深圳市晶鸿辉电子有限公司
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產 品 規 格 書 SPECIFICATION

標題 Title：石英晶體諧振器規格書 QUARTZ CRYSTAL SPECIFICATION

石英晶體諧振器

SPECIFICATION FOR QUARTZ CRYSTAL RESONATOR

外 型 Holder Type：**HC-49U/S**

频 率 Frequency： **4.000MHz**

承認日期 **Date of Approval**	年 Year	月 Month	日 Day
承認欄 Approval By			

ACCEPTED/CONFIRMED BY（承 认）：

設計： Issued by	LMH	審核： Checked by		批准： Approved by	

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石英晶體諧振器規格書

QUARTZ CRYSTAL SPECIFICATION

編 號 Spec No. 日 期 Date：2009-12

一、適用 Scope ：本規格書適用於 4.000MHz HC-49U/S 晶體諧振器。

This specification is applied to the quartz crystal 4.000MHz HC-49U/S.

二、技術指標 Electrical Characteristics

	項目	Item	規格 Specification
1	標稱頻率	Nominal Frequency	4.000000MHz
2	殼　　形	Holder Type	HC-49U/S
3	振動模式	Oscillator Mode	AT 基频 FUND
4	調整頻差(25℃)	Frequency Stability (25℃)	±20ppm
5	工作溫度範圍	Operating Temperature Range	-20℃~+80℃
6	溫度頻差	Frequency Stability vs. Temp	±30ppm
7	存儲溫度範圍	Storage Temperature Range	-40℃~+85℃
8	負載電容	Load Capacitance	20pF
9	諧振電阻	Equivalent Series Resistance	120Ω max
10	靜 電 容	Shunt Capacitance	7.0pF max
11	激勵功率	Drive Level	50μW in standard
12	絕緣電阻	Insulation Resistance	500MΩ at DC100V
13	年老化率	Aging Rate a Year	±3ppm
14	檢測儀器	Test Impedance Meter	S&A250B
15	印字形式	Marking	4.000
16	環保要求	符合 ROHS 要求	

三、外形及尺寸 Appearance and Dimensions

1. 外觀：標誌清晰，外表光潔無污點和損傷。
   Appearance：Marking clear, no visible damage and dirt.
2. 外形尺寸：圖一所示。
   Dimensions：See figure 1.

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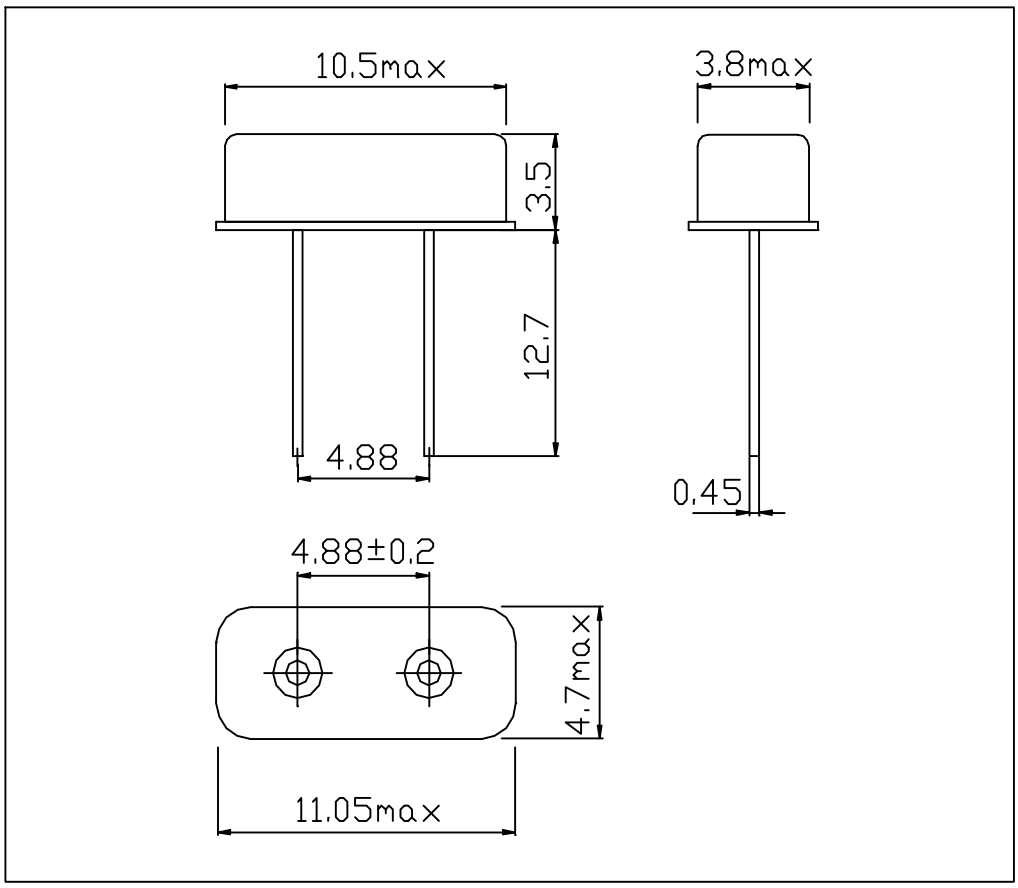
圖一：外形尺寸圖 **unit：mm**

Figure 1. Dimensions



四、機械及環境性能

序號	類 別	規 範	檢驗標準
1	自由跌落	從 75cm 高度自由跌落到 30mm 厚硬木板上，跌落三次	滿足電器性能規定
2	振動	頻率 10~55Hz，振幅 1.5mm，X、Y、Z 方向各振動 30 分鐘。	滿足電器性能規定
3	引出端強度	a.拉力：固定振盪器主體，沿引腳軸向施加 0.9Kg 拉力，保持 30±5 秒。 b.彎曲：引腳端頭懸掛 450g 的重物，彎曲 90,° 時間 2~3 秒, 以相同速度返回原位置, 再反向操作一次。	引腳無拔出或斷裂現象
4	密封性	將諧振器浸在酒精中，加壓 5Kg/cm^2,時間五分鐘。	測量引腳與基座間絕緣電阻>500MΩ（DC100V）
5	可焊性	從引腳末端至底部 2~2.5mm 放入 235℃±5℃的焊槽內，時間 2±0.5 秒。	沾錫面>90%，頻率變化≤±10ppm
6	耐焊接熱	從引腳末端至底部 2~2.5mm 處放入 260℃±10℃的焊槽內，時間 3.5±0.5 秒	外觀無異常，滿足電器性能規定
7	溫度迴圈	將諧振器放置在高低溫箱中，將溫度設置在-20℃，溫度到達後保持 30 分鐘，再將溫箱升溫到+80℃，保持 30 分鍾，這是一個迴圈，再將溫箱降溫到-20℃，開始下一個迴圈，如 此迴圈三次	外觀無損傷，滿足電器性能規定
8	恒定濕熱	在 40±3℃，RH90%±2%，放置 96 小時，取出後恢復 2 小時	外觀無異常，滿足電器性能規定
9	高溫老化	85℃±2℃老化 96 小時,取出後常溫下恢復 2 小時	外觀無異常，滿足電器性能規定
10	耐低溫	-40℃±2℃放置 96 小時，取出後常溫下恢復 2 小時	外觀無異常，滿足電器性能規定

四、Physical and Environment Characteristics

Item	Condition of test	Performance Requirements
Mechanical Shock	Resonator shall be measured after 3 times random dropping from the height of 75cm onto hard wooden broad of thickness more than 30mm	No visible damage, and measured Values shall meet Table 1
Vibration	Subject resonator to following vibration: Frequency:：10～55Hz Amplitude：1.5mm Duration：3 mutually perpendicular planes in each 2 hours Direction：X Y and Z axis	No visible damage, and measured Values shall meet Table 1
Terminal Strength Terminal Pulling Terminal Bending	Force of 5N is applied to each lead in axial direction for 30±5 sec. When force of 5N is applied to each lead in axial direction, the lead shall folded up 90^{o} from the axial direction and folded back to the axial direction. The speed of folding shall be each 3 seconds.	No visible damage, and measured Values shall meet Table 1
Solder ability	Lead terminals are immersed up to 2mm from Resonator's body in soldering bath of 235±5℃ for 2±0.5 sec.	More than 95% of the terminal surface of the resonator shall be covered with fresh solder
Resistance to Soldering Heat	Lead terminals are immersed up to 2mm from Resonator's body in soldering bath of 260±10℃ for 3.5±0.5 seconds and then resonator shall be measured after being placed in natural conditions for 1 hour.	No visible damage, and measured Values shall meet Table 1
Temperature Cycling	Subject the resonator to -20℃ for 30 min, followed by a high temperature of +80℃ for 30 min. Cycling shall be repeated 5 times. resonator shall be measured after being placed in natural conditions for 1 hour.	No visible damage, and measured Values shall meet Table 1
Heat Resistance	Subject the resonator to +85℃±5℃ for 96 hours, resonator shall be measured after being placed in natural conditions for 1 hour.	No visible damage, and measured Values shall meet Table 1
Cold Resistance	Subject the resonator to -40℃±5℃ for 96 hours, resonator shall be measured after being placed in natural conditions for 1 hour.	No visible damage, and measured Values shall meet Table 1
Humidity	Subject the resonator at +40℃±5℃ and 90%～95% R.H. for 96 hours, resonator shall be measured after being placed in natural conditions for 1 hour.	No visible damage, and measured Values shall meet Table 1