

# **SAW Resonator**



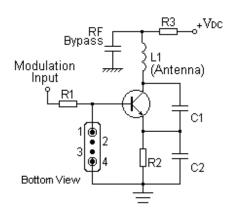
### Features

- 1-port Resonator
- Metal Case for SC04-06
- **RoHS** compatible
- Package Code SC04-06
- Electrostatic Sensitive Device(ESD)

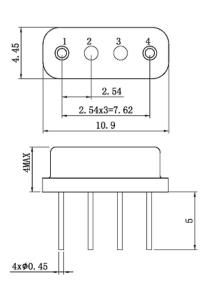


## Application

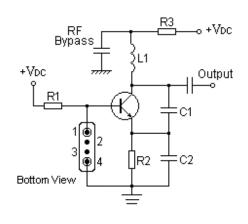
Typical Low-Power Transmitter Application



## Package Dimensions (SC04-06)



### Typical Local Oscillator Application



### **Pin Configuration**

| 1   | Input/ Output |  |  |
|-----|---------------|--|--|
| 4   | Output/ Input |  |  |
| 2,3 | Case Ground   |  |  |

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**SAW Resonator** 

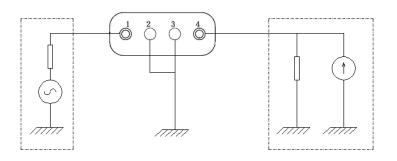


## Marking

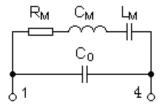


| R    | SAW Resonator |  |  |
|------|---------------|--|--|
| 433D | Part number   |  |  |

## **Test Circuit**



## Equivalent LC Model



### Performance

#### **Maximum Rating**

| Item                  |                  | Value     | Unit |
|-----------------------|------------------|-----------|------|
| DC Voltage            | V <sub>DC</sub>  | ±30       | V    |
| Operation Temperature | т                | -40 ~ +85 | °C   |
| Storage Temperature   | T <sub>stg</sub> | -40 ~ +85 | °C   |
| RF Power Dissipation  | Р                | 15        | dBm  |





#### **Electronic Characteristics**

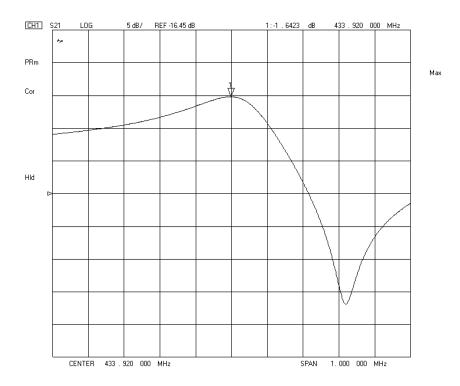
Test Temperature: 25°C±2°C

Terminating source impedance: 50Ω

Terminating load impedance: 50Ω

| Item  |                                      |                  | Minimum | Typical     | Maximum | Unit   |
|---|--------------------------------------|------------------|---------|-------------|---------|--------|
| Center  | Absolute Frequency                   | fc               |         | 433.92      |         | MHz    |
| Frequency                                     | Tolerance from 433.92MHz             | $	riangle f_{c}$ |         | ± 75        |         | KHz    |
| Insertion Loss(min) IL                        |                                      | IL               |         | 1.7         | 2.0     | dB     |
| Quality Factor                                | Unloaded Q                           | QU               |         | 12366       |         |        |
| Quality Factor                                | <sup>50</sup> Ω Loaded Q             | QL               |         | 1642        |         |        |
| Frequency<br>Aging                            | Absolute Value during the First Year | f <sub>A</sub>   |         | <i>≟</i> 10 |         | ppm/yr |
| DC Insulation Resistance between Any Two Pins |                                      |                  | 1.0     |             |         | MΩ     |
|   | Motional Resistance                  | R <sub>M</sub>   |         | 17          | 25      | Ω      |
| RF<br>Equivalent<br>RLC<br>Model              | Motional Inductance                  | L <sub>M</sub>   |         | 69.5        |         | μΗ     |
|   | Motional Capacitance                 | См               |         | 1.94        |         | fF     |
|   | Static Capacitance                   | C <sub>0</sub>   | 2.0     | 2.3         | 2.6     | pF     |

## **Frequency Response**

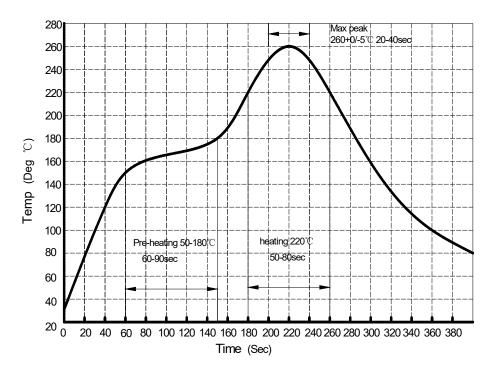




| No. | Test item                       | Test condition  |  |
|-----|---------------------------------|---|--|
| 1   | Temperature<br>Storage          | <ul> <li>(1) Temperature: 85°C±2°C , Duration: 250h , Recovery time: 2h±0.5h</li> <li>(2) Temperature: -40°C±3°C , Duration: 250h ,Recovery time: 2h±0.5h</li> </ul>                              |  |
| 2   | Humidity Test                   | Conditions: 60°C±2°C , 90~95% RH Duration: 250h   |  |
| 3   | Thermal Shock                   | Heat cycle conditions: TA=-40°C±3°C, TB=85°C±2°C, t1=t2=30min, Switch time: ≤3min , Cycle time: 100 times , Recovery time : 2h±0.5h.  |  |
| 4   | Vibration Fatigue               | Frequency of vibration: 10~55HzAmplitude:1.5mmDirections: X,Y and ZDuration: 2h   |  |
| 5   | Drop Test                       | Cycle time: 10 times Height: 1.0m   |  |
| 6   | Solder Ability Test             | Temperature: 245°C±5°CDuration: 3.0s5.0sDepth: DIP2/3 , SMD1/5  |  |
| 7   | Resistance to<br>Soldering Heat | <ul> <li>(1)Thickness of PCB:1mm , Solder condition: 260°C±5°C , Duration: 10±1s</li> <li>(2)Temperature of Soldering Iron: 350°C±10°C , Duration: 3~4s ,<br/>Recovery time : 2 ± 0.5h</li> </ul> |  |

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

## **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.