

# APPROVAL SHEET



CUSTOMER: \_\_\_\_\_

DESCRIPTION: SAW RESONATOR

MANUFACTURER PART NO.: SAW Resonator 315.000MHz 3.2\*2.5\*0.7mm SMD

CUSTOMER PART NO: \_\_\_\_\_

USED IN MODEL: \_\_\_\_\_

REVISION A1

APPROVAL		
TECHNOLOGY DEPT.	QUALITY DEPT.	PURCHASING DEPT.

Date: January 22, 2024

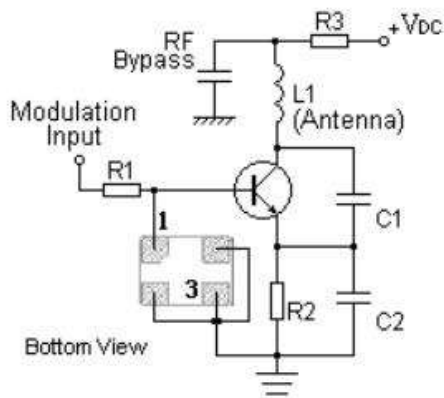
**Features**

- 1-port Resonator
- Ceramic Package for **Surface Mounted Technology (SMT)**
- **RoHS** compatible
- Package size 3.20x2.50x0.70mm<sup>3</sup>
- Electrostatic Sensitive Device(ESD)

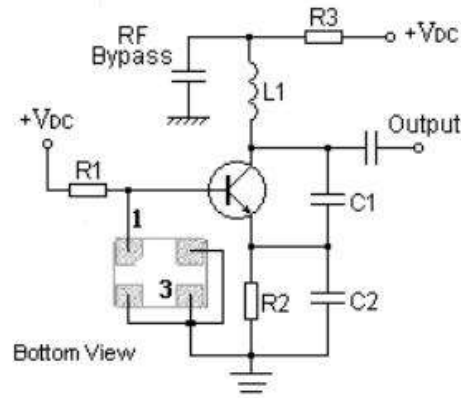


**Application**

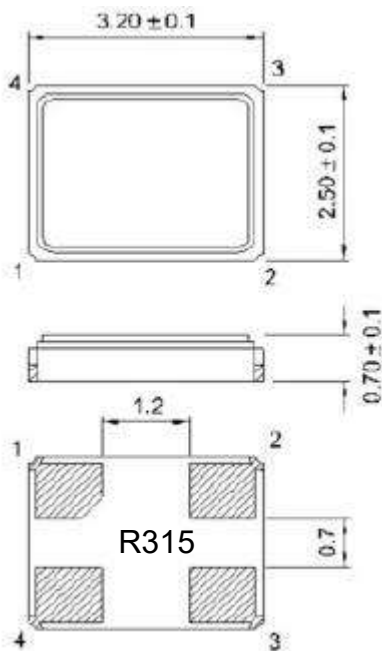
Typical Low-Power Transmitter Application



Typical Local Oscillator Application



**Package Dimensions (QCC4A)**

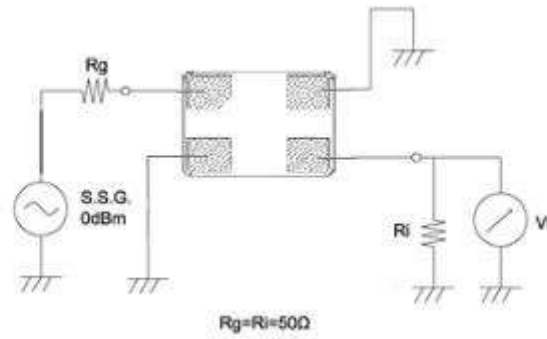


**Pin Configuration**

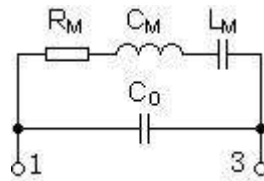
1	Input/ Output
3	Output/ Input
2,4	Ground

●	Pin 2
R	SAW Resonator
315	Part Number

### Marking Description Test Circuit



### Equivalent LC Model



## Performance

### Maximum Rating

Item		Value	Unit
DC Voltage	$V_{DC}$	$\pm 30$	V
Operation Temperature	T	-40 ~ +85	$^{\circ}C$
Storage Temperature	$T_{stg}$	-40 ~ +85	$^{\circ}C$
RF Power Dissipation	P	10	dBm

### Electronic Characteristics

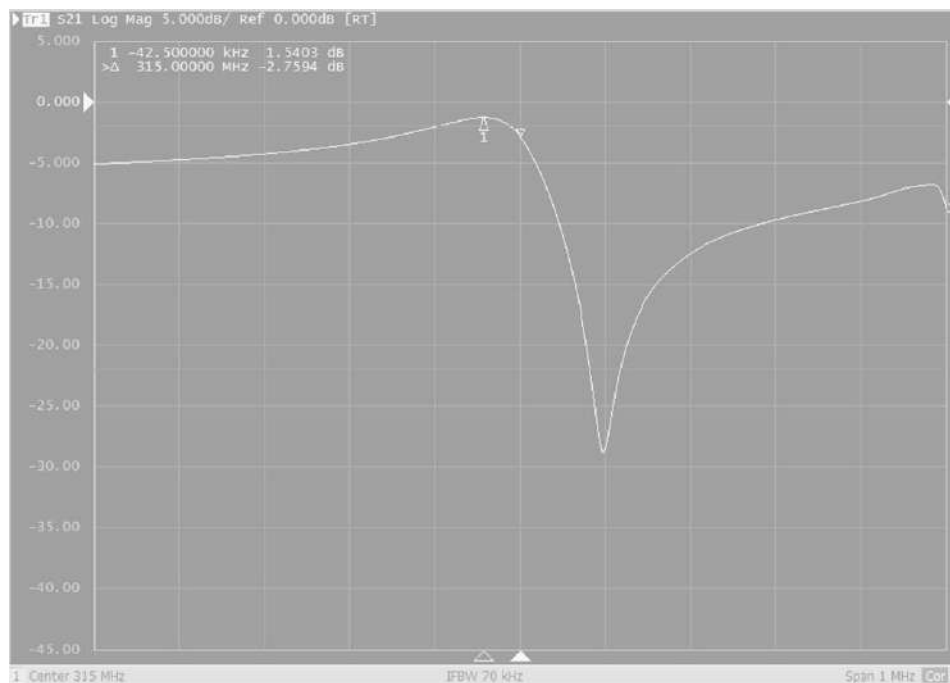
Test Temperature:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Terminating source impedance:  $50\Omega$

Terminating load impedance:  $50\Omega$

Item			Minimum	Typical	Maximum	Unit
Center Frequency	Absolute Frequency	$f_c$		315.000		MHz
	Tolerance from 315.000MHz	$\Delta f_c$		$\pm 75$		KHz
Insertion Loss(min)		IL		1.5	2.0	dB
Quality Factor	Unloaded Q	$Q_u$		17396		
	$50\Omega$ Loaded Q	$Q_L$		2518		
Temperature Stability	Turnover Temperature	$T_0$	25	40	55	$^{\circ}\text{C}$
	Frequency Temperature Coefficient	FTC		0.032		ppm/ $^{\circ}\text{C}$
Frequency Aging	Absolute Value during the First Year	$ f_A $		$\leq 10$		ppm/yr
DC Insulation Resistance between Any Two Pins			1.0			$\text{M}\Omega$
RF Equivalent RLC Model	Motional Resistance	$R_M$		16.9	25	$\Omega$
	Motional Inductance	$L_M$		148.8		$\mu\text{H}$
	Motional Capacitance	$C_M$		1.72		fF
	Static Capacitance	$C_0$	2.3	2.6	2.9	pF

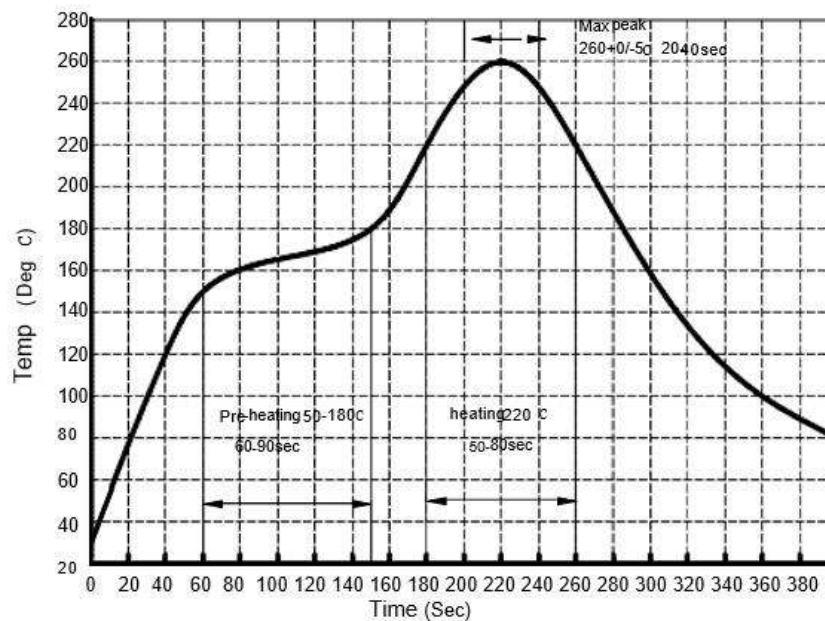
### Frequency Response



## Reliability (The SAW components shall remain electrical performance after tests)

No.	Test item	Test condition	
1	Temperature Storage	(1) Temperature: $85^{\circ}\text{C}\pm 2^{\circ}\text{C}$ , Duration: 250h , Recovery time: $2\text{h}\pm 0.5\text{h}$ (2) Temperature: $-40^{\circ}\text{C}\pm 3^{\circ}\text{C}$ , Duration: 250h ,Recovery time: $2\text{h}\pm 0.5\text{h}$	
2	Humidity Test	Conditions: $60^{\circ}\text{C}\pm 2^{\circ}\text{C}$ , 90~95% RH	Duration: 250h
3	Thermal Shock	Heat cycle conditions: $\text{TA}=-40^{\circ}\text{C}\pm 3^{\circ}\text{C}$ , $\text{TB}=85^{\circ}\text{C}\pm 2^{\circ}\text{C}$ , $t_1=t_2=30\text{min}$ , Switch time: $\leq 3\text{min}$ , Cycle time: 100 times , Recovery time : $2\text{h}\pm 0.5\text{h}$ .	
4	Vibration Fatigue	Frequency of vibration: 10 ~ 55 Hz Directions: X,Y and Z	Amplitude: 1.5 mm Duration: 2h
5	Drop Test	Cycle time: 10 times	Height: 1.0m
6	Solder Ability Test	Temperature: $245^{\circ}\text{C}\pm 5^{\circ}\text{C}$ Depth: DIP--2/3 , SMD-- 1/5	Duration: 3.0s--5.0s
7	Resistance to Soldering Heat	(1)Thickness of PCB:1mm , Solder condition: $260^{\circ}\text{C}\pm 5^{\circ}\text{C}$ , Duration: $10\pm 1\text{s}$ (2)Temperature of Soldering Iron: $350^{\circ}\text{C}\pm 10^{\circ}\text{C}$ , Duration: 3~4s , Recovery time : $2 \pm 0.5\text{h}$	

## Recommended Reflow Soldering Diagram



## Notes

1. As a result of the particularity of inner structure of SAW products, it easy to be breakdown by electrostatic, so we should pay attention to **ESD protect** in the test.
2. **Static voltage** between signal load and ground may cause deterioration and destruction of the component. Please avoid static voltage.
3. **Ultrasonic cleaning** may cause deterioration and destruction of the component. Please avoid ultrasonic cleaning.
4. Only leads of component may **be soldered**. Please avoid soldering another part of component.
5. There is a close relationship between the device's performance and **matching network**. The specifications of this device are based on the test circuit shown above. L and C values may change depending on board layout. Values shown are intended as a guide only.