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# APPROVAL SHEET

Approval Specification	Customer's Approval Certificate
<b>TO:</b>	Please return this copy as a certification of your approval
<b>Part No.:</b>	<b>Checked &amp; Approved by:</b>
<b>Customer's Part No.:</b>	<b>Date:</b>

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Part No.	:	SFR433D
Pages	:	6
Date	:	2013/3/14
Revision	:	1.0

<b>Prepared by:</b>	
<b>Checked by:</b>	
<b>Approved by:</b>	

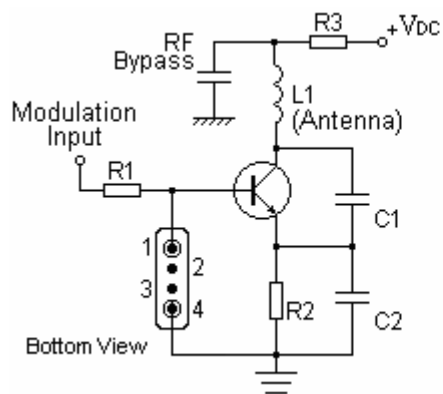
**Features**

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

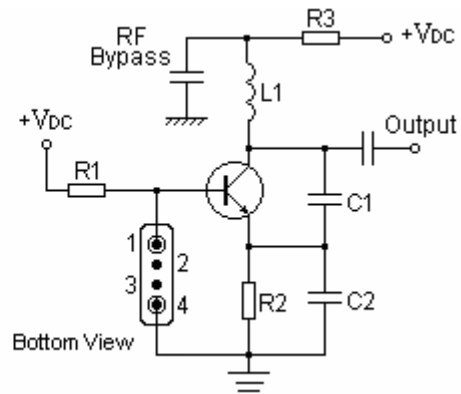


**Application**

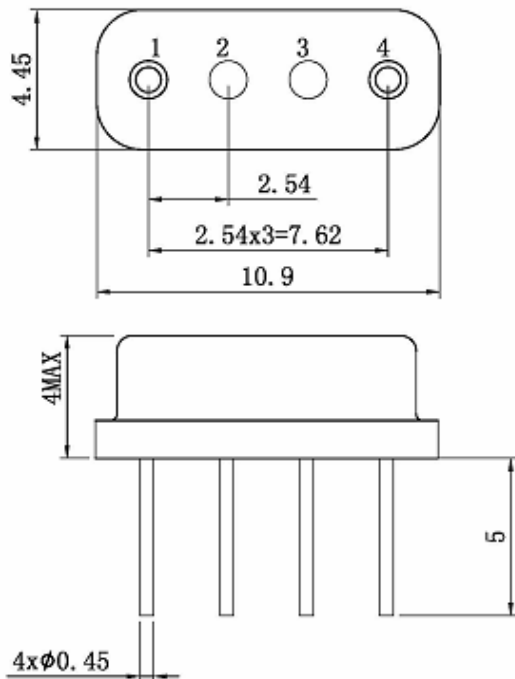
Typical Low-Power Transmitter Application



Typical Local Oscillator Application



**Package Dimensions (SC04-06)**



**Pin Configuration**

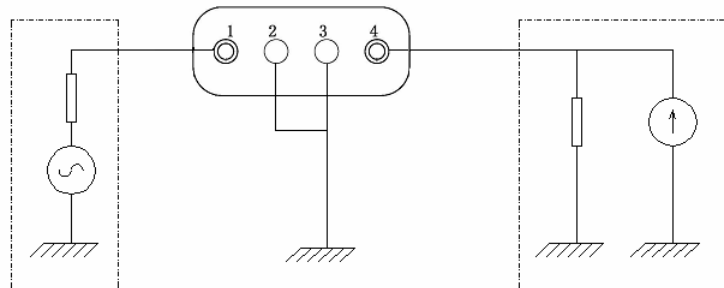
<b>1</b>	Input
<b>4</b>	Output
<b>2,3</b>	Ground

Marking

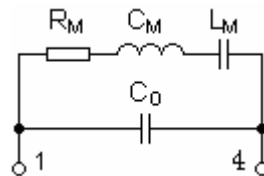


<b>SF</b>	Trademark
<b>R</b>	SAW Resonator
<b>433D</b>	Part number

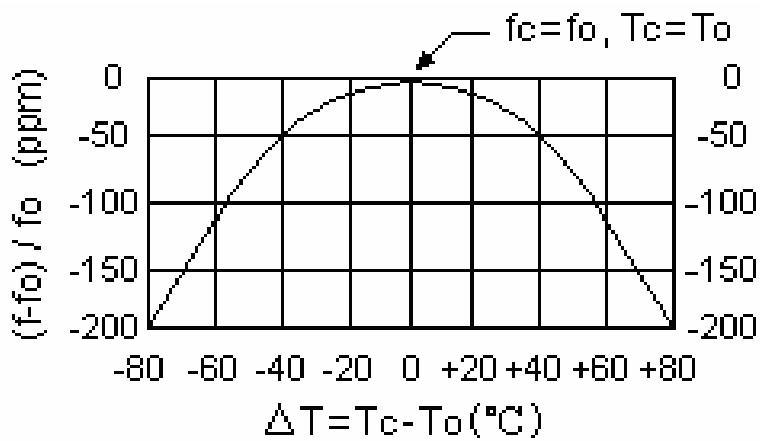
Test Circuit



Equivalent LC Model



Temperature Characteristics



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

**Performance****Maximum Rating**

Item		Value	Unit
DC Voltage	$V_{DC}$	$\pm 30$	V
Operation Temperature	T	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-55 ~ +125	°C
RF Power Dissipation	P	10	dBm

**Electronic Characteristics**

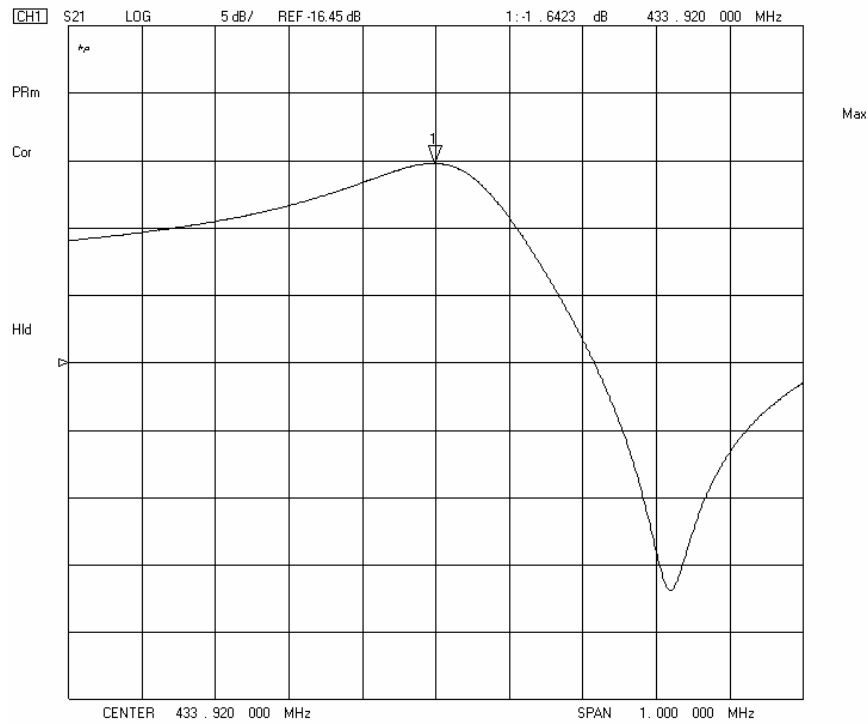
Test Temperature:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Terminating source impedance:  $50\Omega$

Terminating load impedance:  $50\Omega$

Item			Minimum	Typical	Maximum	Unit
Center Frequency	Absolute Frequency	$f_c$		433.92		MHz
	Tolerance from 433.92MHz	$\Delta f_c$		$\pm 75$		KHz
Insertion Loss(min)		IL		1.7	2.0	dB
Quality Factor	Unloaded Q	$Q_U$		12366		
	$50\Omega$ Loaded Q	$Q_L$		1642		
Temperature Stability	Turnover Temperature	$T_0$	25	40	55	°C
	Frequency Temperature Coefficient	FTC		0.032		ppm/°C
Frequency Aging	Absolute Value during the First Year	$ f_A $		$\leq 10$		ppm/yr
DC Insulation Resistance between Any Two Pins			1.0			$M\Omega$
RF Equivalent RLC Model	Motional Resistance	$R_M$		17	25	$\Omega$
	Motional Inductance	$L_M$		69.5		$\mu\text{H}$
	Motional Capacitance	$C_M$		1.94		fF
	Static Capacitance	$C_0$	2.0	2.3	2.6	pF

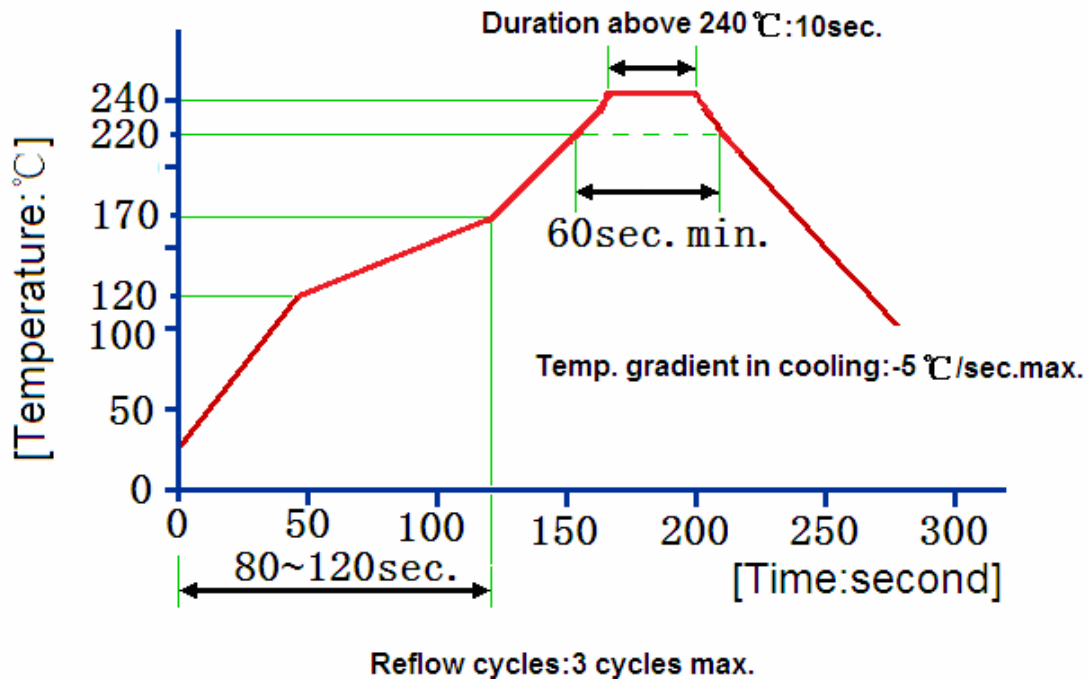
## Frequency Response



## 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: $T_A = -40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , $T_B = 85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , $t_1 = t_2 = 30\text{min}$ , 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: 10~55Hz      Amplitude: 1.5mm Directions: X, Y and Z      Duration: 2h
5	Drop Test	Cycle time: 10 times      Height: 1.0m
6	Solder Ability Test	Temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Duration: 3.0s--5.0s Depth: DIP--2/3 , SMD--1/5
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 is easy to be broken down 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.