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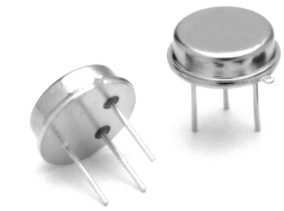
Discontinued

RFM products are now Murata products.

RO3075

345.0 MHz SAW Resonator



TO39-3 Case

- ***Ideal for 345.0 MHz Transmitters***
- ***Very Low Series Resistance***
- ***Quartz Stability***
- ***Rugged, Hermetic, TO39-3 Package***

The RO3075 is a true one-port, surface-acoustic-wave (SAW) resonator in TO39-3 case. It provides reliable, fundamental-mode, quartz frequency stabilization of fixed-frequency transmitters operating at 345.0 MHz.

Absolute Maximum Ratings

Rating	Value	Units
CW RF Power Dissipation	+5	dBm
DC Voltage Between Any Two Pins (Observe ESD Precautions)	±30	VDC
Case Temperature	-40 to +85	°C
Soldering Temperature (10 seconds / 5 cycles max.)	260	°C

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at +25 °C	Absolute Frequency	f_C	2, 3, 4, 5	344.930		345.070	MHz
	Tolerance from 345.0 MHz	Δf_C			±70	±100	kHz
Insertion Loss		IL	2, 5, 6		0.9	1.8	dB
Quality Factor	Unloaded Q	Q_U	5, 6, 7		7900		
	50 Ω Loaded Q	Q_L			750		
Temperature Stability	Turnover Temperature	T_O	6, 7, 8	10	25	40	°C
	Turnover Frequency	f_O			f_C-5		kHz
	Frequency Temperature Coefficient	FTC			0.037		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, 7, 9		10.5		Ω
	Motional Inductance	L_M			38		µH
	Motional Capacitance	C_M			5.6		fF
	Pin 1 to Pin 2 Static Capacitance	C_O	5, 6, 9		4.2		pF
	Transducer Static Capacitance	C_P	5, 6, 7, 9		4.0		pF
Test Fixture Shunt Inductance		L_{TEST}	2, 7		50.7		nH
Lid Symbolization		RFM / 3075					

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

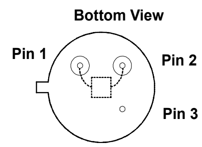
NOTES:

1. Lifetime (10 year) frequency aging.
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.
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: $f = f_O [1 - FTC (T_O - T_C)^2]$.
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 a floating case. Case parasitic capacitance is approximately 0.25pF. Transducer parallel capacitance can be calculated as: $C_P \approx C_O$ - 0.25pF.

Electrical Connections

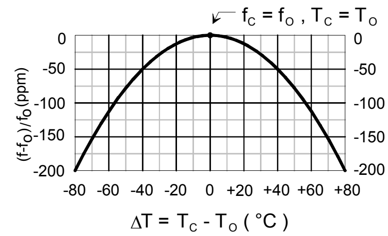
This one-port, two-terminal SAW resonator is bidirectional. The terminals are interchangeable with the exception of circuit board layout.

Pin	Connection
1	Terminal 1
2	Terminal 2
3	Case Ground



Temperature Characteristics

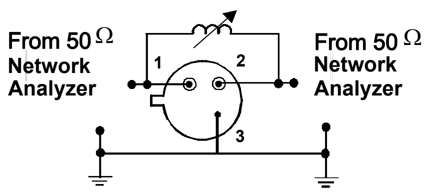
The curve shown on the right accounts for resonator contribution only and does not include oscillator temperature characteristics.



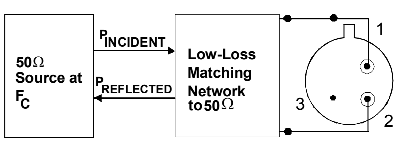
Typical Test Circuit

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

Electrical Test:



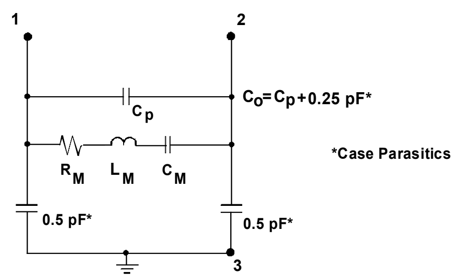
Power Test:



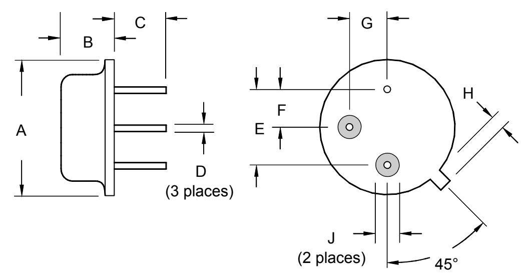
CW RF Power Dissipation = $P_{INCIDENT} - P_{REFLECTED}$

Equivalent LC Model

The following equivalent LC model is valid near resonance:



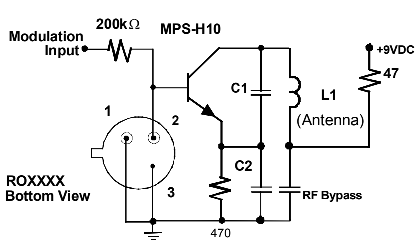
Case Design



Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A		9.30		0.366
B		3.18		0.125
C	2.50	3.50	0.098	0.138
D	0.46 Nominal		0.018 Nominal	
E	5.08 Nominal		0.200 Nominal	
F	2.54 Nominal		0.100 Nominal	
G	2.54 Nominal		0.100 Nominal	
H		1.02		0.040
J	1.40		0.055	

Typical Application Circuits

Typical Low-Power Transmitter Application:



Typical Local Oscillator Application: