

深圳市晶友嘉电子有限公司

SHENZHEN JINGYOUJIA ELECTRONIC CO., LTD



## CRYSTAL RESONATOR SPECIFICATIONS

### 石英晶体谐振器承认书

客户 Customer:	立创商城
型号 Product:	SB21 声表面
料号 Code No:	SB2143392TT
频率 Frequency:	433.920MHz
数量 Sample Quantity:	
日期 Date:	2021-7-29

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供应商确认栏:

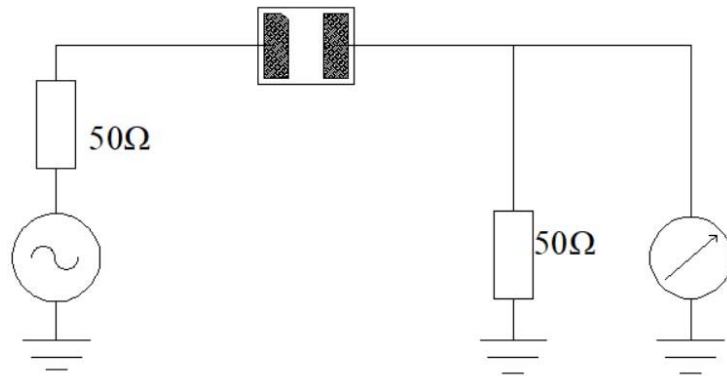
制作 Handler	确认 Checked	核审 Approved
戴晓嘉	陈斌	李晨

客户承认栏:

承认 Checked	核审 Approved

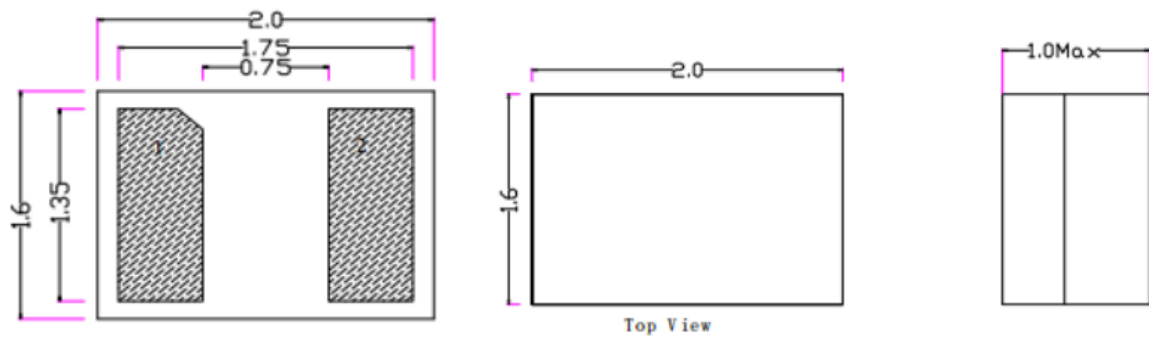
## 1. Package Dimension

Unit: mm

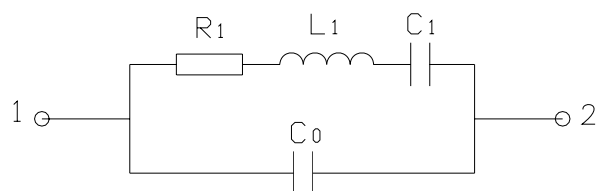


Pin	Connection
1	Input
2	Output

## 2.Dimension



## 3. Equivalent LC Model



## 4. Performance

### 4.1 Maximum Rating

Item	Value
DC Voltage $V_{DC}$	12V
Operation Temperature Range	-40°C to +85°C
Storage Temperature Range	-40°C to +85°C
RF Power Dissipation	0dBm

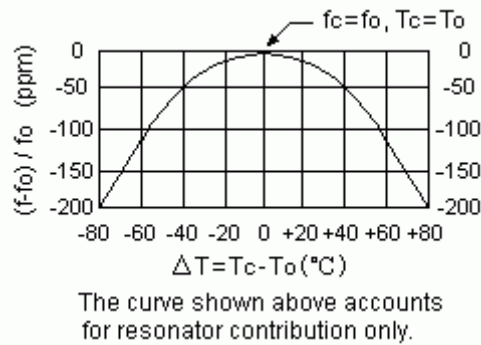
### 4.2 Electronic Characteristics

Item	Unit	Minimum	Typical	Maximum
Center Frequency ( $f_c$ )	MHz	433.845	433.920	433.995
Insertion Loss	dB	—	2.2	2.6
Quality Factor				
Unloaded Q	—	—	7340	—
50Ω Loaded Q	—	—	1650	—
Temperature Stability				
Turnover Temperature ( $T_0$ )	°C	25	-	55
Turnover Frequency ( $f_0$ )	MHz		$f_c$	
Frequency Temperature Coefficient (FTC)	ppm/°C <sup>2</sup>	—	0.032	—
Frequency Aging	ppm/yr	—	<±10	
DC Insulation Resistance	MΩ	1.0	—	—
RF Equivalent RLC Model				
Motional Resistance $R_1$	Ω	—	29	35
Motional Inductance $L_1$	μH	—	78.1096	—
Motional Capacitance $C_1$	fF	—	1.7241	—
Shunt Static Capacitance $C_0$	pF	1.90	2.15	2.40

#### Notes:

- Unless noted otherwise, case temperature  $T_C = +25^\circ\text{C} \pm 2^\circ\text{C}$ .
- The center frequency,  $f_c$ , is measured at the minimum insertion loss point with the resonator in the 50Ω test system.
- Frequency aging is the change in  $f_c$  with time and is specified at +65°C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
- Turnover temperature,  $T_0$ , is the temperature of maximum (or turnover) frequency,  $f_0$ . The nominal frequency at any case temperature,  $T_C$ , may be calculated from:  $f = f_0 [1 - \text{FTC} (T_0 - T_C)^2]$ .
- This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance  $C_0$  is the static capacitance between Pin 1 and Pin 2 measured at low frequency (10MHz) with a capacitance meter. The measurement includes case parasitic capacitance.

### 4.3 Temperature Characteristics



## 5. Remarks

- 5.1 SAW devices should not be used in any type of fluid such as water, oil, organic solvent, etc.
- 5.2 Be certain not to apply voltage exceeding the rated voltage of components.
- 5.3 Do not operate outside the recommended operating temperature range of components.
- 5.4 Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.
- 5.5 Be careful of soldering temperature and duration of components when soldering.
- 5.6 Do not place soldering iron on the body of components.
- 5.7 Be careful not to subject the terminals or leads of components to excessive force.
- 5.8 SAW devices are electrostatic sensitive. Please avoid static voltage during operation and storage.
- 5.9 Ultrasonic cleaning shall be avoided. Ultrasonic vibration may cause destruction of components.

