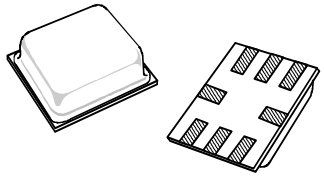
RO2180B

433.92 MHz SAW Resonator

- ***Very Low Series Resistance***
- ***Quartz Stability***
- ***Surface-Mount, Solder Seal Package with 4.8 x 5.2 mm Footprint***

The RO2180B is a true one-port, surface-acoustic-wave (SAW) resonator in a surface-mount ceramic case. It provides reliable, fundamental-mode, quartz frequency stabilization.



SM5248-8 Case

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation	+0	dBm
DC Voltage Between Terminals (Observe ESD Precautions)	±30	VDC
Case Temperature	-40 to +85	°C
Soldering Temperature	+250	°C

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Frequency (+25 °C)	Nominal Frequency	f_C	2, 3, 4, 5	433.845	433.92	433.995	MHz
	Tolerance from 433.92 MHz	Df_C				±75	kHz
Insertion Loss		IL	2, 5, 6		2		dB
Quality Factor	Unloaded Q	Q_U	5, 6, 7		11,535		
	50 Ω Loaded Q	Q_L			1,811		
Temperature Stability	Turnover Temperature	T_O	6, 7, 8		25		°C
	Turnover Frequency	f_O			$f_{C+}16$		
	Frequency Temperature Coefficient	FTC			0.032		ppm/°C[2]
Frequency Aging	Absolute Value during the First Year	|fA|	1		≤10		ppm/yr
DC Insulation Resistance between Any Two Terminals			5	1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	R_M	5, 6, 7, 9		18.63		Ω
	Motional Inductance	L_M			78.79		µH
	Motional Capacitance	C_M			1.71		fF
	Shunt Static Capacitance	C_O	5, 6, 7, 9		1.82		pF
Test Fixture Shunt Inductance		L_{TEST}	2, 7		63.13		nH
Lid Symbolization (in Addition to Lot and/or Date Code)		295					

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

1. Frequency aging is the change in f_C with time and is specified at +65°C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
2. The frequency, f_C, is measured at the minimum insertion loss point, IL_{MIN}, with the resonator in the 50 Ω test system (VSWR ≤ 1.2:1). The shunt inductance, L_{TEST}, is tuned for parallel resonance with C_O at f_C. Typically, $f_{OSCILLATOR}$ or $f_{TRANSMITTER}$ is approximately equal to the resonator f_C.
3. One or more of the following United States patents apply: 4,454,488 and 4,616,197.
4. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
5. Unless noted otherwise, case temperature T_C = +25°C±5°C.
6. The design, manufacturing process, and specifications of this device are subject to change without notice.
7. Derived mathematically from one or more of the following directly measured parameters: f_C, IL, 3 dB bandwidth, f_C versus T_C, and C_O.
8. Turnover temperature, T_O, is the temperature of maximum (or turnover) frequency, f_O. The nominal frequency at any case temperature, T_C, may be calculated from: $f = f_O [1 - FTC (T_O - T_C)^2]$. Typically, *oscillator* T_O is approximately equal to the specified *resonator* T_O.
9. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the static (nonmotional) capacitance between the two terminals measured at low frequency (10 MHz) with a capacitance meter. The measurement includes parasitic capacitance with "NC" pads unconnected. Case parasitic capacitance is approximately 0.05 pF. Transducer parallel capacitance can be calculated as: $C_P \approx C_O$ - 0.05 pF.

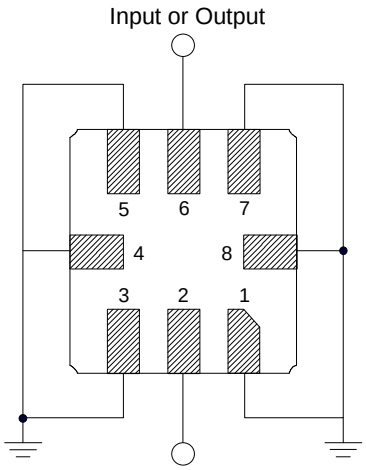
RF Monolithics, Inc. Phone: (972) 233-2903 Fax: (972) 387-9148 E-mail: info@rfm.com
RFM Europe Phone: 44 1963 251383 Fax: 44 1963 251510 http://www.rfm.com

Electrical Connections

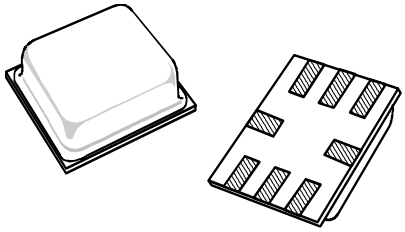
This one-port, eight-terminal solder seal resonator is bidirectional. However, impedances and circuit board parasitics may not be symmetrical, requiring slightly different oscillator component-matching values.

Pin	Connection
1	Ground
2	Input or Output
3	Ground
4	Ground
5	Ground
6	Output or Input
7	Ground
8	Ground

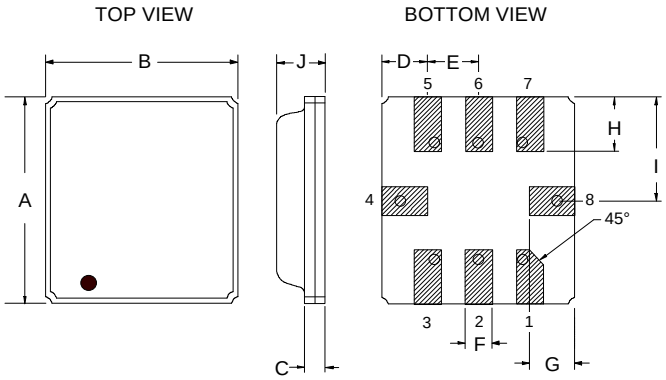
Typical Circuit



1, 3, 4, 5, 7, 8 No Internal Connection



Case Design



	Nominal	
Dimensions	Millimeters	Inches
A	5.18	.204
B	4.8	.189
C	0.508	.020
D	1.14	.045
E	1.27	.050
F	0.71	.028
G	1.12	.044
H	1.37	.054
I	2.59	.102
J	1.78	0.070