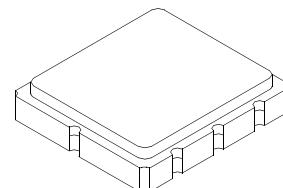


- **Ideal for 403.55 MHz Transmitters**
- **Very Low Series Resistance**
- **Quartz Stability**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Tape and Reel Standard per ANSI/EIA-481**
- **Moisture Sensitivity Level: 1**
- **AEC-Q200 Qualified**

The RO3120C 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 403.55 MHz.

#### Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	0	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +85	°C
Soldering Temperature, 10 seconds / 5 cycles maximum	260	°C

**RO3120C**
**403.55 MHz  
SAW  
Resonator**

**SM5050-8 Case  
5 X 5 mm**

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units	
Center Frequency, +25 °C	Absolute Frequency	$f_C$		403.475		403.625	MHz	
	Tolerance from 433.420 MHz	$\Delta f_C$				$\pm 75$	kHz	
Quality Factor	Unloaded Q	$Q_U$			14400			
	50 ohm Loaded Q	$Q_L$			1000			
Insertion Loss		$IL$			1.0	2.0	dB	
Temperature Stability	Turnover Temperature	$T_O$		10	25	40	°C	
	Turnover Frequency	$f_O$			$f_C$			
	Frequency Temperature Coefficient	$FTC$			0.032		ppm/°C <sup>2</sup>	
Frequency Aging	Absolute Value during the First Year	$ f_A $			$\leq 10$		ppm/yr	
DC Insulation Resistance between Any Two Terminals				1.0			MΩ	
RF Equivalent RLC Model	Motional Resistance	$R_M$			12.4		Ω	
	Motional Inductance	$L_M$			70.6		µH	
	Motional Capacitance	$C_M$			2.2		fF	
	Shunt Static Capacitance	$C_O$			3.7		pF	
Lid Symbolization (Y = Year, WW = Week, S = Shift)		811, YWWS						
Standard Reel Quantity		500 Pieces/Reel						
		3000 Pieces/Reel						

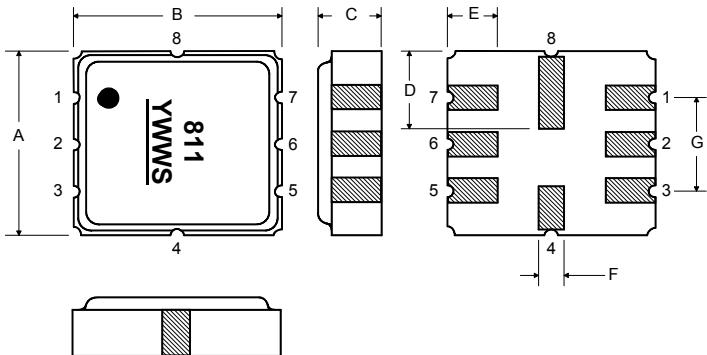

**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**
**NOTES:**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

## 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	NC
6	Terminal
7	NC
8	NC



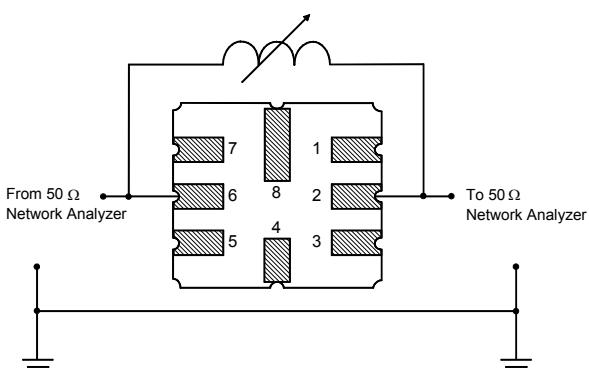
## Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.80	5.00	5.20	0.189	0.197	0.205
B	4.80	5.00	5.20	0.189	0.197	0.205
C			1.70			0.067
D		2.08			0.082	
E		1.17			0.046	
F		0.64			0.025	
G	2.39	2.54	2.69	0.094	0.100	0.106

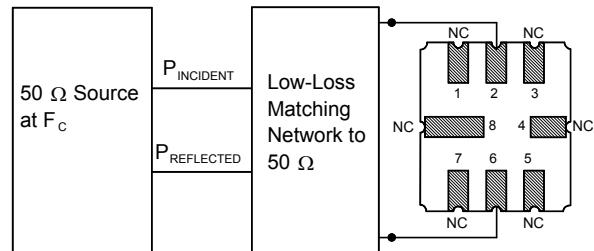
## Typical Test Circuit

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

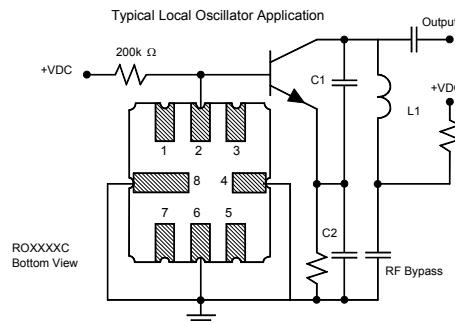
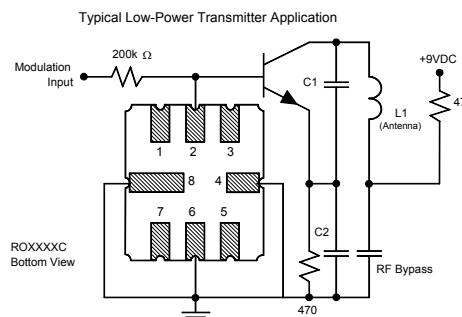
## Electrical Test



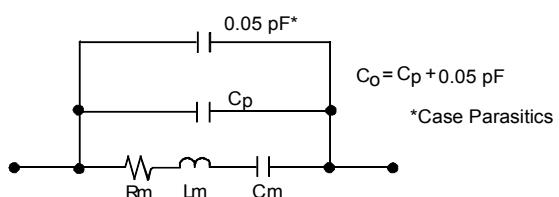
## Power Test



## Typical Application Circuits

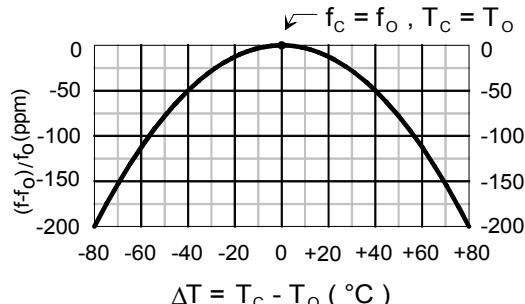


## Equivalent LC Model



## Temperature Characteristics

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



## Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
4. Time: 5 times maximum.

