文件编码: MDH3-03-002 版次: 1.0

新品)变更

MDH201808109

# 产品规格书

### SPECIFICATION FOR APPROVAL

产品名称

石英晶体谐振器

Product Name:

SMD3225

产品型号 Product Type:

SINDSZZS

标称频率 Nominal Freq:

40.000000

MHz

明德亨料号 MDH P/N:

2. 3. 3. 400001004

客户料号

Customer P/N:

客户承认

Approved By Customer

签章

日期

Signature:

Date:

	Date:	2018年8月22日
批准	审核	拟制
Accepted	Checked	Issued
黄屹	乔润国	马赛



烟台明德亨电子科技有限公司

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# Revision Record

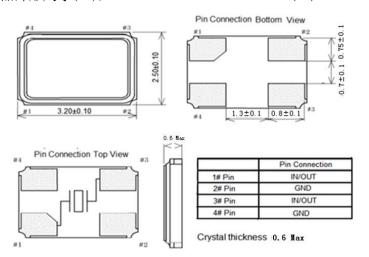
VER	修订页面	变更内容	修改日期	修订者
VLIC	Rev. page	Revise Contents	Revise Date	Reviser
01	N/A	Initial released	N/A	Zhang Shengli
				1

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1	Product sp	pecification	and features				
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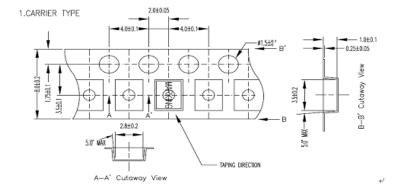
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							,
1	石英晶体产品规格及特性 / Product speci	ficatio	on and fe	eature	es :		
	1.1 一般特性 / General characteristics						
	标称频率 Nominal frequency	40. 000	000 "	Mz			
	振动模式 Overtone order	Fundam	ental				
	型 号 Type	SMD322	5				
	动作温度	-30 <sup>~</sup> 85	o	С			
	Operating temperature 保存温度 Storage temperature	-40 <sup>~</sup> 85	0	С			
	1.2 电气特性 / Electric characteristics						
	调整频差(+25℃基准)	$\pm 10$	p	pm			
	Adjustment tolerance: (at+25℃) 温度频差	±10	p	pm	-30 <sup>~</sup> 85	$^{\circ}$	!
	Tolerance over the temperature:	$\pm 20$			$-40^{\sim}85$	$^{\circ}\!\mathbb{C}$	
	负 载 Load capacitance	10.0	ŗ	οF			
	测试仪器 Measure Instrument	S&A 25	0B				
	激励功率 Drive level	100.0	$\mu_{\scriptscriptstyle N}$	V			
	等效电阻 Equivalent resistance	25. 0	Ω	Max			
	分布电容 ( CO ) Shut capacitance	3.0	pF	Max			
	绝缘阻抗 Insulation resistance	500 M S	2 Min 10	00VDC±	±15VDC		
	老化率 Aging	±2ppm	ppı	m/Firs	st year		
	1.3 其它特性 / Other characteristics						
	SPDB	<-3	dB		(以标称频	率为	基准)

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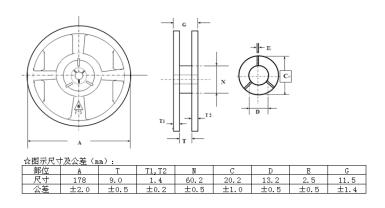
- 2.0 外形尺寸、外观 / Outline dimensions、Appearances
  - 2.1 产品外形尺寸(mm)/ Product outline dimension(mm)



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

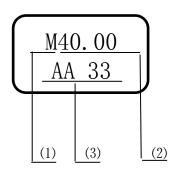


2.3编带盘外形尺寸图(mm) /Reel Dimensional Drawing (mm)



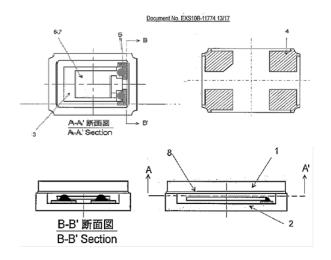
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## 2.4 印字 Marking



- (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/Matenal	备注/Notes	NO.	材料/ Matenal	备注/Notes
1	金属盖板/LID	Fe-Ni-Co	5	导电胶 /Conductive achesive	/
2	陶瓷/Ceramics	黑色/Color black	6	银/Ag	形状例/Form isexample
3	晶片/Crystal (Si02)	晶片 /Crystal Water	7	铬/Cr	形状例/Form isexample
4	引脚 /Pad	镀镍/镀金 Ni plating/Au plating			

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# 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)  Stored at -40±2℃ for 1000±2 hrs then 25±2℃ 1~2 hrs before testing	(1)
A. 2	耐高温性(耐热性)测试 (Heat resistance) Stored at 85±2℃ for 1000±2 hrs then 25±2℃ 1~2 hrs before testing	(1)
A. 3	盐雾测试 (Salt Mist Test) 将温度35℃±2℃之盐水(盐份浓度5%),喷向石英晶体48小时±2小时,再用清水洗净。  Spray the 35℃±2℃ salt water (salt density 5%) to crystal for 48±2hrs, then clean by water	(1)
A. 4	耐湿热性 (Humidity Resistance Result) 稳态温度: 60±2℃; 湿度: 90~95%RH; 时间: 500h; Steady temperature: 60±2℃; humidity: 90~95%RH; time:500h	(1)
A. 5	撞击测试 (Mechanical Shock) 14700m/S <sup>2</sup> 0.5sec 5times in each of 6 direction	(I)
A. 6	老化 (Aging)  Stored at 85±3℃ for 720±12Hrs then 25±2℃ 1~2 Hrs before testing  Stored at 25±2℃ for 1±0.03 year	(1)
A. 7	气密性 (Leakage) 细漏Fine leak: Helium leak test *JIS C 6701 10.6	(V)
A. 8	温度循环 (Temperature Cycle)  -40℃ ~ 85℃, Dewell 30Min, 100 cycles  +85℃  +25℃  -40℃  30 min  15s  温度循环 (Temperature Cycle)	(1)

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B.1 Device are dropped from a height of 100 cm onto 20mm thickness stainless plate executing 3 times of random drops.    Mage (Resistance of Vibration)	SMIT	OSZZO QUARTZ CRYSTAL UNII REV. 01	PAGE	8/
B.1 Device are dropped from a height of 100 cm onto 20mm thickness stainless plate executing 3 times of random drops.  耐振性 (Resistance of Vibration)  Frequency: 10~55Hz, amplitude(total excursion): 1.5mm±15%, 3 direction (X, Y, Z) each 2 hr  耐焊接热 (手工)  Resistance to soldering heat (Hand soldering method)  B.3 温度: 360±10℃; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min  Temperature: 370~400℃; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min  可焊性试验 (Solderability)  240±2℃, 3±0.5sec  耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260±5℃; 10S; 2Times  Reflow温度曲线图  TBMP. (*C)  300  10s MAX  260±5℃ C 230±5℃ C 230±5℃ C	4. 1机	戒性能 / Mechanism characteristics		
Bevice are dropped from a height of 100 cm onto 20mm thickness stainless plate executing 3 times of random drops.  耐燥性 (Resistance of Vibration)  Frequency: 10~55Hz, amplitude(total excursion): 1.5mm±15%, 3 direction (X,Y,Z) each 2 hr  耐焊接热 (手工)  Resistance to soldering heat (Hand soldering method)  温度: 360±10°C; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min  Temperature: 370~400°C; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min  可焊性试验 (Solderability)  240±2°C, 3±0.5sec  耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260±5°C; 10S; 2Times  Reflow温度曲线图  TEMP. (°C)  300——————————————————————————————————		跌落测试 (Drop Test)		
B. 2   Frequency: 10~55Hz, amplitude(total excursion): 1.5mm±15%, 3   direction (X, Y, Z) each 2 hr   Mpg接热 (手工)   Resistance to soldering heat (Hand soldering method)   abg: 360±10°C; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min   (I)   Temperature: 370~400°C; Time: 3~4sec;   Frequency: 2 times; Soldering iron: 60W/Min   可焊性试验 (Solderability)   240±2°C, 3±0.5sec   Mpg接热 (Reflow) Resistance to soldering heat (Reflow)   260±5°C; 10S; 2Times   Reflow温度曲线图   TBMP. (°C)   300   250   230±5°C   230	В. 1		( <b>[</b> )	
#requency: 10 55Hz, amplitude(total excursion): 1.5mm±15%, 3 direction (X,Y,Z) each 2 hr 耐焊接热 (手工)  Resistance to soldering heat (Hand soldering method)  温度: 360±10℃; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min  Temperature: 370~400℃; Time: 3~4sec;  Frequency: 2 times; Soldering iron: 60W/Min  可焊性试验 (Solderability)  240±2℃, 3±0.5sec  耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260±5℃; 10S; 2Times  Reflow温度曲线图  **TBMP. (° C)**  300—**105 MAX**  260±5° C 230±5° C 230±5° C 180±10° C 180±10° C		耐振性 (Resistance of Vibration)		
Resistance to soldering heat (Hand soldering method) 温度: 360±10℃; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min  Temperature: 370~400℃; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min  B.4  □焊性试验 (Solderability) 240±2℃, 3±0.5sec  耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260±5℃; 10S; 2Times  Reflow温度曲线图  TEMP. (° C)  300- 250- 250- 230±5° C 230±5° C 230±5° C	В. 2		(1)	
B.3 温度: 360±10℃; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min  Temperature: 370~400℃; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min  B.4 可焊性试验 (Solderability)  240±2℃, 3±0.5sec  耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260±5℃; 10S; 2Times  Reflow温度曲线图  TBMP. (° C)  300		耐焊接热 (手工)		
Temperature: 370~400°C; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min  B.4		Resistance to soldering heat (Hand soldering method)		
Frequency: 2 times; Soldering iron: 60W/Min	В. 3	温度: 360±10℃; 时间: 3秒; 次数: 2次; 烙铁功率: 60W/Min	(I)	
B.4 可焊性试验 (Solderability) 240±2°C, 3±0.5sec  耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260±5°C; 10S; 2Times  Reflow温度曲线图  TBMP. (° C)  300  250  250  250  250  260±5° C  230±5° C  230±5° C  (I)		Temperature: 370 <sup>4</sup> 00°C; Time: 3 <sup>4</sup> sec;		
B.4 240±2℃, 3±0.5sec		Frequency: 2 times; Soldering iron: 60W/Min		4
耐焊接热 (Reflow) Resistance to soldering heat (Reflow)  260± 5℃; 10S; 2Times  Reflow温度曲线图  10s MAX  260±5° C 230±5° C 100 100 100 100 100 100 100 100 100 10	B. 4		(][)	
260± 5℃; 10S; 2Times  Reflow温度曲线图  TBMP. (° C)  300  250  250  200  100  90-120s  40s  (I)				-
TEMP. (°C)  300——————————————————————————————————				
B. 5  TBMP. (° C)  10s MAX  260 ± 5° C  230 ± 5° C  180 ± 10° C				
B. 5  260 ± 5° C  230 ± 5° C  180 ± 10° C  100 — 90-120s				
B. 5  250  200  180  180  100  50  100  100  100  10		10s MAX		
B. 5  180  190-120s  100- 50-  50-  180±10° C				
180 100 50	B 5		(1)	
100- 50-120s 40s	<b>D.</b> 0	180 ± 10° C		
50		90-120s		
TIME (sec)		50		
		TIME (sec)		

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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<±10ppm; 电阻变化<5 Ω 或规格电阻的15%, 取大者 Frequency variation <±10ppm; Resistance variation <5 Ω or 15% of RR spec., select the bigger value.         2       (II)       上锡覆盖率高于95% The covering rate of Tin-plating is more than 95%.         3       (III)       无气泡在晶体表面沉淀或冒出水面,绝缘阻抗 500 MΩ Min 100VDC/±15VDC There is no bubbles after the Crystal is dipped in the water Insulation Resistance: 500 MΩ Min 100VDC/±15VDC         4       (IV)       在10倍放大镜下观察石英晶体无裂纹 The Crystal is no crackle under the observation of 10 times Magnifier.         5       (V)       1*10-9Pa. m²/s Max			
I (I) Frequency variation 〈±10ppm; Resistance variation 〈5Ω or 15% of RR spec., select the bigger value.  2 (II) 上锡覆盖率高于95% The covering rate of Tin-plating is more than 95%.  3 (III) 无气泡在晶体表面沉淀或冒出水面,绝缘阻抗 500 MΩ Min 100VDC/±15VDC There is no bubbles after the Crystal is dipped in the water Insulation Resistance: 500 MΩ Min 100VDC/±15VDC  4 (IV) 在10倍放大镜下观察石英晶体无裂纹 The Crystal is no crackle under the observation of 10 times Magnifier.			规格要求 Specification Requirements
The covering rate of Tin-plating is more than 95%.  无气泡在晶体表面沉淀或冒出水面,绝缘阻抗 500 MΩ Min 100VDC/±15VDC There is no bubbles after the Crystal is dipped in the water Insulation Resistance: 500 MΩ Min 100VDC/±15VDC  在10倍放大镜下观察石英晶体无裂纹 The Crystal is no crackle under the observation of 10 times Magnifier.	1	(1)	Frequency variation $<\pm10\rm{ppm};$ Resistance variation $<\!5\Omega$ or 15% of RR spec., select the
3 (III) 100VDC/±15VDC There is no bubbles after the Crystal is dipped in the water Insulation Resistance: 500 MΩ Min 100VDC/±15VDC  在10倍放大镜下观察石英晶体无裂纹 The Crystal is no crackle under the observation of 10 times Magnifier.	2	( ]] )	
4 (IV) The Crystal is no crackle under the observation of 10 times Magnifier.	3	(III)	$100 \text{VDC} / \pm 15 \text{VDC}$ There is no bubbles after the Crystal is dipped in the water
5 (V) 1*10-9Pa. m³/s Max	4	( <b>IV</b> )	The Crystal is no crackle under the observation of 10 times
	5	(V)	1*10-9Pa.m³/s Max

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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/MDH Technology Co., Ltd

工厂所在地/Address: 山东省烟台开发区黑龙江路6号

No. 6 Heilongjiang Road, Yantai Development zone, Shandon

包装方式: <u>纸箱 52cm×37cm×38cm(±1.5cm)</u>

Package: Paper carton  $52 \text{cm} \times 37 \text{cm} \times 38 \text{cm} (\pm 1.5 \text{cm})$ 

### 5.1包装规格Package specification

