Preliminary

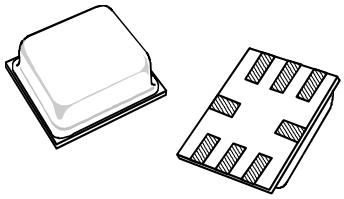
RFM

RP1094B

915.0 MHz SAW Resonator

- ***Designed for 915 MHz FCC Part 15 Transmitters***
- ***Quartz Stability***
- ***Surface-mount, Solder Seal Package with 5.2 x 4.8 mm Footprint***

The RP1094B is a surface mount, solder sealed resonator. It provides reliable, fundamental-mode, quartz frequency stabilization of fixed-frequency oscillators operating at or near 915 MHz with a 180° nominal phase at resonance. This resonator is designed specifically for use in low-power transmitters operating in the USA under FCC Part 15.249 regulations. It is also suitable for a variety of other oscillator applications.



SM5248-8 Case

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation (See: Typical Test Circuit)	+13	dBm
DC Voltage Between Any Two Pins (Observe ESD Precautions)	±30	VDC
Case Temperature	-40 to +85	°C

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency	Absolute Frequency	f_C	2, 3, 4, 5,	914.850		915.150	MHz
	Tolerance from 915.000 MHz	Δf_C				±150	kHz
Insertion Loss		IL	2, 5, 6		8	9	dB
Quality Factor	Unloaded Q	Q_U	5, 6, 7		6000		
	50 Ω Loaded Q	Q_L			3500		
Temperature Stability	Turnover Temperature	T_O	6, 7, 8	10	25	+85	°C
	Turnover Frequency	f_O			915		kHz
	Frequency Temp. Coefficient	FTC			0.032		ppm/°C^2
Frequency Aging	Absolute Value during First Year	$\|f_A\|$	6		10		ppm/yr
DC Insulation Resistance between Any Two Pins			5	1.0			MΩ
RF Equivalent RLC	Motional Resistance	R_M	5, 7, 9		125		Ω
	Motional Inductance	L_M			130		µH
	Motional Capacitance	C_M			0.2		fF
	Shunt Static Capacitance	C_O	5, 6, 9		1.2		pF
Lid Symbolization (in addition to Lot and/or Date Codes)		396					

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 the frequency of minimum IL with the resonator in the specified test fixture in a 50 Ω test system with VSWR ≤ 1.2:1.
3. One or more of the following United States patents apply: 4,454,488; 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± 2°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 tempearture, 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: $f = f_O [1 - FTC (T_O - T_C)^2]$.
9. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the measured static (nonmotional) capacitance between either pin 1 and ground or pin 2 and ground. The measurement includes case parasitic capacitance.

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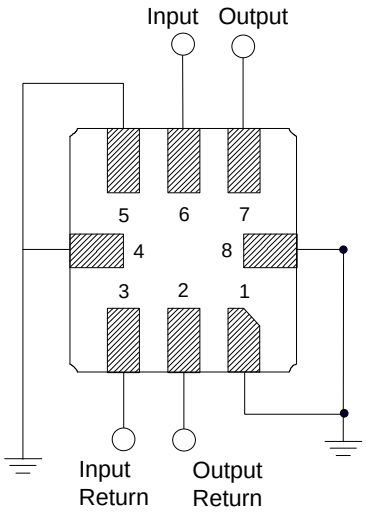
Electrical Connections

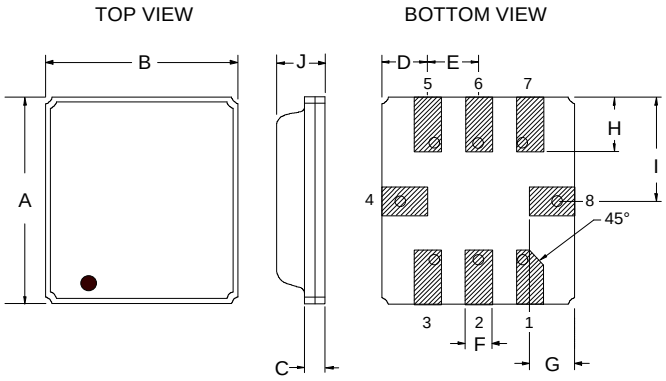
This two-port, eight-terminal solder seal resonator is bidirectional. However, impedances and circuit board parasitics may not be symmetrical, requiring slightly different oscillator component-matching values.

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

Typical Circuit



Case Design



Dimensions	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	5.21	5.33	5.46	0.205	0.210	0.215
B	4.83	4.95	5.08	0.190	0.195	0.200
C	0.38	0.51	0.64	0.015	0.020	0.025
D	1.07	1.19	1.32	0.042	0.047	0.052
E	1.14	1.27	1.40	0.045	0.050	0.055
F	0.58	0.71	0.84	0.023	0.028	0.033
G	1.07	1.19	1.32	0.042	0.047	0.052
H	1.32	1.45	1.57	0.052	0.057	0.062
I	2.54	2.67	2.79	0.100	0.105	0.110
J	1.52	1.78	2.03	0.060	0.070	0.080

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