

Discontinued

RoHS Compliance
This component is compliant with RoHS directive.
This component was always RoHS compliant from the first date of manufacture.

- **Ideal for 418.00 MHz Remote Control and Security Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Surface-mount Ceramic Case**

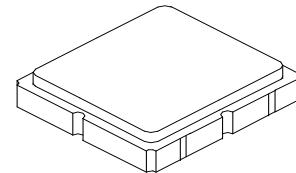
The RO3103E is a true one-port, surface-acoustic-wave (SAW) resonator in a surface-mount ceramic case. It provides reliable, fundamental-mode, quartz frequency stabilization of fixed-frequency transmitters operating at 418.00 MHz. This SAW is designed specifically for AM transmitters used in remote control and wireless security applications.

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation (See Test Circuit)	0	dBm
DC Voltage Between Terminals (Observe ESD Precautions)	12	VDC
Case Temperature	-40 to +85	°C
Soldering Temperature (10 seconds / 5 cycles maximum)	+260	°C

RO3103E

**418.00 MHz
SAW
Resonator**



**SM3030-6 Case
3.0 X 3.0**

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Frequency, +25 °C	f_C	2, 3, 4, 5	417.925		418.075	MHz
	Δf_C				±75	kHz
Insertion Loss	IL	2, 5, 6		1.3	2.0	dB
Quality Factor	Q_U	5, 6, 7	10700			
	Q_L		1500			
Temperature Stability	T_O	6, 7, 8	10	25	40	°C
	f_O			f_C		
	FTC		0.032			ppm/°C ²
Frequency Aging	$ f_A $	1, 6		10		ppm/yr
DC Insulation Resistance between Any Two Terminals		5	1.0			MΩ
RF Equivalent RLC Model	R_M	5, 6, 7, 9,	16.7			Ω
	L_M		67			μH
	C_M		2.2			fF
	C_O	5, 6, 9		2.4		pF
Test Fixture Shunt Inductance	L_{TEST}	2, 7		62		nH
Lid Symbolization				676 // YWWS		
Standard Reel Quantity	Reel Size 7 Inch	10		500 Pieces/Reel		
	Reel Size 13 Inch			3000 Pieces/Reel		

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

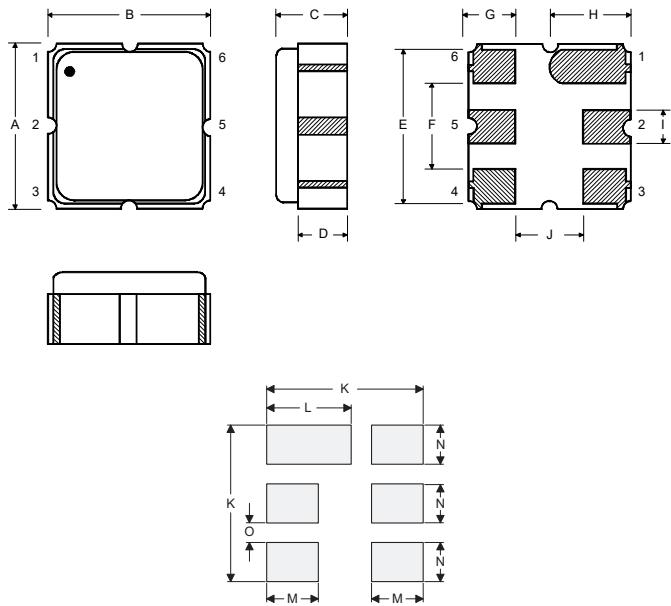
NOTES:

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 center frequency, f_C , is measured at the minimum insertion loss point, IL_{MIN} , with the resonator in the 50 Ω test system ($VSWR \leq 1.2:1$). 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 $T_C = +25 \pm 2$ °C.
6. The design, manufacturing process, and specifications of this device are subject to change.
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.
10. Tape and Reel Standard Per ANSI / EIA 481.

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.

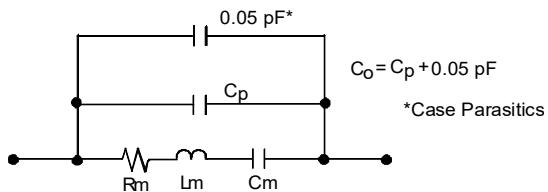
Pin	Connection
1	NC
2	Terminal
3	NC
4	NC
5	Terminal
6	NC



Case and Typical PCB Land Dimensions

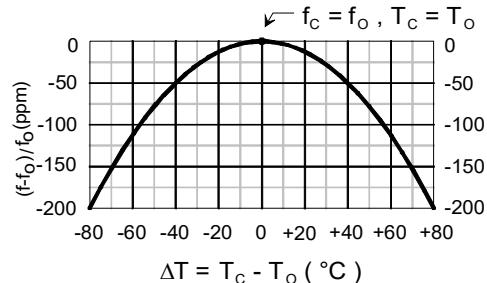
Ref	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.00	3.13	0.113	0.118	0.123
B	2.87	3.00	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.60	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.50	1.63	0.054	0.059	0.064
I	0.47	0.60	0.73	0.019	0.024	0.029
J	1.17	1.30	1.43	0.046	0.051	0.056
K		3.20			0.126	
L		1.70			0.067	
M		1.05			0.041	
N		0.81			0.032	
O		0.38			0.015	

Equivalent RLC Model



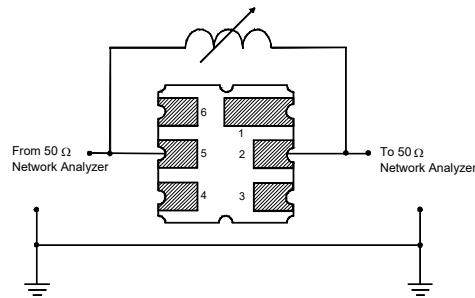
Temperature Characteristics

The curve shown accounts for resonator contribution only and does not include external LC component temperature effects.

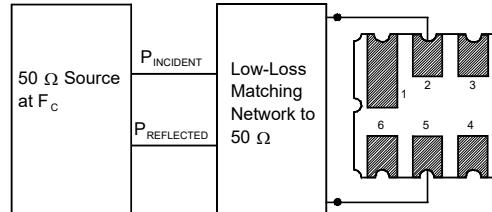


Characterization Test Circuit

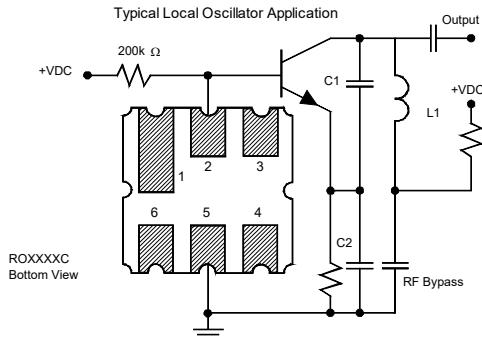
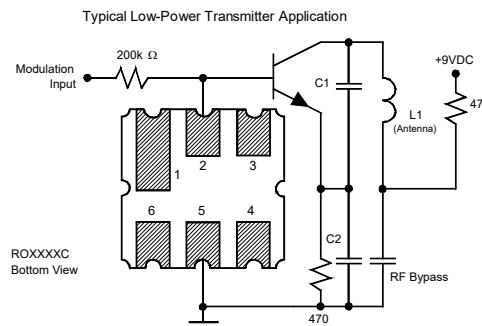
Inductor L_{TEST} is tuned to resonate with the static capacitance, C_0 , at F_C .



Power Dissipation Test



Example Application Circuits



Mouser Electronics

Authorized Distributor

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[Murata](#):

[RO3103E](#)