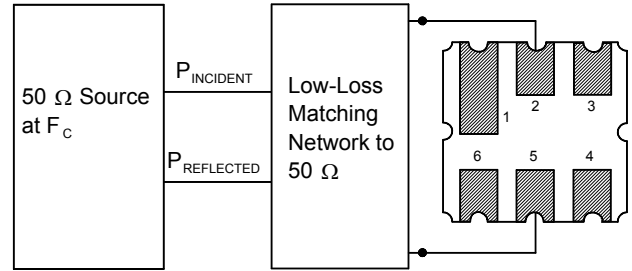
The SAW resonator is bidirectional and may be installed with either orientation. The two terminals are interchangeable and unnumbered. The callout NC indicates no internal connection. The NC pads assist with mechanical positioning and stability. External grounding of the NC pads is recommended to help reduce parasitic capacitance in the circuit.

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

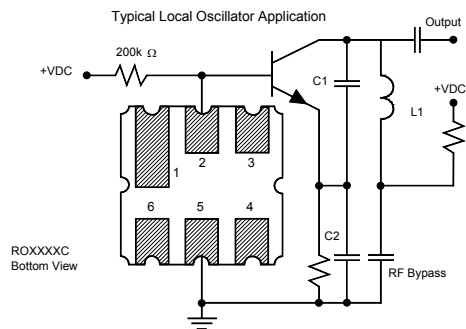
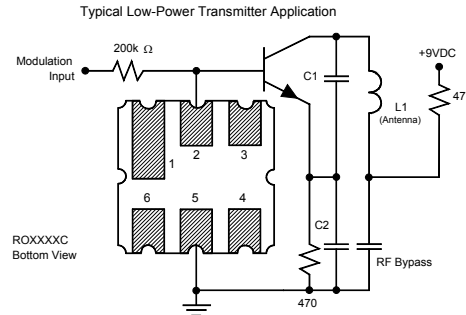


Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	3.60	3.80	4.0	0.14	0.15	0.16
B	3.60	3.80	4.0	0.14	0.15	0.16
C	1.00	1.20	1.40	0.04	0.05	0.055
D	0.95	1.10	1.25	0.037	0.043	0.05
E	2.39	2.54	2.69	0.090	0.10	0.110
G	0.90	1.0	1.10	0.035	0.04	0.043
H	1.90	2.0	2.10	0.75	0.08	0.83
I	0.50	0.6	0.70	0.020	0.024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

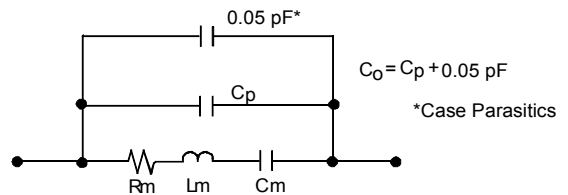
### Power Test



### Typical Application Circuits

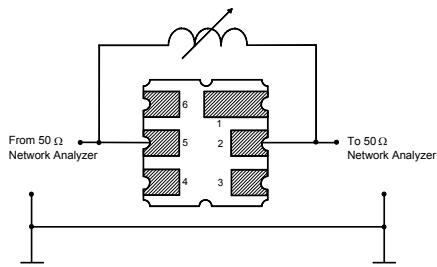


### Equivalent RLC Model



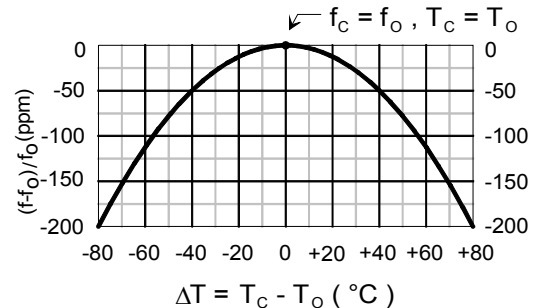
### Typical Test Circuit

The test circuit inductor,  $L_{TEST}$ , is tuned to resonate with the static capacitance,  $C_0$ , at  $F_C$ .



### Temperature Characteristics

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



## 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.

