

新品 变更

SPEC. NO. : DM150413

产 品 规 格 书

SPECIFICATION FOR APPROVAL

客户名称

Customer Name: _____

产品名称

Product Name: 石英晶体谐振器

产品型号

Product Type: M49/SL-SMD-3PIN

标称频率

Nominal Freq.: 24.000MHz

大明料号

Dynamic P/N: 3BM124015424000A

客户料号

Customer P/N: _____

客户承认

Approved By Customer

签章

Signature:

日期

Date:

Date: 2015 年 04 月 15 日

批准 Accepted	审核 Checked	拟制 Issued
黄屹	丛丽萍	岳坤



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Revision Record				
VER	修订日 Rev. Date	项 目 Items	内 容 Contents	备 注 Remarks
01	2015/04/15	Issue		

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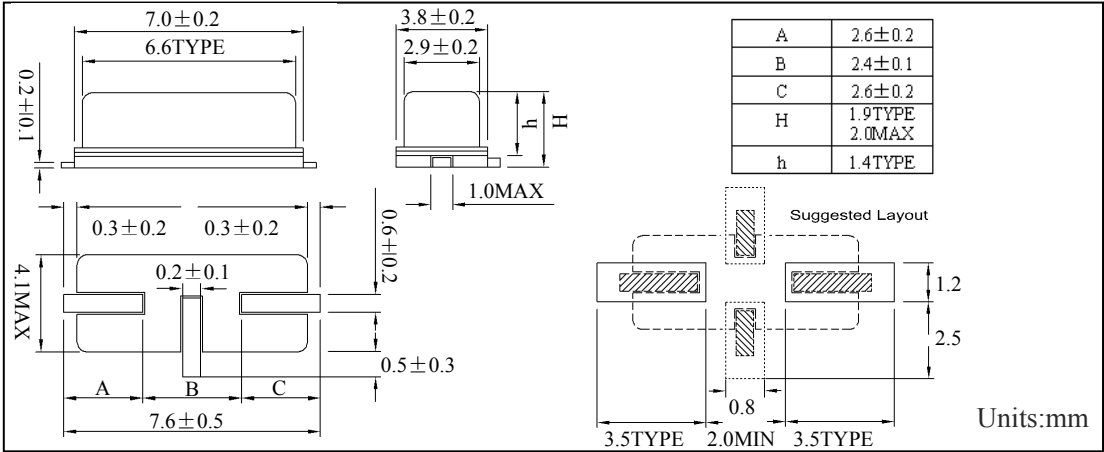
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1. 石英晶体产品规格及特性 / Product specification and features					
1.1 一般特性 / General characteristics					
标称频率 Nominal frequency		24.000 MHz			
振动模式 Overtone order		Fundamental			
型 号 Type		M49/SL-SMD-3PIN			
动作温度 Operating temperature		-20℃ to +70℃			
保存温度 Storage temperature		-40℃ to +85℃			
1.2 电气特性 / Electric characteristics					
调整频差(+25℃基准) Adjustment tolerance: (@+25℃)		±10PPM			
温度频差 Tolerance over the temperature:		±30PPM			
负 载 Load capacitance		12.0PF			
Measure Instrument		S&A 250B/350D			
激励功率 Drive level		100μW			
等效电阻 Equivalent resistance		40 Ω Max			
分布电容 (C0) Shunt capacitance		7.0PF Max			
绝缘阻抗 Insulation resistance		500 MΩ Min 100VDC±15VDC			
老化率 Aging		±5PPM/Year			
1.3 其它特性 / Other characteristics					
SPDB		<-3dB （以标称频率为基准）			

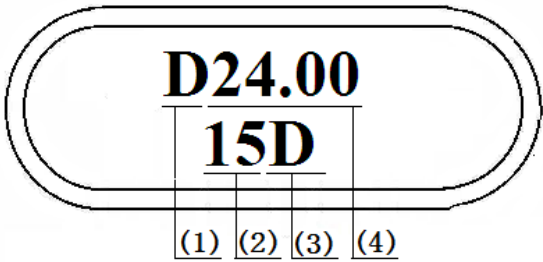
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2. 外形尺寸、外观 / Outline dimensions、Appearances

2.1 外形尺寸 Product outline dimension



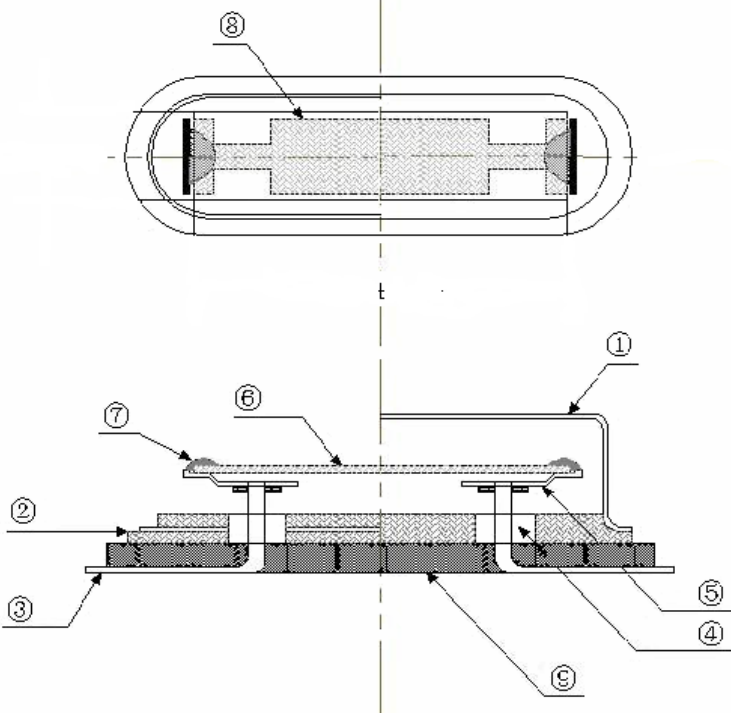
2.2 印字 Marking



- Remarks: ① 公司代码 / Company code
 ② 年度代码 / Year code
 ③ 月份代码 / Month code
 (table-1)
 ④ 频率 / Frequency

Table-1:

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Code	A	B	C	D	E	F	G	H	J	K	L	M

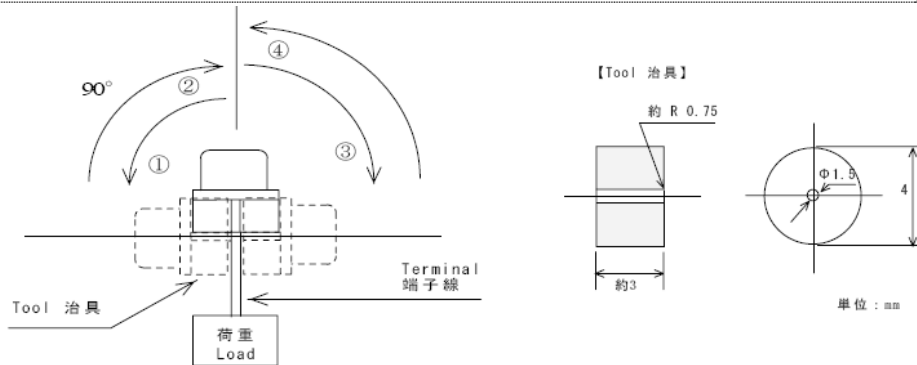
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3. 内部构造图 / Product internal structure					
 <p>The diagram illustrates the internal structure of the M49/SL-SMD Quartz Crystal Unit. It features a cross-sectional view with numbered callouts: ① points to the top electrode, ② to the base, ③ to the lead, ④ to the glass insulator, ⑤ to the support, ⑥ to the blank, ⑦ to the epoxy, ⑧ to the electrode, and ⑨ to the insulator. The unit is shown in a perspective view with a dashed line indicating the cross-section.</p>					
No	名称 Description	材料 Material	颜色 Color	Supplier	Remark
①	外壳/ Can	Nickel Silver	银白	Huaxun(China)	
②	底板/ Base	Fe	银白	Senzhong (China)	
③	引线/ Lead	Kovar	银白	Senzhong (China)	
④	玻璃绝缘子/ Glass	lass	褐色	Senzhong (China)	
⑤	簧片/ Supporter	Cu、Zn、Ni	银白	Senzhong (China)	
⑥	晶片/ Blank	SiO2	透明	Qinxiang (China)	
⑦	银胶/ Epoxy	Ag&resin	银白	Three Bond (Japan)	
⑧	电极/ Electrode	Ag	银白	Yinxin (China)	
⑨	绝缘垫片/ Insulator	PPA	黑色	Gangshan (China)	

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4. 石英晶体之可靠性 / Product reliability					
4.1 电气性能 / Electric Characteristics					
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±5℃ for 500±2 hr then 25±2℃ 1~2 hr before testing				
A.2	耐高温性（耐热性）测试（Heat resistance）				(I)
	Stored at +85℃ ±5℃ for 500±2 hr then 25±2℃ 1~2 hr before testing				
A.3	盐雾测试 (Salt Mist Test)				(I)
	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				
A.4	耐湿热性 (Humidity Resistance Result)				(I)
	稳态温度：60±2℃；湿度：90～95％RH；时间：500h； Steady temperature: 60±2℃;humidity: 90～95％RH; time:500h				
A.5	撞击测试（Mechanical Shock）				(I)
	14700m/S ² 0.5sec 5times in each of 6 direction				
A.6	老化（Aging）				(I)
	Stored at 85±3℃ for 720±12Hr then 25±2℃ 1~2 Hr before testing Stored at 25±2℃ for 1±0.03 year				
A.7	气密性 (Leakage)				(VI)
	细漏 Fine leak: Helium leak test * JIS C 60068-2-17				
A.8	温度循环（Temperature Cycle）				(I)
	-40℃ ～ 85℃，Dewell 30Min， 100 cycles  温度循环（Temperature Cycle）				

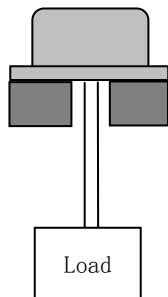
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4.2 机械性能 / Mechanism characteristics

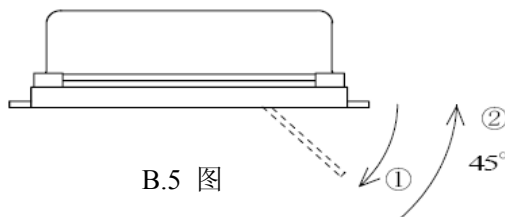
B.1	跌落测试 (Drop Test)	(I)
	Device are dropped from a height of 75 cm onto 20mm thickness stainless plate executing 3 times of random drop.	
B.2	耐振性 (Resistance of Vibration)	(I)
	Frequency: 10~55Hz, amplitude(total excursion): 1.5mm±15%,3 direction (X,Y,Z) each 2 hr	
B.3	引线弯曲强度测试 (The Lead Terminal Bending Strength Test)	(I & II)
	<p>固定本体，在引线垂直方向负重 250±10g，然后弯曲 90°，慢慢恢复至原位置，再向反方向弯曲 90°，再回复到原位置。</p> <p>Make the Crystal fixed, and loading the weight of 250±10g in the vertical direction of lead, and then bending it down to 90°,and slowly recover it to the original position, and then bending it down to 90°in the reverse direction, and recover it to the original position again.</p>	



B.4	引线拉力测试 (Lead Pulling Test)	(I & II)
	<p>引线端子下载重 500±10g，30±2 秒</p> <p>Lead terminal load weight is 500±10g, 30±2 Sec.</p>	
B.5	端子弯曲强度测试(The Lead Terminal Bending Strength Test)	(I & II)
	<p>固定本体，引线弯折 45° 后，慢慢恢复至原始位置。</p> <p>Make the crystal fixed, after bending the lead down to 45°,slowly recover it to the original position.</p>	



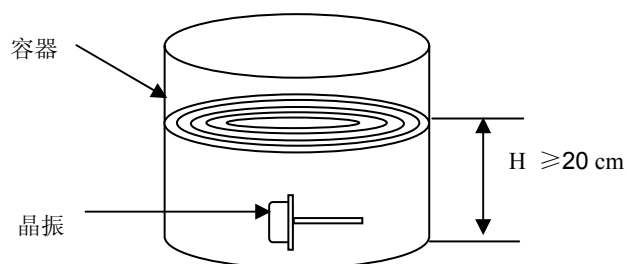
B.4 图



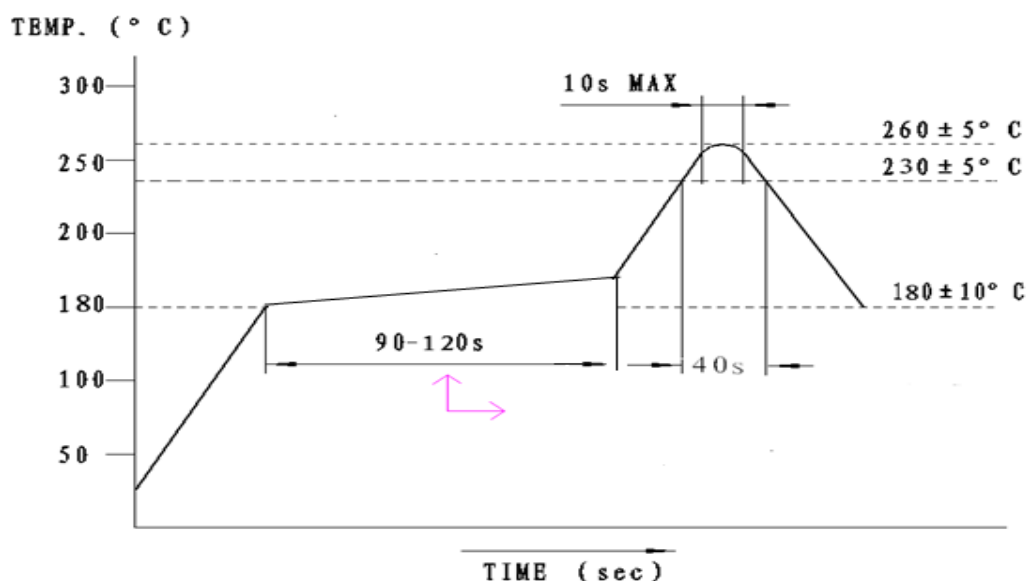
B.5 图

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B.6	密封性测试 (Sealing Test)	(IV)
	石英晶体放于 $+85^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 之温水中浸 5 分钟, 温水水量覆盖晶体约 20cm. Dip Crystal in the water with the temperature of $+85^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 5 minutes, and the water will cover about 20cm of Crystal.	

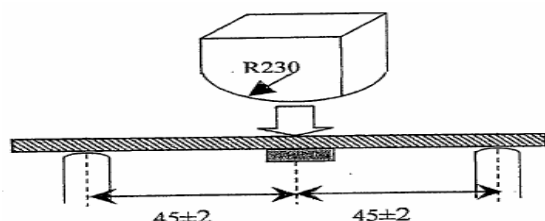


B.7	耐焊接热 (手工)	(I)
	Resistance to soldering heat (Hand soldering method) 温度: $370\sim 400^{\circ}\text{C}$; 时间: 3~4 秒; 次数: 2 次; 烙铁功率: 60W/Min Temperature: $370\sim 400^{\circ}\text{C}$; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min	
B.8	可焊性试验 (Solderability)	(III)
	$240\pm 2^{\circ}\text{C}$, $3\pm 0.5\text{sec}$	
B.9	耐焊接热 (Reflow) Resistance to soldering heat (Reflow)	(I)
	$260\pm 5^{\circ}\text{C}$; 10S; 4Times	

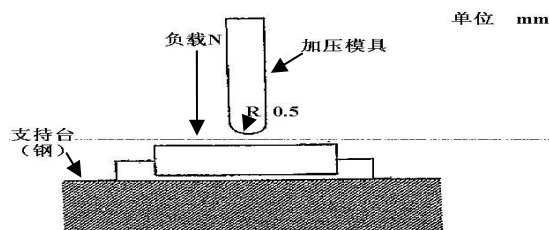


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B.10	抗基板弯曲性 (The Board Bendability)	(I & II)
	依据 EIAJRCX-0104/101, 变形量: 3mm Comply with EIAJRCX-0104/101, deformation degree: 3mm 时间(Time): 5±1 秒(Sec)、1 次(1 Time)	
B.11	端子强度	(I & V) 满足 B.6 项
	按上图的箭头方向使用 R0.5 的压力棒, 在部品中央部分施加 5±1N(0.51±0.1Kgf)的静载荷并保持 10±1S 秒钟。 Use R0.5 pressure stick following the arrowhead direction, give 5±1N(0.51±0.1Kgf)dead load at the center of crystal and keep for 10±1sec.	
B.12	静荷重 (Static Load)	(I & V) 满足 B.6 项
	石英晶体静态荷重 3.3N 以上。 The Static Load of Crystal is above 3.3N.	



B.10 图



B.11 图

项目 Item	结果编号 Result NO.	规格要求 Specification Requirements
1	(I)	频率变化<±10ppm; Rs 符合规格要求 Change of Frequency→±10ppm; Rs could meet the requirements of Specification.
2	(II)	引线无折断, 在 10 倍放大镜下观察玻璃体无裂纹 The lead is no broken, the Glass is no crackle under the observation of 10 times Magnifier.
3	(III)	上锡覆盖率高于 95% The covering rate of Tin-plating is more than 95%.
4	(IV)	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
5	(V)	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.
6	(VI)	5*10-9Pa.m³/s Max

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5. 生产商及产地说明 / Manufacturer and origin

生 产 商: 烟台大明电子科技有限公司

Manufacturer: Yantai Dynamic Techtronics Co., Ltd

工厂/制造所在地: 山东省烟台开发区黑龙江路 6 号

Address: NO.6 Heilongjiang Rd, Yantai development zone, Shandong

产品名称: 石英晶体谐振器

Product name: Quart Crystal Resonator

产品型号: M49/SL-SMD 24.000MHz

Product type: M49/SL-SMD 24.000MHz

包装方式: 纸箱 38cm×37cm×37cm (±1.5cm)

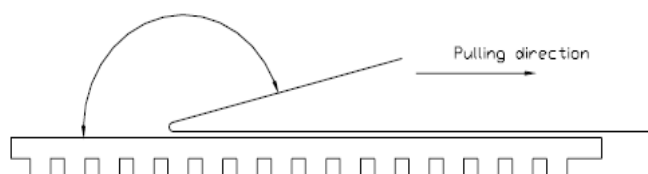
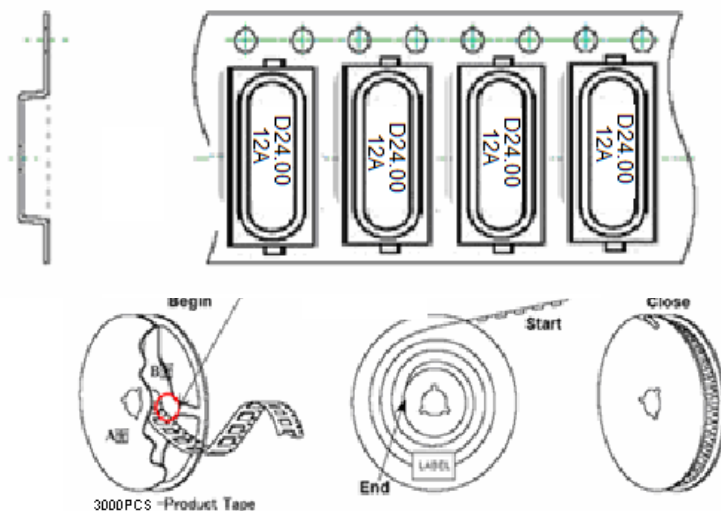
Package: Paper carton 38cm×37cm×37cm (±1.5cm)

净重: 10KGS ; 毛重: 12.5KGS

NW: 10KGS; GW: 12.5KGS

标准包装 Standard package	SHIPPING MARK		标 签 Label
外包装 38×37×37cm 如图 P13-(2)	每箱 30000pcs (10 小盒)	客户名称、订单 号、客户料号、 规格、数量、发 货日期、装箱编 号、产地	客户名称: <u>*****</u> 订 单 号: <u>XXXXXX</u> 客户料号: <u>#####</u> 规 格: <u>M49/SL-SMD 24MHz12PF</u> 数 量: <u>30000pcs</u> 发货单位: <u>烟台大明电子科技有限公司</u> 发货日期: <u>2007.01.05</u> 装箱编号: <u>XX-X</u> 产 地: <u>Made in China</u>
内包装 33.3×33.3×3.2cm 如图 P13-(1)	每小盒 3000 pcs	每盒 1 盘 每盘 3000pcs	料号: <u>#####</u> 型号: <u>M49/SL-SMD-3PIN</u> 规格: <u>24MHz12PF</u> LOT No. : <u>070105A-01</u> 数量: <u>3000pcs</u>

6.2 包装规格 Package specification

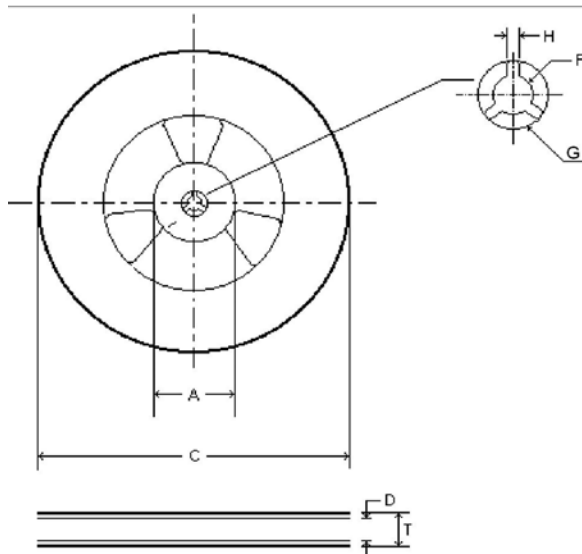
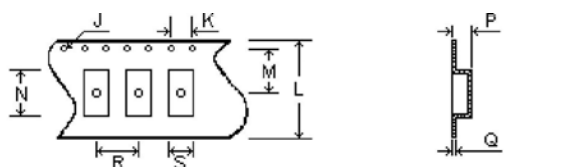


It has to between 0.1N to 0.7N under following condition.

Pulling direction: 165° to 180°

Pulling Speed : 300mm/min

Otherwise unless specified



Tape&Reel		Carrier	
NO.	Dimmension	NO.	Dimmension
A	100±1.0mm	J	Φ1.5mm
C	330±2.0mm	K	4.0±0.1mm
D	16.4±1.0mm	L	16.0±0.3mm
T	20.4±0.5mm	M	7.5±0.1mm
F	13.0±0.2mm	N	9.4±0.1mm
G	20.2mm MIN	P	2.5±0.1mm
H	1.5mm MIN	Q	0.3±0.05mm
		R	8.0±0.1mm
		S	4.4±0.1mm

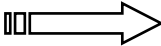
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5.2 包装规格 Package specification

1. 每盘数量 Qty/reel: 3000pcs
2. 小盒数量 Qty/box: 3000pcs（1 盘）
3. 外箱数量 Qty/carton: 30000pcs（10 小盒）
4. 净重 NW: 10KGS; 毛重 GW: 12.5KGS



料号: #####
 型号: M49/SL-SMD-3PIN
 规格: 24.000MHz12PF
 LOT No.: 120428A-01
 数量: 3000pcs



(1) 内 盒

料号: #####
 型号: M49/SL-SMD-3PIN
 规格: 24.000MHz12PF
 LOT No.: 120428A-01
 数量: 3000pcs



33.3×33.3×3.2cm (±0.5cm)

1CM 左右泡沫板，缓
冲及抗震作用



客户名称: *****
 订 单 号: XXXXX
 客户料号: #####
 规 格: M49/SL-SMD 24MHz12PF
 数 量: 30000pcs
 发货单位: 烟台大明电子科技有限公司
 发货日期: 2007.01.05
 装箱编号: XX-X
 产 地: Made in China



38×37×37cm (±1.5cm)

(2) 外 箱