



TAE雅晶

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日期Date:2018-09-07

致TO: 深圳市猎芯科技有限公司

产品ITEM: 石英晶体谐振器 QUARTZ CRYSTAL UNITS

型号TYPE: HC-49SMD-2PIN

标称频率NOMINAL FREQUENCY: 4MHz 20PF +/-30PPM

请收到我们的规格书后，签字回传。
Please confirm you received this specification,sign and fax it to us.

Table with 2 columns and 3 rows: RECEIVING CONFIRMATION, 日期DATA, 接收RECEIVED

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RoHS Compliant Standard **HC-49SMD**



Features 特性

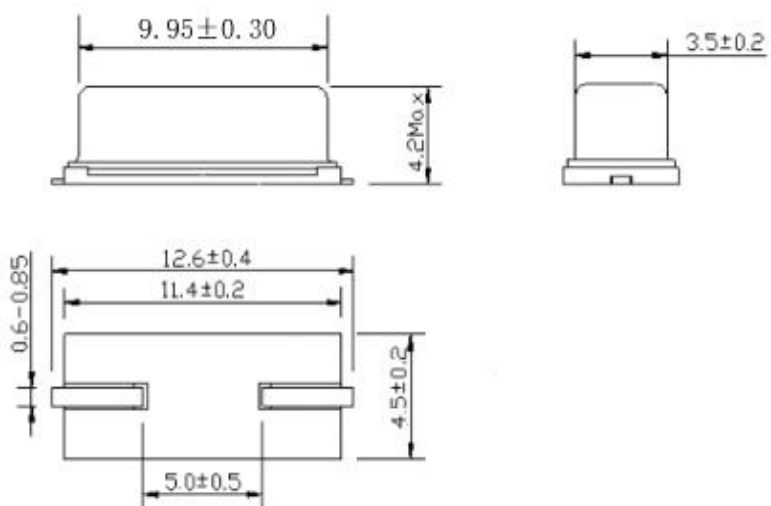
- Nominal Frequency:4.000MHz 标称频率: 4.000MHz
- Excellent clock signal generator for CPU's适用于卓越的CPU时钟信号发生器
- Available in extended temperature range适用于宽广的温度范围

STANDARD SPECIFICATIONS 标准规格

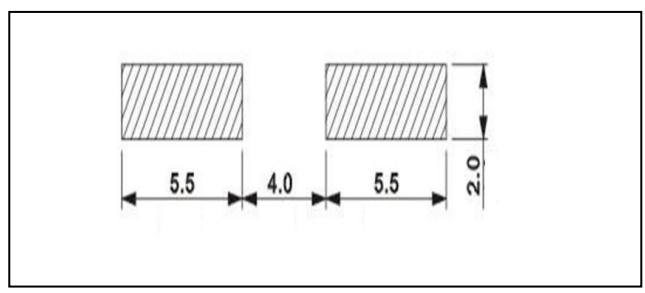
Item	Model	HC-49SMD	Conditions
Nominal Frequency 标称频率		4.000MHz (Fund.)	Need to specify
Frequency Tolerance 调整频差		±30ppm	at 25°C
Freq. Tol. Over Temp. 温度频差		±30ppm	-40~+85°C
Operating Temp. Range 工作温度范围		-40~+85°C	
Storage Temp. Range 保存温度范围		-55~+125°C	
Series Resistance 谐振电阻		90ΩMax.	at 25°C
Load Capacitance 负载电容		20pF	Need to specify
Shunt Capacitance 静态电容		7.0pF Max.	
Drive Level 激励电平		100 μ w Max.	
Aging[first year] 第一年老化率		±5ppm Max.	25±3°C
Insulation Resistance 绝缘阻抗		500Mohm Min.	DC100V±15V

OUTLINE DRAWING OF HC-49SM SERIES

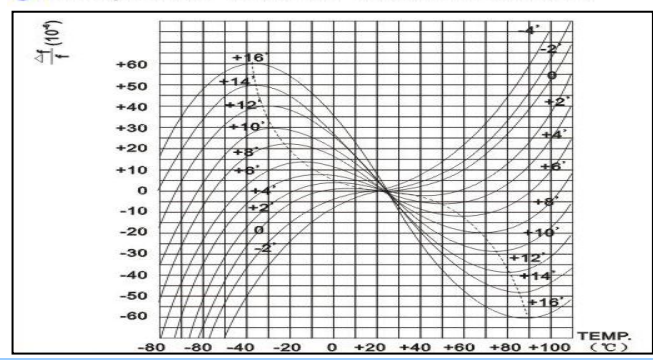
Dimensions(mm)

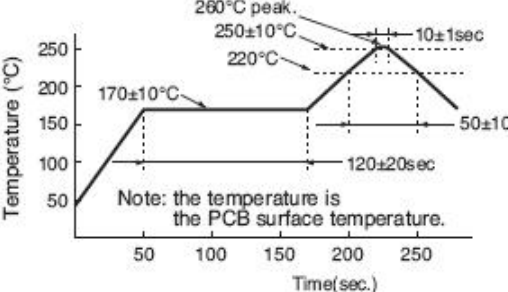


RECOMMENDED SOLDER PATTERN



FREQUENCY VS. TEMPERATURE CURVE

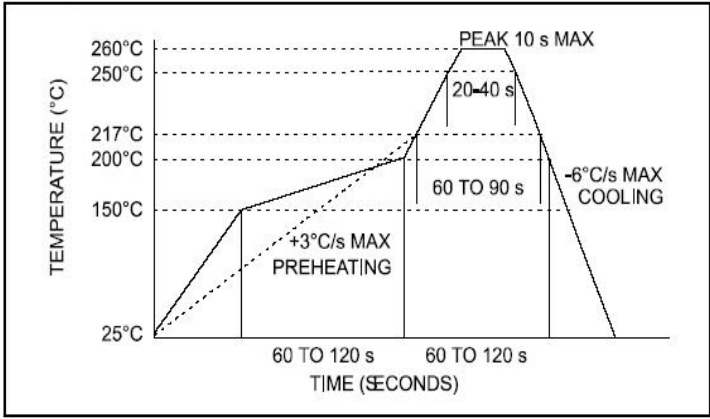


No	Test Items	Test Method and Condition	Requirements
1	振动 Vibration	(1)振动频率Vibration Frequency 10 to 55Hz (2)振动幅度Vibration Amplitude 1.5mm (3)周期 Cycle Time 1-2min(10-55-10Hz) (4)振动方向Direction X.Y.Z (5)振动时间Duration 2h/each direction	频率变化最大:±5ppm Frequency Change:±5ppm Max. 电阻变化最大: ±15%或5ohm Resistance Change:±15% or 5ohm Max.
2	冲击 Shock	从75cm高的地方自由跌落3次到30mm厚的硬木板上 3 Times free drop from 75cm height to hard wooden board of thickness more than 30mm	频率变化最大:±5ppm Frequency Change:±5ppm Max. 电阻变化最大: ±15%或5ohm Resistance Change:±15% or 5ohm Max.
3	气密性 Leakage	晶体放入氦加压罐内，充入氦气压力0.5-0.6Mpa保持1小时；然后使用氦质谱检漏仪测试。 Put crystal units into a hermetic container and Helium for 0.5-0.6 Mpa,and keep it for 1h;Check the leakage by a Helium leak detector	漏气率小于:1x10 ⁻⁸ mbar.l/s Leakage:1x10 ⁻⁸ mbar.l/s Max.
4	可焊性 Solderability	将引线浸入完全熔化的焊锡锅内3-5s，焊锡温度245℃±5℃ Put the leads of crystal units into solder melted tank for 3 to 5s Temperature of solder melted tank is 245℃±5℃	浸过引线面积的95%以上被新焊锡覆盖 The dipped surface of the lead should be at least 95% covered with continuous new solder coating
5	回流焊接 Reflow soldering	HC-49SM系列晶体可以经受下图所示的回流焊曲线 The profile of Fig. is for <div data-bbox="279 1041 922 1467" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">Example of SMD product soldering conditions (260°C peak: Lead-free products)</p>  </div>	频率变化最大:±5ppm Frequency Change:±5ppm Max. 电阻变化最大: ±25%或10ohm Resistance Change:±25% or 10ohm Max.

No	Test Items	Test Method and Condition	Requirements
6	引线强度(引线直插晶体) Lead Strength(DIP)	用0.9kg(9N)的力持续拉晶体引线30s±5s; 用0.45kg的力折引线成90° 2次(折弯处离机体1.5mm以上); The crystal lead with the 0.9kg(9N)power(keep it for 30s±5s) and bend the crystal lead 90° with 0.45kg power and two times (which you want to bend should be more than 1.5mm from the case)	引线无异常 The crystal lead is not abnormality
7	耐高温能力 High Temperature Endurance	晶体放置于85℃±2℃环境中 2小时后, 常温放置1-2小时 The crystal units shall be put in somewhere for 2 hours at temperature of 85℃±2℃,then keep it for 1 to 2 hours under room temperature	频率变化最大:±5ppm Frequency Change:±5ppm Max. 电阻变化最大:±15%或5ohm Resistance Change:±15% or 5ohm Max
8	耐低温能力 Low Temperature Endurance	晶体放置于-25℃ 环境中2小时后, 常温放置1-2小时 The crystal units shall be put in somewhere for 2 hours at temperature of -25℃,then keep it for 1 to 2 hours under room temperature	
9	耐湿性 Humidity Endurance	晶体放置于40℃、相对湿度90-95%环境中48小时后, 常温放 置1-2小时The crystal units shall be put in somewhere relative humidity of 90-95% for 48 hours,then keep it for one or two hours under room temperature	
10	高低温循环 Temperature Cycle	温度从-40℃(保持30分钟)升高到100℃(保持30分钟), 再 到-40℃(保持30分钟)然后回到室温25℃完成一个循环, 共计 5个循环Temperature shift from low(-40℃) to high(100℃,keep 30 minutes),satisfy high(100℃) to low(-40℃,keep 30 minutes),then go up to room temperature for 5 cycles	

下面的说明和信息供用户正确理解和使用我们公司的石英晶体系列产品，预防不当的加工方式对石英晶体的损坏，确保用户设备的可靠性

The following instructions and information are provided for the purpose of having the user understand the proper way to process our crystal products to prevent problems prior to use and enhance the reliability of the equipment to which they are applied.

N	PROCESSING INSTRUCTIONS
1	<p>石英晶体意外跌落When dropped by mistake</p> <p>设计和制造的石英晶体本身具有耐冲击能力,但是当石英晶体组件经受剧烈的机械冲击,如跌落到地板上或安装期间剧烈震动时,在使用之前需要进行电性能确认</p> <p>The crystal units are designed and manufactured to resist physical shocks.However,when the crystal units are subjected to excessive impact such as being dropped onto the floor or giving shocks during processing,need to make sure its satisfactory performance before using it.</p>
2	<p>回流炉焊接曲线Soldering</p> <p>The REFLOW SOLDERING PROFILE as below is recommended for HC-49SM</p> <p>● REFLOW SOLDERING PROFILE</p> 
3	<p>石英晶体组件的清洗CLEANING</p> <p>(1)恶劣的超声波清洗或超声波焊接可能会影响和损坏石英晶体组件。如果您对晶体组件进行了超声波清洗,请一定在使用前确认晶体组件是否受到了影响和损坏</p> <p>Crystal units may be affected and destroyed at worst by supersonic cleaning or supersonic welding.Please be sure to check if your cleaning and welding process affects any damage to crystal units before using.</p> <p>(2)有些清洗液也可能造成晶体组件的损坏,请在使用清洗液前确认该清洗液是否适用</p> <p>Some kinds of cleaning fluid may cause any damage to crystal units.Please be sure to check suitability of the cleaning fluid in advance.</p>
4	<p>贮存STORAGE</p> <p>石英晶体组件长时间贮存在高温或高湿环境中,可能会影响频率的稳定性或可焊性。请将晶体组件贮存在正常的温度和湿度环境中,避免阳光直射和露水凝结,避免贮存6个月以上再使用,拆封后尽快装配使用。</p> <p>Storage of crystal units under higher temperature or high humidity for a long term may affect frequency stability or solderability. Please store the crystal units under the normal temperature and humidity without exposing to direct sunlight and dew condensation, and avoid the storage of crystal units for more than 6 months, and mount them as soon as possible after unpacking.</p>