

STANDARD SPECIFICATION

产品规格书

客户 Customer: _____

客户料号 Customer P/N NO.: _____

产品描述 Product Description: OSC-2016 24.000MHZ 1.8~3.3V ±10PPM

H X - C 料号 P/N NO.: 1Y024000VP

客户批准 Customer Approval :

审 核	批 准
Checked	APPROVED

(请批准后回签一份 PLEASE RETURN A COPY WITH APPROVAL)

拟 制 DESIGNER	审 核 CHECK	批 准 APPROVED
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REVISION RECORD

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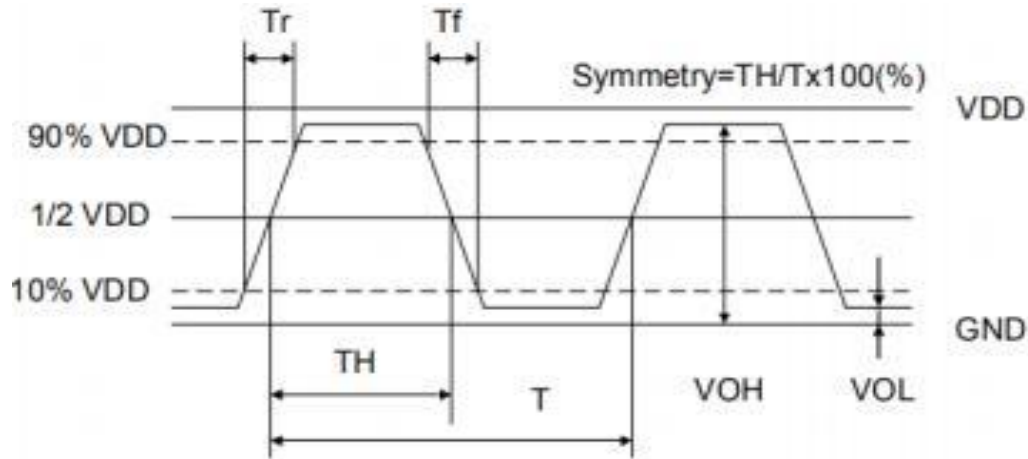
Spec Sheet Contents

NO.	Content	Page
1	石英晶体参数规格 QUARTZ CRYSTAL UNIT SPECIFICATION	4
2	CMOS负载输出波形 LOAD OUTPUT WAVEFORM	5
3	CMOS负载电路测试 LOAD CIRCUIT TEST	5
4	外形尺寸 BOUNDARY DIMENSION	6
5	印字内容 MARKING	6
6	内部结构 INSIDE STRUCTURE	7
7	包装 PACKING	7
8	回流焊温度曲线 REFLOW PROFILES	8
9	可靠性试验 RELIABILITY SPECIFICATIOND	9
10	包装数量 NUMBER OF PACKAGES	11

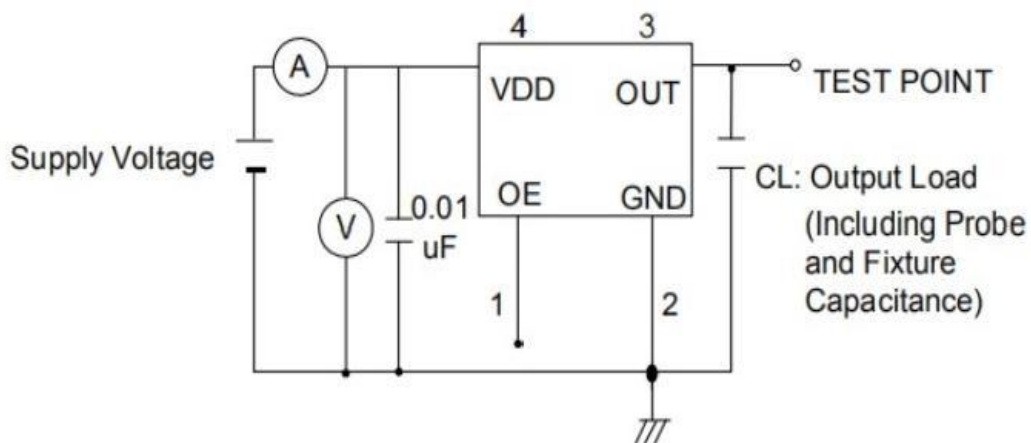
1. 石英晶体参数规格 QUARTZ CRYSTAL UNIT SPECIFICATION

NO.	项目 Item	符号 Symbol	电气特性规格 Electrical Specification				备注 Notes
			下限 Min.	中心 Typ.	上限 Max.	单位 Units	
1	标准频率 Nominal Frequency	FL	24.000			MHz	
2	震荡模式 Oscillation Mode	-	Fundamental			-	
3	频率偏差 Frequency Tolerance	FT	-10	-	10	ppm	At 25°C±°C
4	温度频差 Frequency Stability	TC	-30	-	30	ppm	
5	工作温度 Operating Temperature		-40	-	85	°C	
6	储存温度范围 Storage temperature range	T_stg	-55	-	125	°C	
7	老化率 Aging rate	F_age		±2		ppm	First year
8	供电电压 For the pressure	Vdd	1.8~3.3			V	±10%
9	电流 current	Icc			10.0	mA	
10	上升, 下降时间 Rise, fall time		5			Ns	10%~90% Level
11	输出波形 Output waveform		CMOS				
12	占空比 Duty ratio	TH/T	45		55	%	
13	输出负载 The output load	CL		15		pF	
14	起振时间 Start-up Time			-	5	mS	To 90% of Final Amplitude
15	使能延迟 Enable Delay Time			-	150	uS	
16	使能高电平 Enable Voltage High (Logic 1)		70%Vdd			V	输出使能OE是高电平1或者悬空, 频率输出; 输出使能OE是低电平0, 则无频率输出。 Output will be enable if OE is Logic 1 or open ; Output will be disable if OE is Logic 0.
17	使能低电平 Enable Voltage Low (Logic 0)				30%Vdd	V	

2. CMOS 负载输出波形 LOAD OUTPUT WAVEFORM

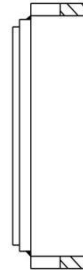
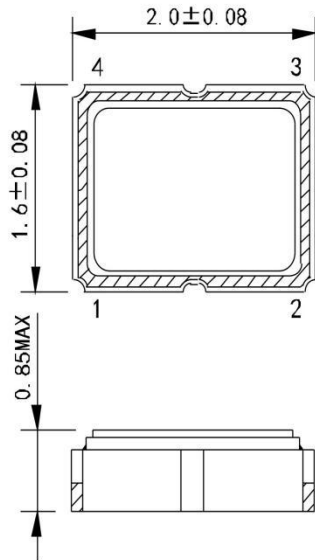


3. CMOS 负载电路测试 LOAD CIRCUIT TEST

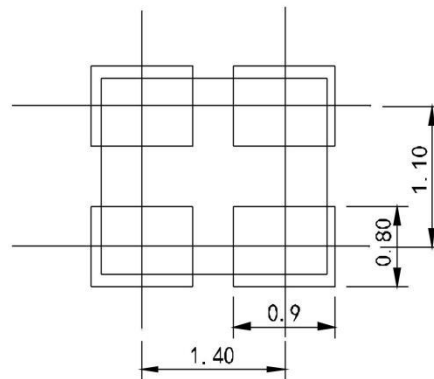
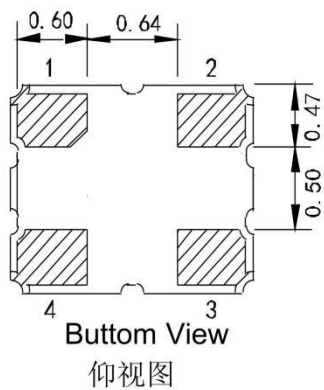


4. 外形尺寸 BOUNDARY DIMENSION

(单位 unit : mm)

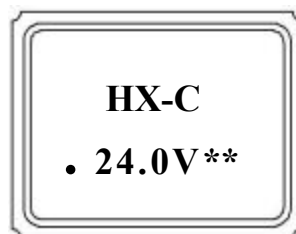


Pad Functions:
1. ENABLE CONTROL
2. GND
3. OUT PUT
4. VDD



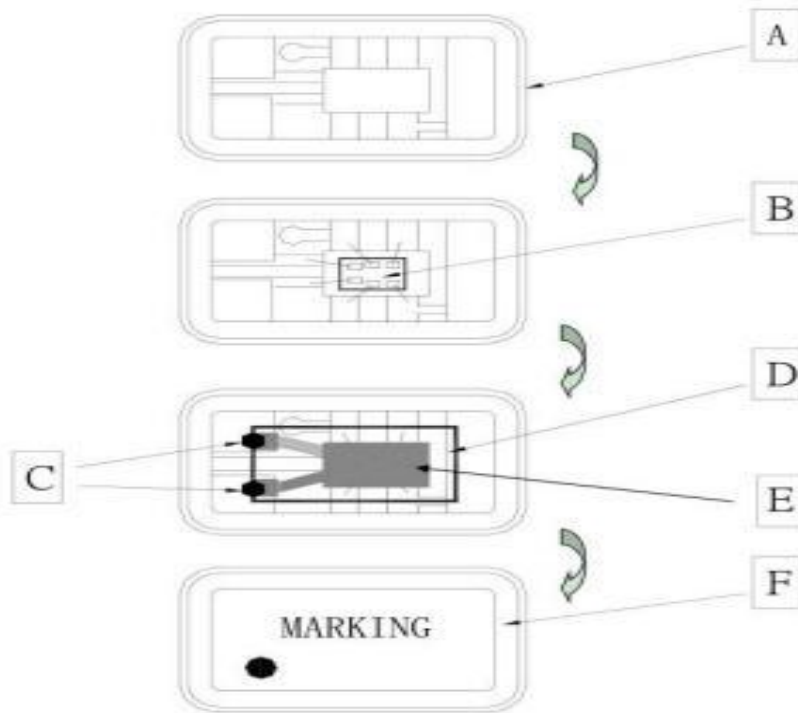
suggested solder pad layout.

5. 印字



HX-C ———— LOGO
· ———— Pin1
24.0 ———— FL
V ———— VDD
YM ———— YM

6. 内部结构图 INSIDE STRUCTURE

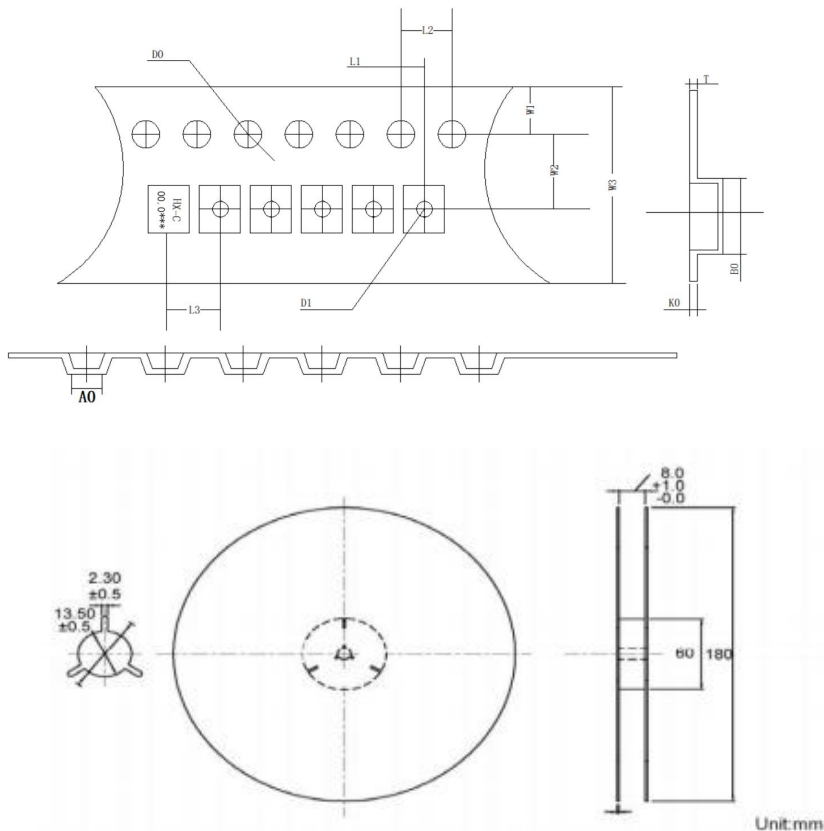


组件及名称		材质	组件及名称		材质
A	基座	Al_2O_3	D	晶片	SiO_2
B	芯片	硅	E	电极	Cr+Ag
C	导电胶	Ag + 硅树脂	F	上盖	Kovar

7. 编带包装 BRAID PACKAGING

(单位: mm)

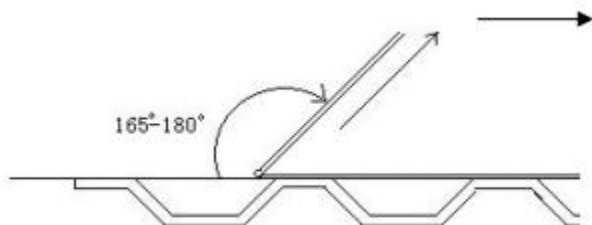
1. 载带与编带盘尺寸



L1	2.00±0.1
L2	4.00±0.1
L3	4.00±0.1
D0	1.50±0.1
D1	1.00±0.1
W0	8.30±0.2
W1	1.75±0.1
W2	3.50±0.1
W3	8.00±0.1
A0	2.72±0.1
B0	3.46±0.1
K0	1.00±0.1
T	0.22±0.05

2. 剥离方式见下图, 强度: 20g-100g

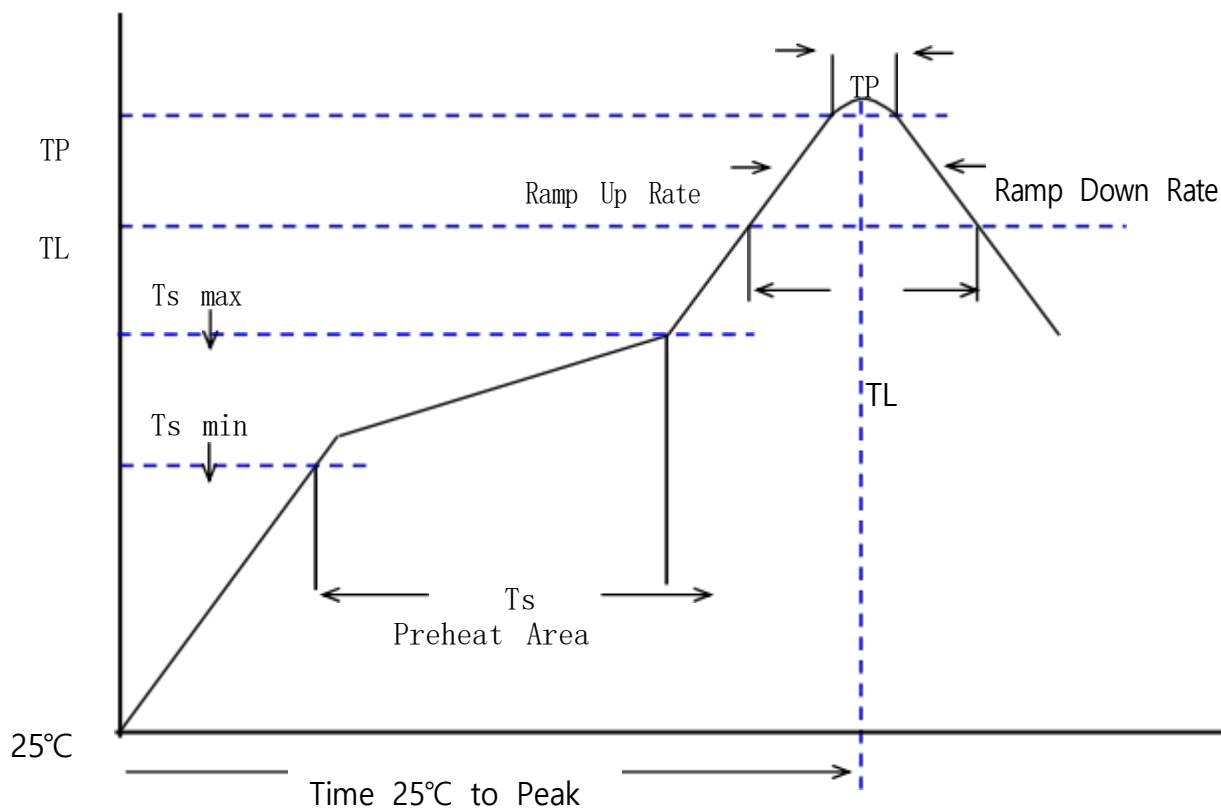
牵引方向



8. 回流焊温度曲线 REFLOW PROFILES

参考标准 REFER: JEDEC J-STD-020D

Profiles Feature	Pb-Free Assembly
Preheat/Soak Temperature Min (Ts min) Temperature Max (Ts max) Time (Ts) from (Ts min to Ts max)	150°C 200°C 60-120 seconds
Ramp-up rate (TL to TP)	3°C/second max.
Liquidous temperature (TL) Time (TL) maintained above TL	217°C 60-150 seconds
Peak/Classification Temperature (TP)	260±5°C
Time within 5°C of actual Peak Temperature (TP)	20~40 seconds
Ramp-down rate (TP to TL)	6°C/second max.
Time 25 °C to peak temperature	8 minutes max.
Suggest reflow times	3 Times max



9. 可靠性试验 RELIABILITY SPECIFICATION

参考标准REFER		JIS C 6701	
NO.	项目 ITEM	测试条件 CONDITIONS	合格标准 BASIS OF VERDICT
1	跌落 DROP	100cm高处自由跌落到3cm厚木板上, 3次 High:100cm; Thickness:3cm; 3 times.	$\Delta FL \leq \pm 5\text{ppm}$
2	振动 VIBRATION	频率 Frequency:10~57.7Hz:幅度 Amplitude: $\pm 0.75\text{mm}$ 频率 Frequency:57.7Hz~500Hz:加速度幅度acceleration rate:98m/s ² 周期 Cycle time:10~500-10Hz: 15min 振动方向 Direction:X, Y, Z 振动时间 Duration: 每个方向2小时 2 h/direction.	$\Delta FL \leq \pm 5\text{ppm}$
3	温度变化 TEMPERATURE SHOCK	-40℃ $\pm 2^\circ\text{C}$ (30min) $\leftarrow \rightarrow$ 85℃ $\pm 2^\circ\text{C}$ (30min); 循环10次 -40℃ $\pm 2^\circ\text{C}$ ℃ (30min) $\leftarrow \rightarrow$ 85℃ $\pm 2^\circ\text{C}$ (30min); For 10 cycles	$\Delta FL \leq \pm 5\text{ppm}$
4	湿热 HUMIDITY	温度:40℃ $\pm 2^\circ\text{C}$; 湿度90~95%; 时间:96小时 Temp:40℃ $\pm 2^\circ\text{C}$; Humidity:90~95%; Times:96h	$\Delta FL \leq \pm 5\text{ppm}$
5	低温 COLD RESISTANCE	温度:-40℃ $\pm 2^\circ\text{C}$; 时间:96小时 Temp:- 40℃ $\pm 2^\circ\text{C}$; Times:96h	$\Delta FL \leq \pm 5\text{ppm}$
6	高温1 HEAT RESISTANCE 1	温度:100℃ $\pm 2^\circ\text{C}$; 时间:96小时 Temp:100℃ $\pm 2^\circ\text{C}$; Times:96h	$\Delta FL \leq \pm 5\text{ppm}$
7	高温2 HEAT RESISTANCE 2	温度:155℃ $\pm 2^\circ\text{C}$; 时间:2小时 Temp:155℃ $\pm 2^\circ\text{C}$; Times:2h	$\Delta FL \leq \pm 5\text{ppm}$
8	高温3 HEAT RESISTANCE 3	温度:85℃ $\pm 2^\circ\text{C}$; 电压:3.3V/5.0V; 时间:96小时 Temp:85℃ $\pm 2^\circ\text{C}$; Voltage:3.3V/5.0V; Times:96h	$\Delta FL \leq \pm 5\text{ppm}$
9	回流焊 REFLO W	150℃ $\pm 5^\circ\text{C}$ 保持120s后升到270℃ $\pm 5^\circ\text{C}$ 保持10s, 升温 and 保温 时间小于 200s, 常温放置1~2h后测定 Keep 150 °C $\pm 5^\circ\text{C}$ 120s and then rose to 270 °C $\pm 5^\circ\text{C}$ for 10s, warming and holding time is less than the 200s, placed at room temperature 1 ~ 2h after test	$\Delta FL \leq \pm 5\text{ppm}$
10	盐雾 SALT SPRAY	盐雾浓度:5%; 温度:35℃; 时间:24小时 Salt density:5%; Temp:35℃; Times:24h	目测无明显腐蚀现象 Visual no significant corrosion.
11	老化 AGING	温度:85℃; 时间:30天 Temp:85℃; Times:30days	$\Delta FL \leq \pm 5\text{ppm}$
12	气密性 LEAKAG E	氦气 (0.6~0.65MPa):10分钟 He (0.6~0.65MPa):10min	$\leq 3 \times 10^{-9} \text{Pa} \cdot \text{m}^3/\text{s}$
13	焊接 SOLDER	温度:260℃ $\pm 5^\circ\text{C}$ Temp:260℃ $\pm 5^\circ\text{C}$	浸锡率大于90% Soldering tin rate greater than 90%

10. 包装数量 NUMBER OF PACKAGES

类型 TYPE	尺寸 SIZE	数量 NUMBER
包装盒 Packaging	180*20*180	3000pcs
包装箱 Packing cases	240*200*200	30000pcs

★ 备注:

1. 以上可靠性项目为我司常规测试项目, 若客户对产品有跌落, 冲击, 碰撞以及涉及到超声 波焊接工艺的需求, 请将贵司的需求反馈给我司, 我司会对该产品的可靠性项目进行更新。 2. 客户端在对晶体加热后, 为了保证频率的准确性, 建议将晶体充分冷却后再进行相关测试。 3. 该产品符合公司环保标准要求。

1. The above reliability items are routine test items of our company. If the customer has requirements on the products including drop, impact, collision and ultrasonic wave welding process, please feedback your requirements to our company, and we will update the reliability items of this product. 2. In order to ensure the accuracy of frequency, it is recommended to fully cool the crystal after heating it on the client. 3. The product meets the company's environmental standards.