Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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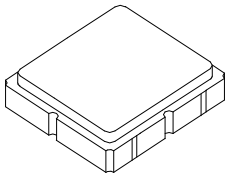
muRata
INNOVATOR IN ELECTRONICS

RFM products are now Murata products.

RO3164E/E-1/E-2

868.35 MHz SAW Resonator

- ***Ideal for European 868.35 MHz Transmitters***
- ***Very Low Series Resistance***
- ***Quartz Stability***
- ***Complies with Directive 2002/95/EC (RoHS)***



SM3030-6 Case
3.0 X 3.0

The RO3164E 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 868.35 MHz. This SAW is designed specifically for remote-control and wireless security transmitters operating under ETSI-ETS 300 220 in Europe and under FTZ 17 TR 2100 in Germany.

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	0	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +125	°C
Operating Temperature Range	-40 to +125	°C
Soldering Temperature	+260	°C

Electrical Characteristics

Characteristic			Sym	Notes	Minimum	Typical	Maximum	Units
Frequency (+25 °C)	Nominal Frequency	RO3164E	f_C	2,3,4,5	868.150		868.550	MHz
		RO3164E-1			868.200		868.500	
		RO3164E-2			868.250		868.450	
	Tolerance from 868.35 MHz	RO3164E	Δf_C				±200	kHz
		RO3164E-1					±150	
		RO3164E-2					±100	
Insertion Loss			IL	2,5,6		1.3	2.0	dB
Quality Factor	Unloaded Q		Q_U	5,6,7		7200		
	50 Ω Loaded Q		Q_L			975		
Temperature Stability	Turnover Temperature		T_O	6,7,8	10	25	40	°C
	Turnover Frequency		f_O			f_C		kHz
	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		16		Ω
	Motional Inductance		L_M			20		µH
	Motional Capacitance		C_M			1.7		fF
	Shunt Static Capacitance		C_O	5, 6, 9		1.6		pF
Test Fixture Shunt Inductance			L_{TEST}	2, 7		20		nH
Lid Symbolization (in addition to Lot and/or Date Codes)			RO3164E 686, RO3164E-1 773, RO3164E-2 774 / 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.

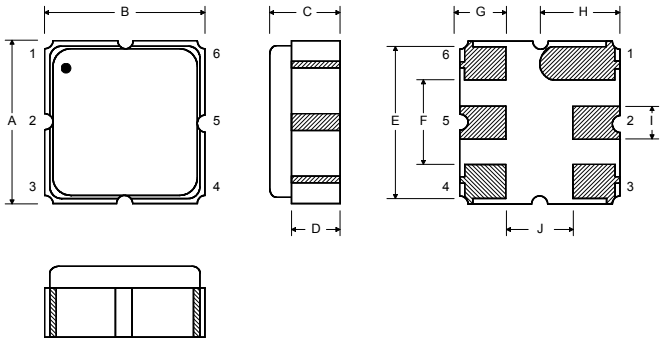
NOTES:

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 ≤ 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±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 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 by calculated as: $C_P \approx C_O$ - 0.05 pF.
10. Tape and Reel Standard for 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



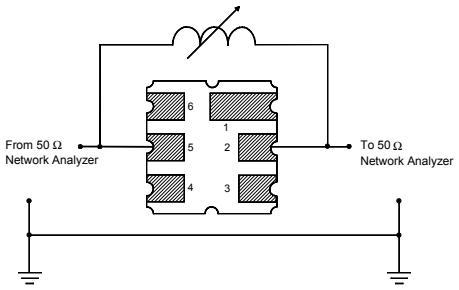
Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.0	3.13	0.113	0.118	0.123
B	2.87	3.0	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	1.6	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.5	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

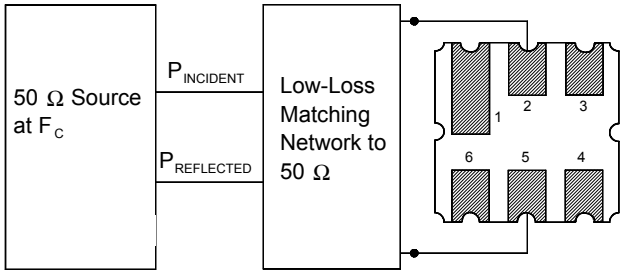
Typical Test Circuit

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

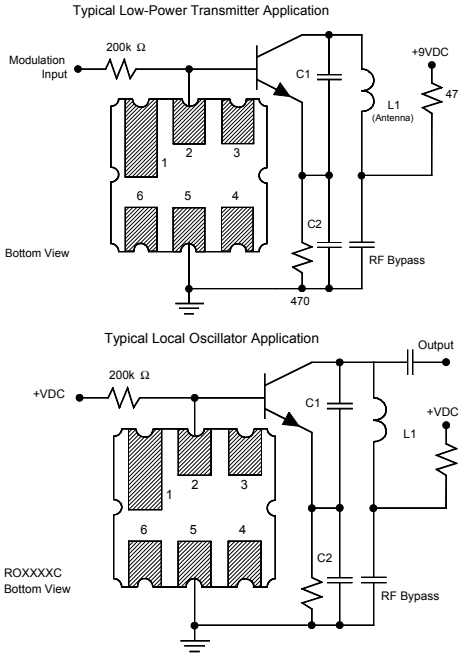
Electrical Test



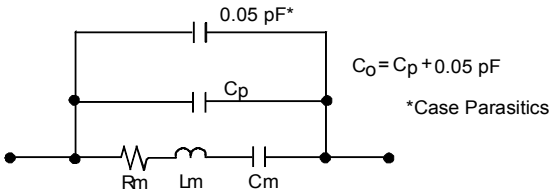
Power Test



Typical Application Circuits



Equivalent LC Model



Temperature Characteristics

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