

新品 变更



产 品 规 格 书

SPECIFICATION FOR APPROVAL

产品名称 Product Name:	石英晶体谐振器 Quart crystal unit
产品型号 Product Type:	SMD3225
标称频率 Nominal Freq:	16.384000 MHz
明德亨料号 MDH P/N:	2.3.3.163841801
客户料号 Customer P/N:	

客户承认
Approved By Customer

签章
Signature:

日期
Date:

Date: 2021年7月27日

批准 Accepted	审核 Checked	拟制 Issued
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RoHS Compliant

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1 石英晶体产品规格及特性 / Product specification and features

1.1 一般特性 / General characteristics

Items	Electrical spec.			Unit	Notes
	Min.	Typ.	Max.		
1.Frequency(FL)	16.384000			MHz	-
2.Mode of oscillation	Fundamental			-	-
3.Crystal Cutting Type	AT-CUT			-	Thickness shear mode
4.Frequency tolerance	-20	~	20	ppm	At 25°C ±3°C
5.Loading capacitance(CL)	18			pF	-
6.Equivalent resistance(RR)	-	-	60	Ω	Series(ESR)
7.Drive Level (DL)	0.01	10	100	uW	-
8.Temperature stability	-30	~	30	ppm	-
9.Operating temperature range	-40	~	85	°C	-
10.Storage temperature range	-55	~	125	°C	-
11.Shut Capacitance(C0)	-	-	3	pF	-
12.RLD2	-	-	60	Ω	-
13.SPDB	-	-	-3	dB	-
14.Aging	-	-	3	ppm/Year	Per Year
15.Insulation Resistance	500	-	-	MΩ	DC 100±10V
16.TS	-	15	-	ppm/pf	-

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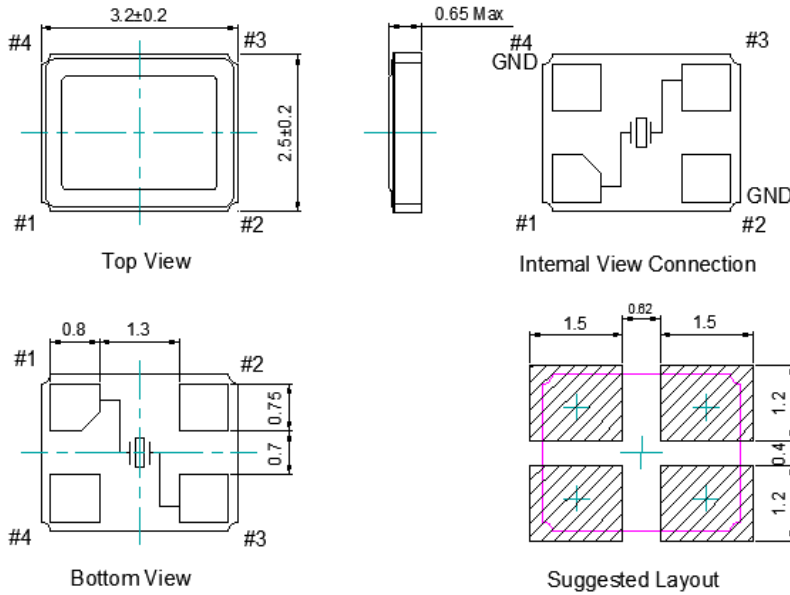
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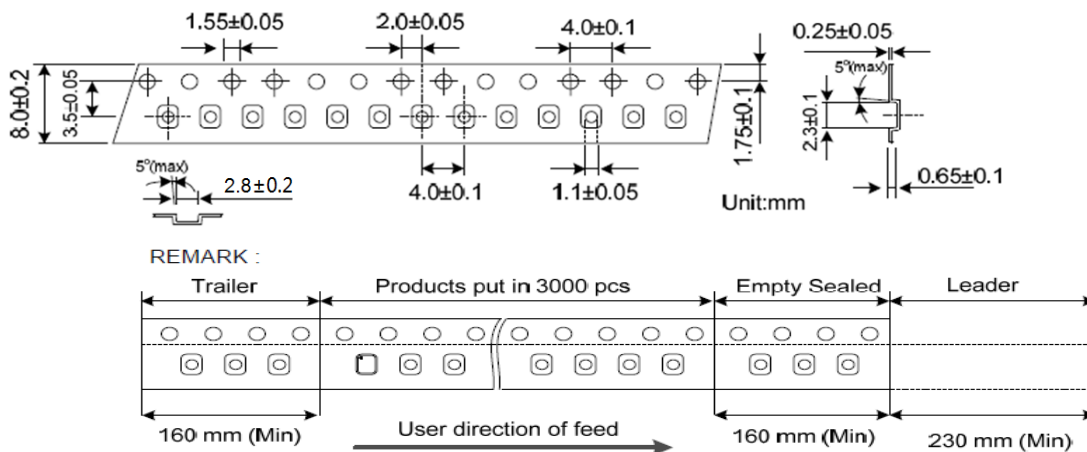
2.0 外形尺寸、外观 / Outline dimensions、Appearances

2.1 产品外形尺寸(mm)/ Product outline dimension(mm)

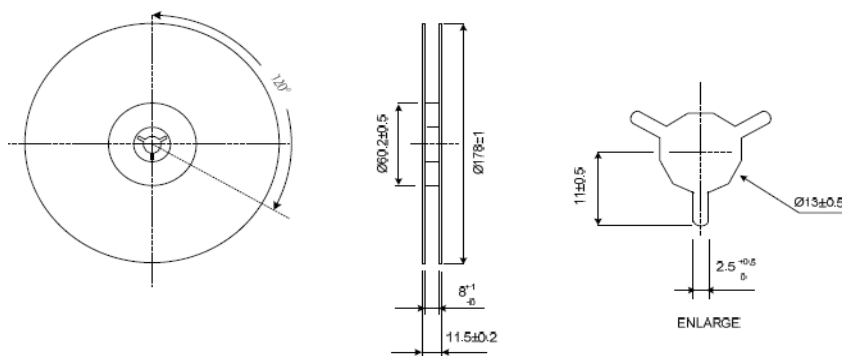
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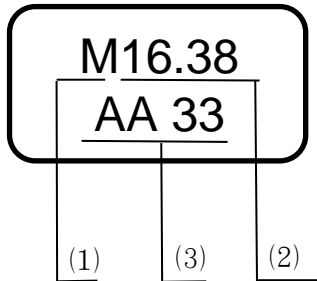
2.2 载带外形尺寸图 (mm) /Carrier Dimensional Drawing (mm)



2.3 编带盘外形尺寸图(mm) /Reel Dimensional Drawing (mm)

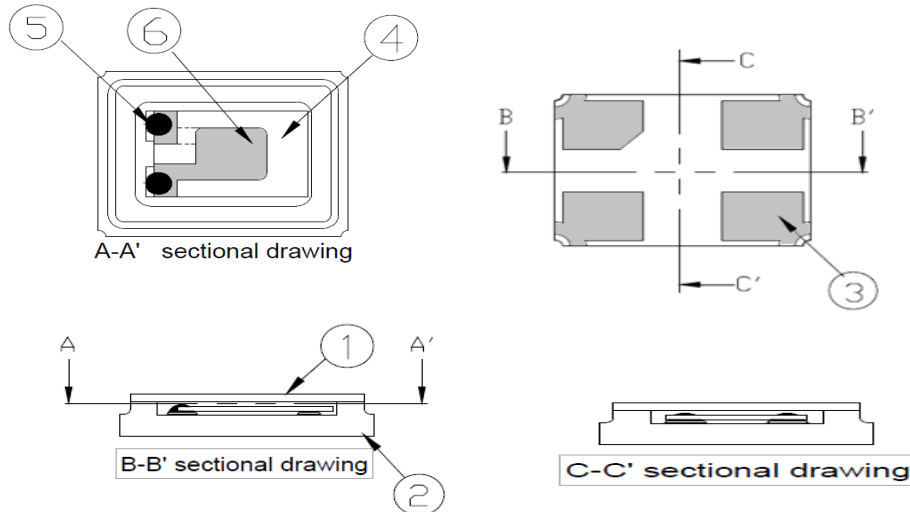


2.4 印字 Marking



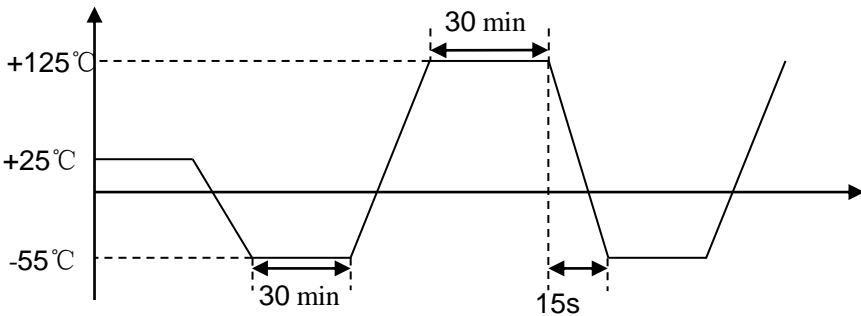
- (1) 代表公司Logo
- (2) 代表标称频率
- (3) 代表批次号

3.0 内部构造图 / Product internal structure



封装方式/Seal		激光封装	质量 (参考值)		0.0144g
NO.	材料名/Material	备注/Notes	NO.	材料/Material	备注/Notes
1	金属盖板/LID	Fe-Ni-Co	5	导电胶 /Conductive achhesive	/
2	陶瓷/Ceramics	黑色/Color black	6	银/Ag	形状例/Form isexample
3	引脚 /Pad	镀镍/镀金 Ni plating/Au plating			
4	晶片/Crystal (SiO2)	晶片 /Crystal Water			

4.0 石英晶体之可靠性 / Product reliability

项目 (Item)	条件 (Condition)	结果 (Result)
A.1	耐低温性 (耐寒性) 测试 (Cold resistance)	(I)
	Stored at $-40\pm 2^{\circ}\text{C}$ for 500 ± 2 hrs then $25\pm 2^{\circ}\text{C}$ 2 hrs before testing	
A.2	耐高温性 (耐热性) 测试 (Heat resistance)	(I)
	Stored at $125\pm 2^{\circ}\text{C}$ for 500 ± 2 hrs then $25\pm 2^{\circ}\text{C}$ 2 hrs before testing	
A.3	耐湿热性 (Humidity Resistance Result)	(I)
	稳态温度: $85\pm 2^{\circ}\text{C}$; 湿度: $85\pm 3\% \text{RH}$; 时间: 500 ± 2 hrs Steady temperature: $85\pm 2^{\circ}\text{C}$; humidity: $85\pm 3\% \text{RH}$; time: 500 ± 2 hrs	
A.4	老化测试 (Aging)	(I)
	Stored at $85\pm 2^{\circ}\text{C}$ for 720 ± 2 Hrs then $25\pm 2^{\circ}\text{C}$ 2 Hrs before testing Stored at $25\pm 2^{\circ}\text{C}$ for 1 year	
A.5	气密性 (Leakage)	(IV)
	细漏 Fine leak: Put the product in the Helium pressure tank, $4 \sim 5 \text{kgf/cm}^2$, 0.5hrs.	
A.6	冷热冲击实验 温度循环 (Temperature Cycle)	(I)
	<p>$-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$, Retain 30Min, 100 cycles</p>  <p>温度循环 (Temperature Cycle)</p>	

4.1 机械性能 / Mechanism characteristics

B.1	跌落测试 (Drop Test) Device are dropped from a height of 150 cm onto 20mm thickness stainless plate executing 3 times of random drops.	(I)
B.2	耐振性 (Resistance of Vibration) Frequency: 10~55Hz, amplitude(total excursion): 1.5mm±15%,3 direction (X,Y,Z) each 2 hrs then 25±2°C 2 hrs before testing	(I)
B.3	可焊性试验 (Solderability) 245±5°C, 5±1s	(III)
B.4	耐焊接热 (Reflow) Resistance to soldering heat (Reflow) 参考曲线图 (Reference Curve) :	(I)
<p>The graph shows the temperature profile for reflow soldering. The y-axis is Temperature (°C) from 50 to 300. The x-axis is Time (sec). The profile consists of a ramp from 50°C to 180°C (90-120s), a second ramp to a peak of 260±5°C (40s), and a final ramp to 180±10°C. A horizontal double-headed arrow above the peak indicates a width of ≤10s. A pink arrow points to the 90-120s ramp.</p>		

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项目 Item	结果编号Result NO.	规格要求 Specification Requirements
1	(I)	频率变化 $<\pm 10\text{ppm}$; 电阻变化 $<\pm 5\Omega$ 或规格电阻的 $\pm 15\%$, 取大者 Frequency variation $<\pm 10\text{ppm}$; Resistance variation $<\pm 5\Omega$ or $\pm 15\%$ of RR spec., select the bigger value.
2	(II)	频率变化 $<\pm 10\text{ppm}$; 电阻变化 $<\pm 10\Omega$ 或规格电阻的 $\pm 20\%$, 取大者 Frequency variation $<\pm 10\text{ppm}$; Resistance variation $<\pm 10\Omega$ or $\pm 20\%$ of RR spec., select the bigger value.
3	(III)	上锡覆盖率高于95% The covering rate of Tin-plating is more than 95%.
4	(IV)	$<1 \cdot 10^{-9}\text{Pa}\cdot\text{m}^3/\text{s}$ Max

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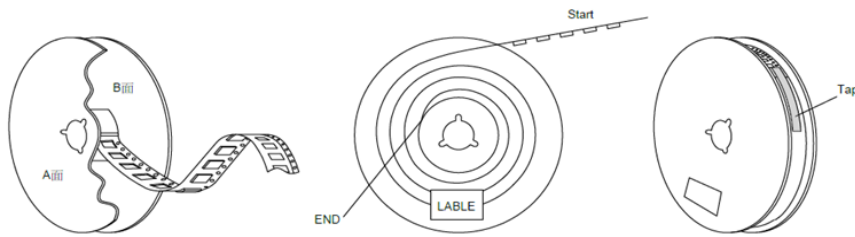
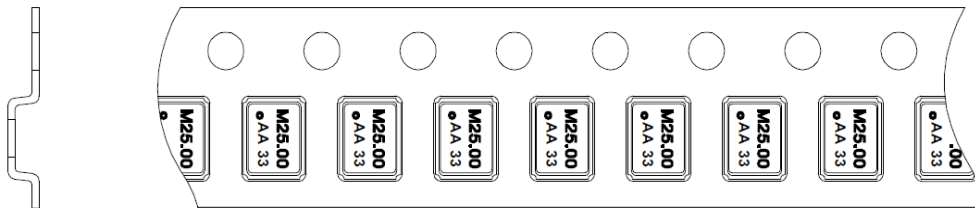
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5.0 生产商及产地说明 / Manufacturer and origin

生产商/Manufacturer: 烟台明德亨电子科技有限公司
YanTai MDH Technology Co.,Ltd

四川明德亨电子科技有限公司
SiChuan MDH Technology Co.,Ltd

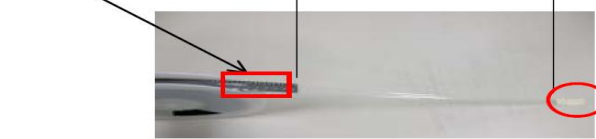
5.1 包装规格 Package specification



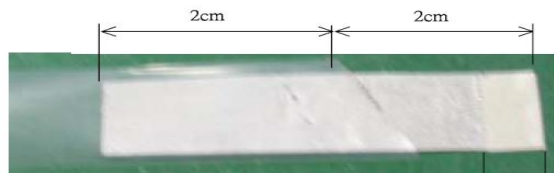
Standard Reel Quantity is 3,000 pcs per reel

(2)

料带/胶膜尾端留30cm不放产品 胶膜尾端留30-50cm



(3)



胶带前端向下反折1cm, 以利拆卸

165°~180°

