

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:	8.000000 MHz
明德亨料号 MDH P/N:	2.2.3.0800012C2
客户料号 Customer P/N:	

客户承认 Approved By Customer	
签章 Signature:	日期 Date:

Date: 2024年9月3日

批准 Accepted	审核 Checked	拟制 Issued
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RoHS Compliant

Revision Record

[illegible]

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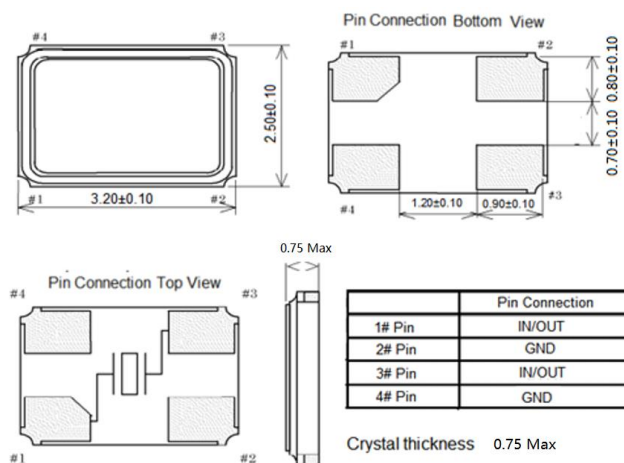
1 石英晶体产品规格及特性 / Product specification and features

1.1 一般特性 / General characteristic (AEC-Q200 Compliant)

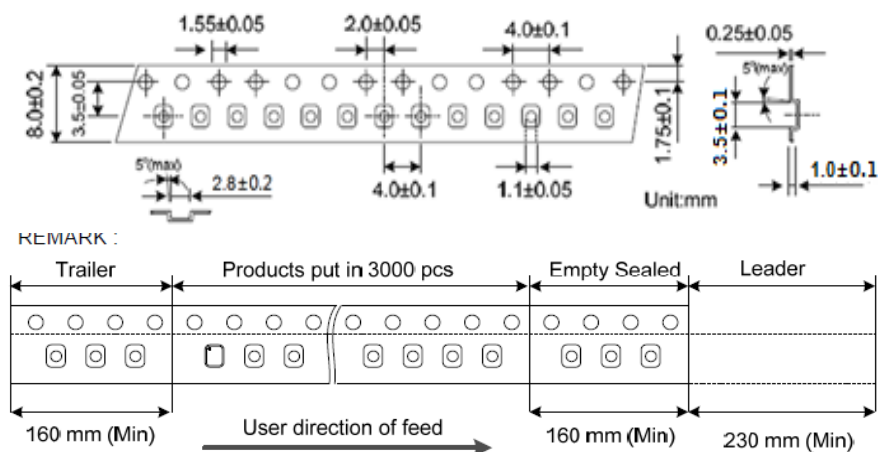
Items	Electrical spec.			Unit	Notes
	Min.	Typ.	Max.		
1.Frequency(FL)	8.000000			MHz	-
2.Mode of oscillation	Fundamental			-	-
3.Crystal Cutting Type	AT-CUT			-	Thickness shear mode
4.Frequency tolerance	-10	~	10	ppm	At 25℃±3℃
5.Loading capacitance(CL)	12			pF	-
6.Equivalent resistance(RR)	-	-	300	Ω	Series(ESR)
7.Drive Level (DL)	0.01	100	150	uW	-
8.Temperature stability	-30	~	30	ppm	-
9.Operating temperature range	-40	~	85	℃	-
10.Storage temperature range	-55	~	125	℃	-
11.Shut Capacitance(C0)	-	-	3	pF	-
12.SPDB	-	-	-3	dB	-
13.Aging	-3	-	3	ppm/Year	-
14.Insulation Resistance	500	-	-	MΩ	DC 100±10V

2.0 外形尺寸、外观 / Outline dimensions、Appearances

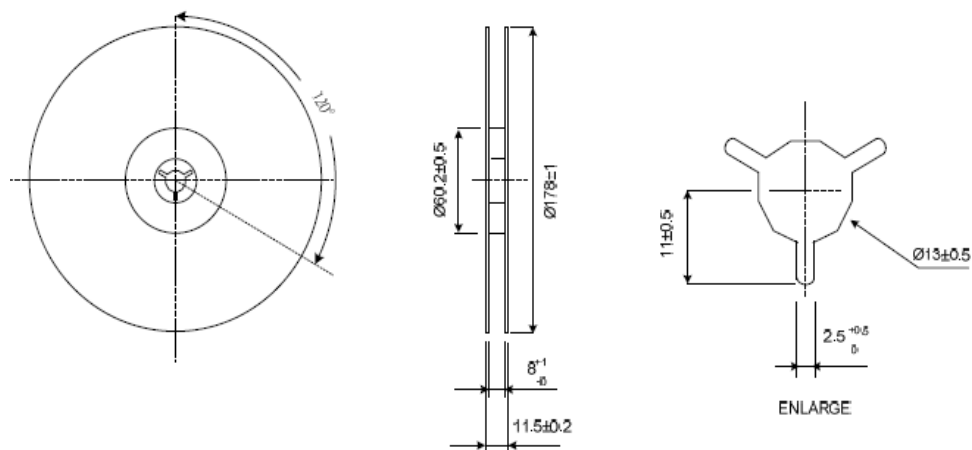
2.1 产品外形尺寸(mm)/ Product outline dimension(mm)



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

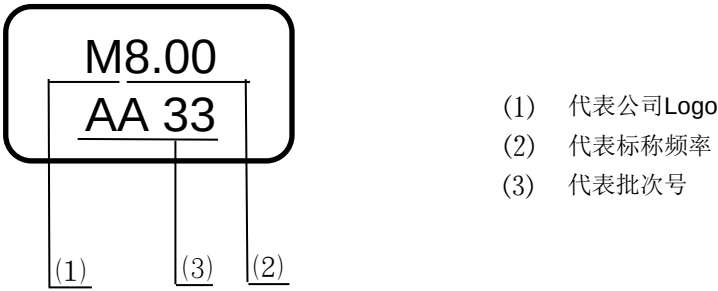


2.3 编带盘外形尺寸图(mm) /Reel Dimensional Drawing (mm)

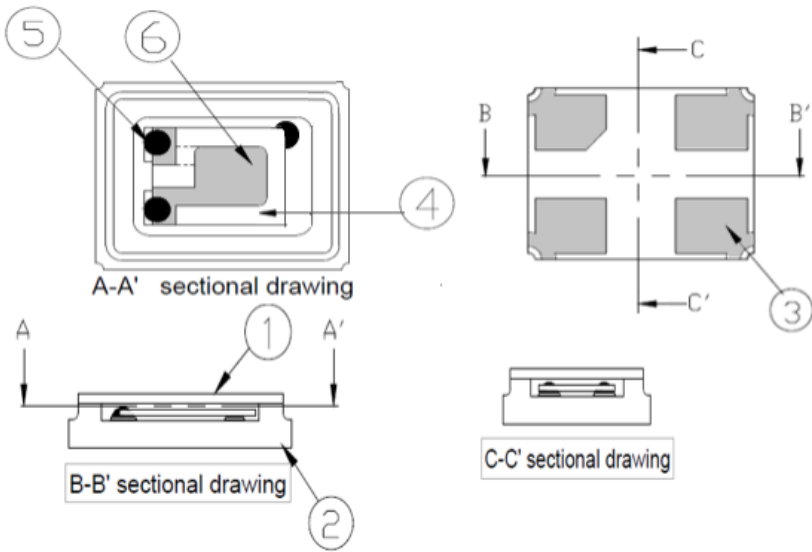


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2.4 印字 Marking



3.0 内部构造图 / Product internal structure



质量（参考值）：0.0168g/pcs			
NO.	COMPONENETS	MATERIALS	SPECIFICATIONS
1	LID	Kovar (Fe/Co/Ni)	-
2	Package	Ceramic (Al ₂ O ₃) + Kovar (Fe/Co/Ni)+ Au/Ni	Color Blank
3	Pad	Au	Tungsten metalize+ Ni plating+ Au plating
4	Crystal blank	SiO ₂	-
5	Conductive adhesive	Resin+Ag	Silicon resin
6	Electrode	Noble Metal	-

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4.0 石英晶体之可靠性 / Product reliability (AEC-Q200 Compliant)

	Item	Test condition		Reference
1	高温储存 High temperature exposure (storage)	实验时间: 1000H。 1000 hours, unpowered, Tested at maximum specified operating temperature or maximum specified storage temperature (whichever is higher).	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test MIL-STD-202 Method 108
2	温度循环 Temperature cycling	低温: $-55 \pm 2^\circ\text{C}$, 高温: $\geq 85^\circ\text{C}$, 循环1000次。1000 cycles, unpowered. Lower temperature of the chamber: -55°C . Upper temperature of the chamber: maximum specified operating temperature and shall not exceed 85°C . Dwell time (soak time): 30 minutes. Transition time: 1 minute maximum.	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test JESD22-A104
3	高温高湿 Humidity bias	温度: $85 \pm 2^\circ\text{C}$, 湿度: $(85 \pm 5)\% \text{RH}$, 时间: 1000H。 1000 hours. $85^\circ\text{C}/85\% \text{RH}$ with Voo applied.	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test MIL-STD-202 Method 103
4	高温使用寿命 High temperature operating life	实验时间: 1000H。 1000 hours, with Voo applied. temperature of the chamber: maximum specified operating temperature up to 150°C .	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test MIL-STD-202 Method 108
5	外观 External visual	Inspect device construction, marking and workmanship. Pre and post electrical test not required.	Per AEC-Q200	AEC-Q200 Test MIL-STD-883 Method 2009
6	尺寸 Physical dimensions	Verify physical dimensions to the applicable components specification. Pre and post electrical test not required.	Pro'duct specification sheet	AEC-Q200 Test JESD22-B100
7	机械冲击 Mechanical shock	峰值加速度: 100g, 脉冲宽度: 6ms。 Condition C, 100g's, 6 msec.. half-sine, three shocks in each direction along the three mutually perpendicular axes.	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test MIL-STD-202 Method 213
8	振动 Vibration	对数扫频10~2000Hz, 5g 20min , 3个方向个12个周期。 Test from 10 Hz to 2000 Hz. 5g's for 20 minutes. 12 cycles each of 3 orientations.	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test MIL-STD-202 Method 204
9	耐焊接热性 Resistance to soldering heat	温度 $\geq 217^\circ\text{C}$, 时间60~150S, 回流焊次数3次 Condition k, time above 217°C , 60 sec. to 150 sec., reflow 3 cycles.	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test MLST AU2 Method 210

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10	可焊性 Solderability	Method B1, Coating Durability Category 2. Method D, Coating Durability Category 2. Pre and post electrical test not required.	Over95% coated	AEC-Q200 Test JSTD-002
11	电气特性 Electrical characterization	Summary to show minimum,maximum, mean and standard deviation at room,minimum and maximum operating temperatures. Pre and post electrical test not required.	Pro'duct specification sheet	AEC-Q200 Test Product specification sheet
12	基板弯曲 Board flex (SMD)	板材弯曲位移2.5mm，保持时间60S。 Board bending displacement: 2.5 mm, holding time: 60 sec	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test AEC-Q200-005
13	剪切实验 Terminal strength (SMD)	力1.8kg，保持时间60S。 Force: 1.8 kg, holding time: 60 sec	$\Delta Fr \leq \pm 10 \text{ ppm}$ $\Delta Rr \leq \pm 10 \Omega$	AEC-Q200 Test AEC-Q200-006

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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

