



深圳市晶光华电子有限公司
ShenZhen JingGuangHua Electronic Co., Ltd



SPECIFICATION FOR APPROVAL

承 认 书

客户名称Customer : _____

货 名Description : _____ 49S 石英晶体谐振器

客户料号Part No : _____

物料编号Code No: _____ 49SAC16000201060

频 率Frequency : _____ 16.000 MHZ

日 期Date: _____ 2025-06-10

备 注Note: RoHS compliance with Directive (EU) 2015/863

制作(Prepare by)	检查(Check by)	批准 (Approve by)
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客户批准 Approve by customer	
批准日期 Approval date	

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规范修订记录表 SPECIFICATION REVISION RECORD SHEET

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1. 产品描述 Product Description

1.1 标准大气条件 Standard atmospheric conditions

除非另有规定。进行测量和试验的大气条件的标准范围如下：

Unless otherwise specified. The standard range of atmospheric conditions for which measurements and tests are carried out is as follows:

环境温度 Ambient temperature: $25 \pm 2^{\circ}\text{C}$

相对湿度 Relative humidity: 40%~70%

1.2 电性能指标 Electrical specifications

编号 NO.	项目 Item	代 码 Symbo l	电气参数Electrical Spec				备 注 Notes
			下限 MIN	中心 TYPE	上限 MAX	单位 UNITS	
1	规格型号 Holder Type		49S				
2	振动模式 Mode of Oscillation		Fundamental				
3	水晶切割模式 Crystal cutting type		AT CUT				厚度剪切模式 thickness shear mode
4	标称频率 Nominal Frequency	FL	16.000000				MHZ
5	负载电容 Load Capacitance	CL	20				pF
6	调整频差 Frequency Tolerance at 25°C		-10		+10	ppm	At $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
7	静电容 Shunt capacitance	C0	-	-	7	pF	
8	等效电阻 Equivalent Series Resistance	ESR	-	-	60	Ω	
9	激励功率 Drive Level	DL			100	μw	
10	温度频差 Temperature Frequency Stability	TC	-30		+30	ppm	Over Operating Temp. Range (Reference 25°C)
11	工作温度 Operating Temperature Range		-40		+85	$^{\circ}\text{C}$	
12	贮存温度 Storage Temperature Range		-40		+90	$^{\circ}\text{C}$	
13	绝缘阻抗 Insulation Resistance	IR	500	-	-	M Ω	100V $\pm$ 15V _{DC}
14	年老化率 Aging		-3		+3	ppm	1st Year
15	测试仪器 Test machine		S&A 250B				
16	湿气敏感性等级 Moisture Sensitivity Level MSL		LEVEL 1				

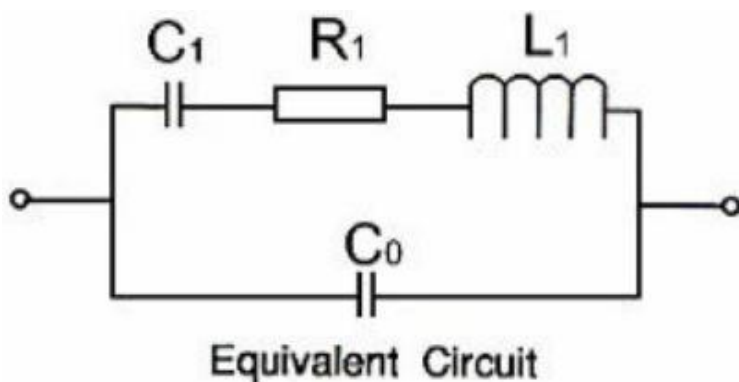
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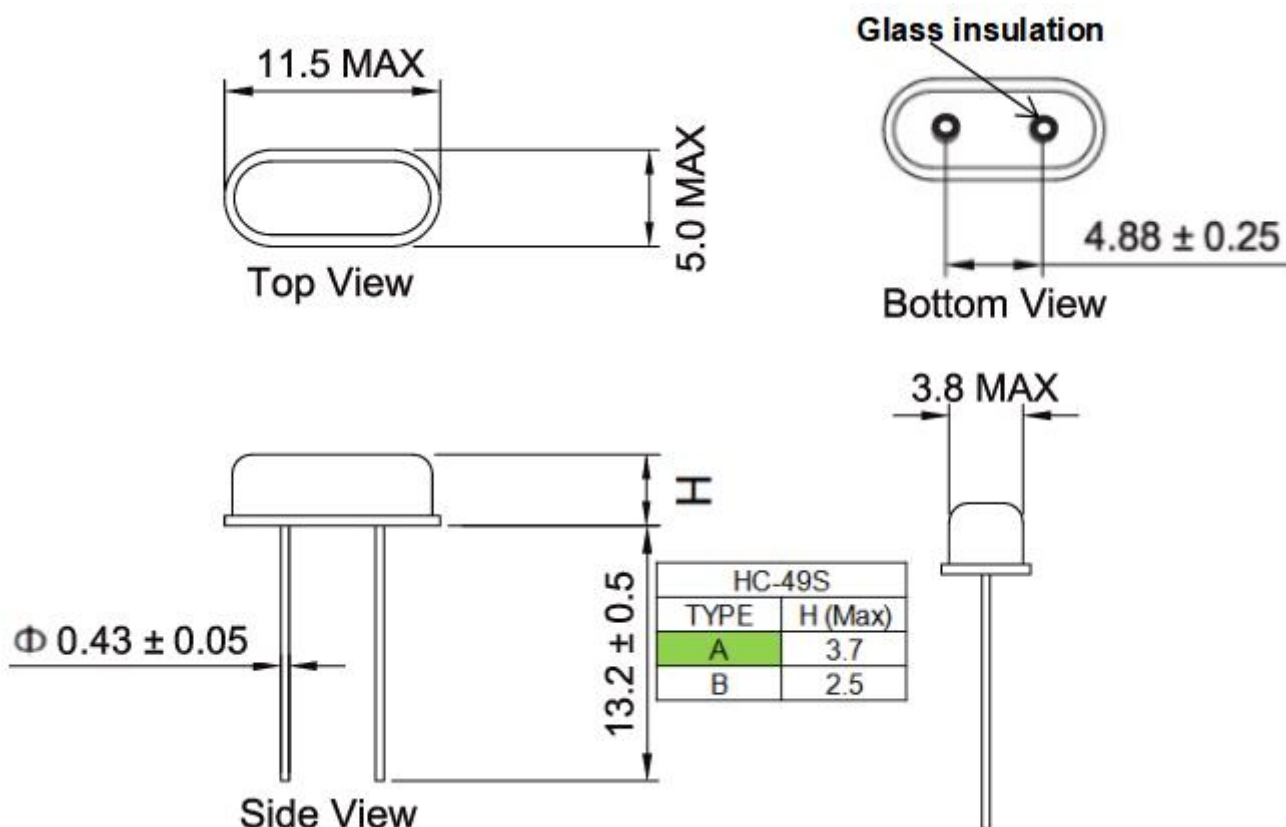
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2. 等效电路图 Equivalent circuit diagram



3. 产品图纸 Dimensions (Unit:mm)



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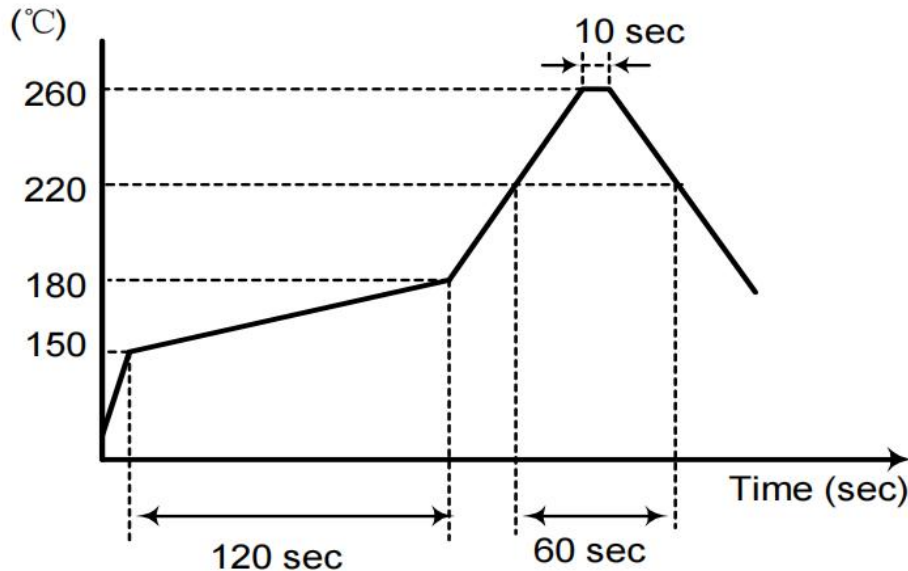
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4. 回流焊温度曲线 Recommended Reflow profile

Solder melting point : $220\pm 10^{\circ}\text{C}$, 60 sec. Min.

Peak Temperature: $260\pm 5^{\circ}\text{C}$, 10 sec. Max.



备注 Notes:

1. 超声波清洗 Ultrasonic cleaning

一般的清洁液或超声波清洗方法可以用来清洗我们的产品。但是，在某些情况下，超声波清洗机在我们产品的振荡频率上会产生共振，从而使器件的电气特性恶化，甚至损坏器件的整体结构。因此，建议超声波清洗前进行验证测试。

General cleaning solutions or ultrasonic cleaning method may be used to clean our products. However, under certain circumstances, ultrasonic cleaning machine could generate resonance at the oscillation frequency of our products and thus deteriorate the electrical characteristics in devices, and even damage the overall structure of devices. Therefore, verification test is recommended before cleaning.

2. 超声波焊接 Ultrasonic welding

避免使用超声波焊接进行安装和加工，这种方法有可能使晶体产品内部产生过大的振动扩散，成为特性退化而不振动的的原因。

Avoid mounting and processing by Ultrasonic welding this method has a possibility of an excessive vibration spreading inside the crystal products and becoming the cause of characteristic deterioration and not oscillating.

3. 储存温度说明 Storage temperature description

储存温度仅适用于产品，而包装材料储存温度 $5^{\circ}\text{C}\sim 40^{\circ}\text{C}$ 。

Storage Temperature is only for the product itself, the temperature for the packing material is $5^{\circ}\text{C}\sim 40^{\circ}\text{C}$.

4. 手工焊建议条件 Recommended conditions for manual welding

温度: $350\pm 10^{\circ}\text{C}$ 、时间: 3 秒 Max、次数: 2 次 Max、

Temperature: $350\pm 10^{\circ}\text{C}$ 、Time: 3 sec max、Re-solder times: twice max.

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5. 可靠性试验 Reliability specifications

NO	Item	Condition	Standard
1.	Drop Test	Free drop from 75 cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.)	Frequency change: $\leq 5\text{ppm}$ Rr as specification
2.	Mechanical Shock	Half sine wave, 1000G, 0.5mS, three times for all 3 directions	Frequency change: $\leq 5\text{ppm}$ Rr as specification
3.	Vibration	Frequency range: 10~55hz Amplitude: 1.52mm Sweep time: 1 minutes perpendicular axes each test time: 2Hrs	Frequency change: $\leq 5\text{ppm}$ Rr as specification
4.	Solderability	Temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Immersing depth: 0.5mm minimum Immersion time: $5 \pm 1\text{sec.}$ Flux: Rosin resin methyl alcohol solvent (1:4)	90% exhibit tin ok
5.	Resistance to soldering heat	Test temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Test time: $10 \pm 1\text{sec.}$	Frequency change: $\leq 10\text{ppm}$ Rr as specification
6.	High Temp & Humidity	$85 \pm 3^{\circ}\text{C}$ & RH85%, $500 \pm 12\text{ hours}$	Frequency change: $\leq 10\text{ppm}$ Rr as specification
7.	Low temperature storage	$-40 \pm 3^{\circ}\text{C}$, $500 \pm 12\text{ hours}$	Frequency change: $\leq 10\text{ppm}$ Rr as specification
8.	High temperature storage	$+85 \pm 3^{\circ}\text{C}$, $500 \pm 12\text{ hours}$	Frequency change: $\leq 10\text{ppm}$ Rr as specification
9.	Temperature cycling	$-40 \pm 3^{\circ}\text{C}/10\text{min} \sim +85 \pm 3^{\circ}\text{C}/10\text{min}$, 100cycles	Frequency change: $\leq 10\text{ppm}$ Rr as specification

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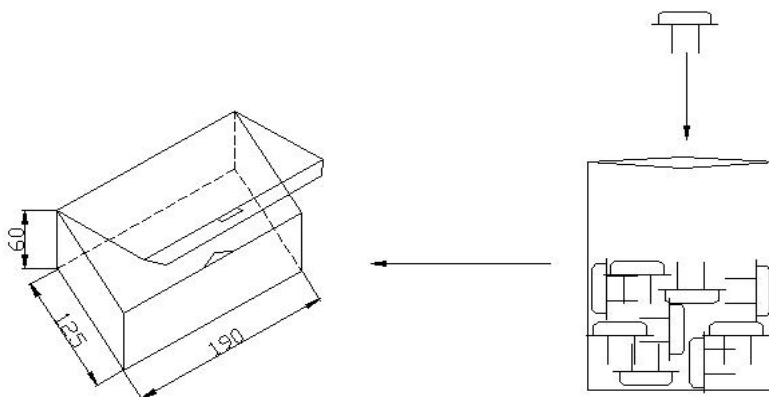


6. 包装标准 Packaging standard

Dimension of Inside Package

内包装尺寸图

Dimensions of outside Package



6.1 MARKING

6.1.1 Marking Labels are affixed to reel, inner carton and outer carton;

6.1.2 Each label contains the following information

6.1.2.1 Manufacture's name or symbo;

6.1.2.2 Parts name or type;

6.1.2.3 Frequency;

6.1.2.4 Quantity;

6.1.2.5 Reel number;

6.1.2.6 Manufacturer's code (EIAJ code)

6.2 QUANTITY

200pcs/bag

6.3 STORAGE ENVIRONMENT

6.3.1 Storage the reel at normal temperature and humidity;

6.3.2 Open the packing just before using;

6.3.3 Do not expose the sun;

6.3.4 Do not storage with some erosive chemicals;

6.3.5 Nothing is allowed to put on the reel or carton to prevent mechanical damage

6.4 HANDLING

Handle with care to prevent the damage of tape, reel and products.

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