



APPROVAL SHEET

承 认 书

Product Name	<u>Quartz Crystal 石英晶体谐振器</u>
P/N	<u>K-F-12.000M-20-3030-2070-50</u>
Customer's Name	<u></u>
Customer's P/N	<u>03.05.010095R</u>
Lot NO.	<u></u>
Specification Sheet #	<u>SK-1189R</u>
Date	<u>2016/1/21</u>
Generation	<u></u>
Approval	<u></u>
Customer Confirmation	<u></u>



南京中电熊猫晶体科技有限公司

NANJING CHINA ELECTRONICS PANDA CRYSTAL TECHNOLOGY CORPORATION

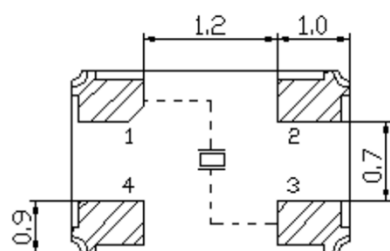
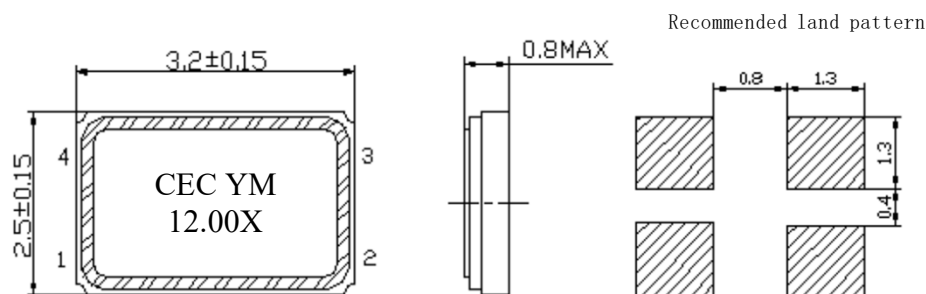
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南京中电熊猫晶体科技有限公司 Nanjing CEC Panda Crystal Tech Corp.	Specification of Quartz Crystal 石英晶体谐振器规格书	NO: SK-1189R
	3.2×2.5 SMD	DATE: 2016/1/21

■ 外形及印字(DIMENSION AND MARKING)



#2 and #4 are connected to the cover.(please connect to ground)

Marking Definitions: (印字说明)

Y/Year (年的最后一位) the last digit of year

M/Month (月度代码) A, B, C, D, E, F, G, H, J, K, L, M

X/Factory (制造工厂) N: 南京工厂, S: 深圳工厂, L: 廊坊工厂

UNIT (单位) mm

■ 电气参数(ELECTRICAL SPECIFICATION)

Type 型号	3.2×2.5 Ceramic SMD
Nominal Frequency 标称频率	12.000000 MHz
Mode of Oscillation 振荡模式	Fundamental
Operating Temperature Range 工作温度范围	-20℃ ~ +70℃
Storage Temperature Range 保存温度范围	-40℃ ~ +85℃
Test Set 测试系统	250B PI-Network
Drive Level 激励电平	100 uW Max.
Loading Capacitance 负载电容	20 pF
Frequency Tolerance 调整频差	±30 ppm Max.(AT 25℃)
Equivalent Resistance 等效阻抗	50 ohms Max.
Temperature Drift 温度频差	±30 ppm Max./-20℃ to +70℃
Shunt Capacitance 静电容	7.0 pF Max.
Motional Capacitance 动电容	/
Aging 老化率	±5 ppm/ year Max.
Insulation Resistance 绝缘阻抗	500 MΩMin / 100V±15V D.C.
Other 其它	Tape & Reel
Note	

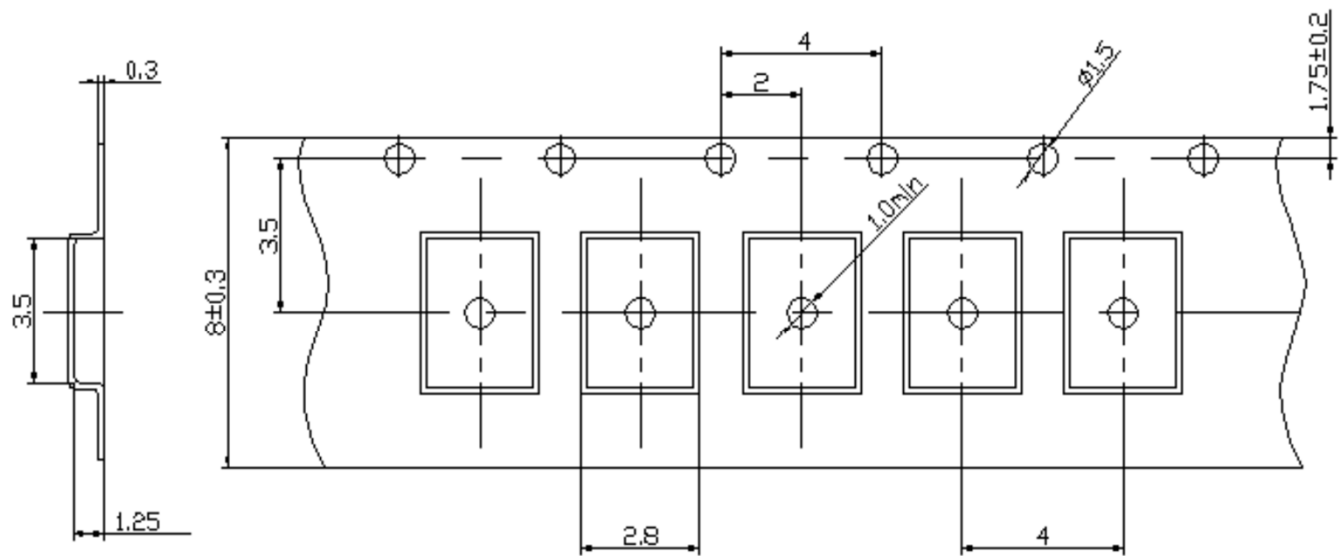
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■ 可靠性测试条件(RELIABILITY TEST)			
序号 NO	项目 ITEM	条件 CONDITIONS	合格标准 BASIS OF VERDICT
1	老化 AGING	温度: 85℃; 时间: 1000小时 Temperature: 85℃;Times: 1000 hours	$\Delta FL \leq \pm 10 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 10\%$ (Whichever is Larger)
2	湿度抗性 MOISTURE RESISTANCE	高温: 65℃ (10小时, 含升温), 低温: 25℃ (2小时, 含降 , 湿度90%, 循环10次, 每循环24小时 Low-Temperature: 25℃±2℃(2 hours, including cooling),	$\Delta FL \leq \pm 10 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 20\%$ (Whichever is Larger)
3	湿热 HUMIDITY	温度: 85℃±2℃; 湿度85%; 时间: 1000小时 Temperature: 85℃±2℃; Humidity: 85%; Time: 1000 hours	$\Delta FL \leq \pm 10 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 20\%$ (Whichever is Larger)
4	低温 LOW-TEMPERATURE	温度: -40℃±2℃; 时间: 1000小时 Temperature: -40℃±2℃; Time: 1000hours	$\Delta FL \leq \pm 10 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 20\%$ (Whichever is Larger)
5	温度变化 TEMPERATURE SHOCK	-55℃±2℃ (5 min) → 125℃±2℃ (5 min); 循环1000次 -55℃±2℃ (5 min) $\xleftrightarrow{5 \text{ min}}$ 125℃±2℃ (5 min); For 1000 cycles	$\Delta FL \leq \pm 10 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 20\%$ (Whichever is Larger)
6	跌落 DROP	100cm高处自由跌落到3cm厚木板上, 3次 Height: 100 cm; Thickness: 3 cm; 3 times	$\Delta FL \leq \pm 5 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 15\%$ (whichever is larger)
7	机械冲击 MECHANICAL SHOCK	峰值 Peak: 100g's 持续时间 Duration: 6ms 波形 Waveform: 半正弦波 Half-sine 变化速度 Velocity Change: 12.3 ft / sec 振动方向 Direction: +X, -X, +Y, -Y, +Z, -Z 每个方向各3次 3 times/direction	$\Delta FL \leq \pm 5 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 15\%$ (Whichever is Larger)
8	振动 VIBRATION	频率 Frequency: 10~2000Hz: 加速度幅度 Acceleration: 100 m/s² 振动方向 Direction: X, Y, Z 振动时间 Duration: 每个方向30分钟 30 min/direction. 循环次数 Times: 12次	$\Delta FL \leq \pm 5 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 15\%$ (Whichever is Larger)

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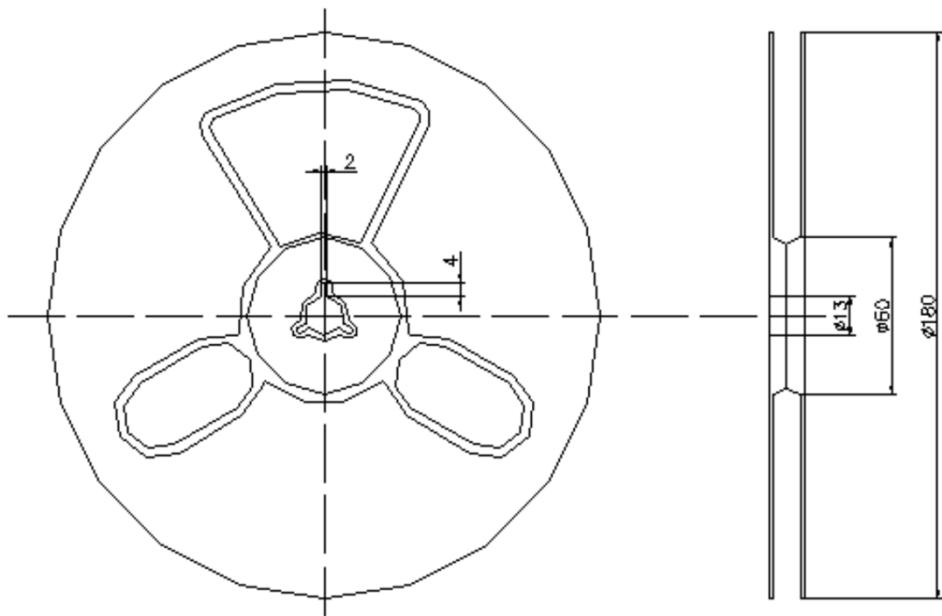
序号 NO	项目 ITEM	条件 CONDITIONS	合格标准 BASIS OF VERDICT
9	回流焊 REFLOW	260℃±5℃ 150℃±5℃ 120sec 10secmax CYCLE TIME周期: 200sec Max.	$\Delta FL \leq \pm 5 \text{ ppm}$ $\Delta RS \leq 5 \Omega \text{ or } \pm 15\%$ (Whichever is Larger) No Rusty
10	焊接 SOLDER	温度: 235℃±5℃; 时间: 2秒 Temperature: 235℃±5℃; Time: 2sec	浸锡率≥95% Solder Coverage ≥95%
11	引出端强度 TERMINAL STRENGTH	1.8kg的切向推力（60秒）以及1.8kg的垂直拉力（60秒） 1.8kg,of the tangential thrust (60 s) 1.8kg of the perpendicular tension (60 s)	No Rupture Observed

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■ 编带 (TAPE)

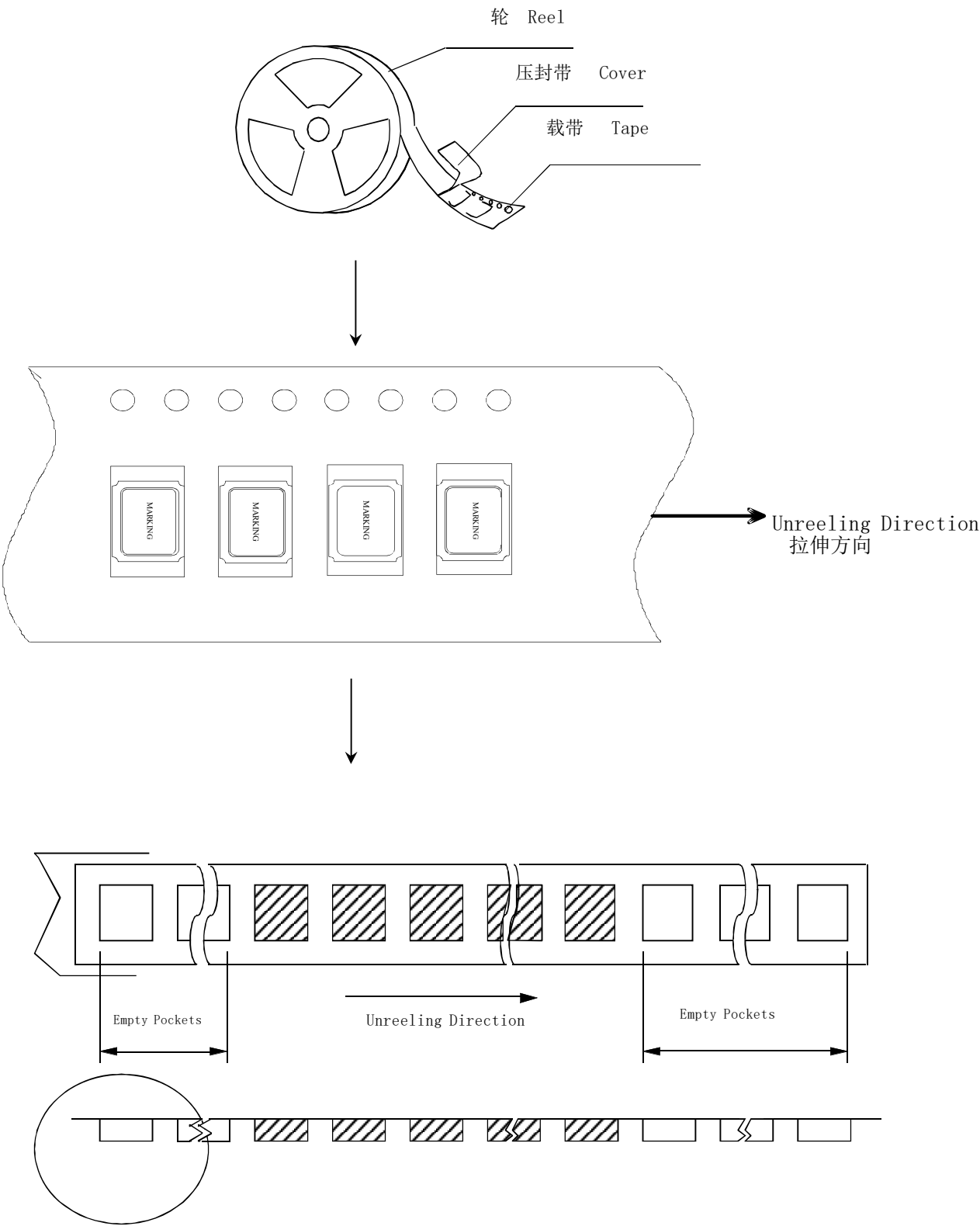


■ 轮 (REEL)



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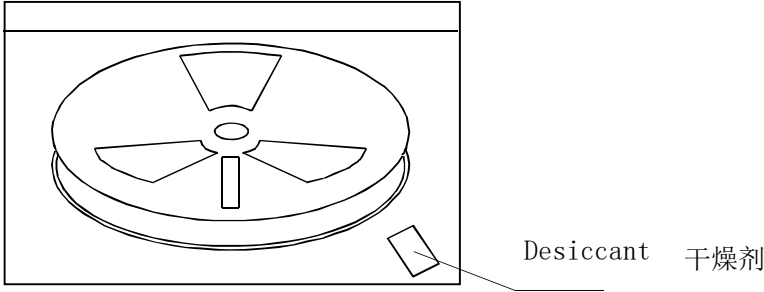
■ 编带方式(TAPING METHOD)



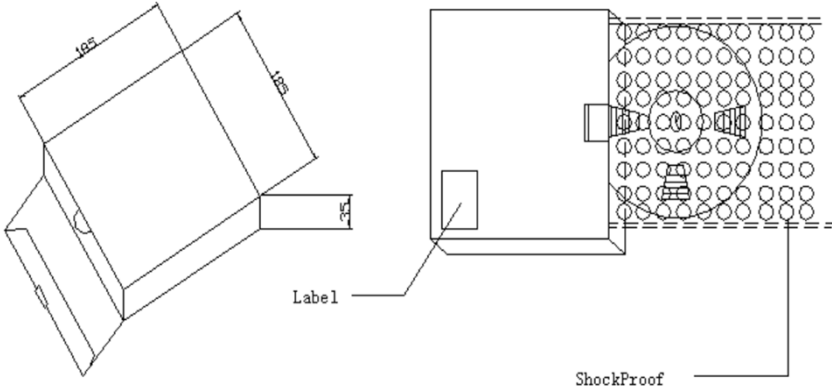
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■包装 (PACKAGE)

1. 自封袋 (Bag)
3000只=1轮
3000pcs=1 Reel



2. 内包装 (Inside Package)
1 轮=1 盒
1 Reel=1 Box



3. 外包装 (Outside Package)
10 盒=1 箱
10 Box=1 Carton

