



深圳市科源信科技有限公司  
Shenzhen KeYuanXin Technology CO., LTD

# 产品规格书

**SPECIFICATION FOR APPROVAL**

深圳市福田区振华路118号华丽装饰一栋西座306A  
306A Block West Building 1, Huali Decoration  
NO.118 Zhenhua Road Futian District Shenzhen  
电话 TEL: 4008-735-535 传真 FAX: 0755-23616323



Product Name:

Crystal

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Product Type:

HC-49SMD

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Nominal Freq:

20.0000MHz

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ProvideBrand:

KKST

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P/N:

KDT20000H03R

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Customer P/N:

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Approved By Customer

Signature:

Date:

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## **CONTENT**

- NO.1    Product specification and features**
  
- NO.2    Product outline dimension**
  
- NO.3    Product reliability**
  
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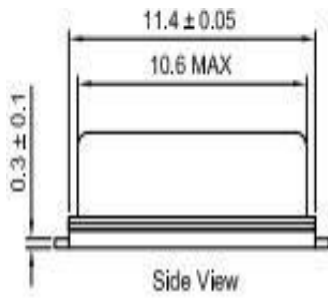


## N0.1 Product specification and features

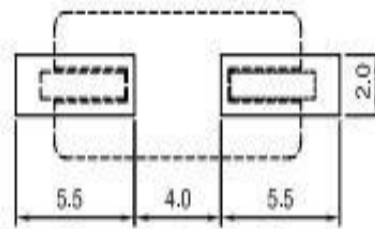
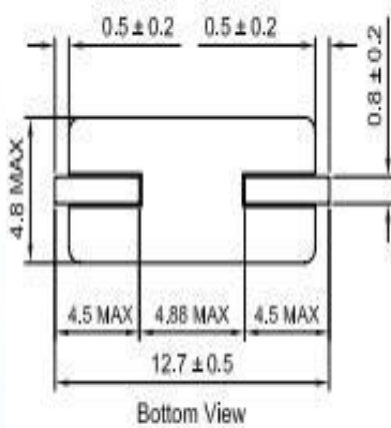
<b>1.1 General characteristics</b>	
Nominal frequency	20.000000MHz
Overtone order	Fundamental
Type	HC-49SMD
Operating temperature	-20~70 °C
Storage temperature	-40~85 °C
<b>1.2 Electric characteristics</b>	
Adjustment tolerance: (at+25°C)	±20 ppm
Tolerance over the temperature:	±20 ppm
Load capacitance	20.0 pF
Drive level	10.0 μW
Shunt capacitance	7.0pF Max
Equivalent resistance	100.0 Ω Max
Insulation resistance	500 M Ω Min      100VDC±15VDC
Aging	±3ppm/Year
<b>1.3 Other characteristics</b>	
SPDB	<-3 dB

## NO.2 Outline dimensions、Appearances

### 2.1 Product outline dimension(mm)

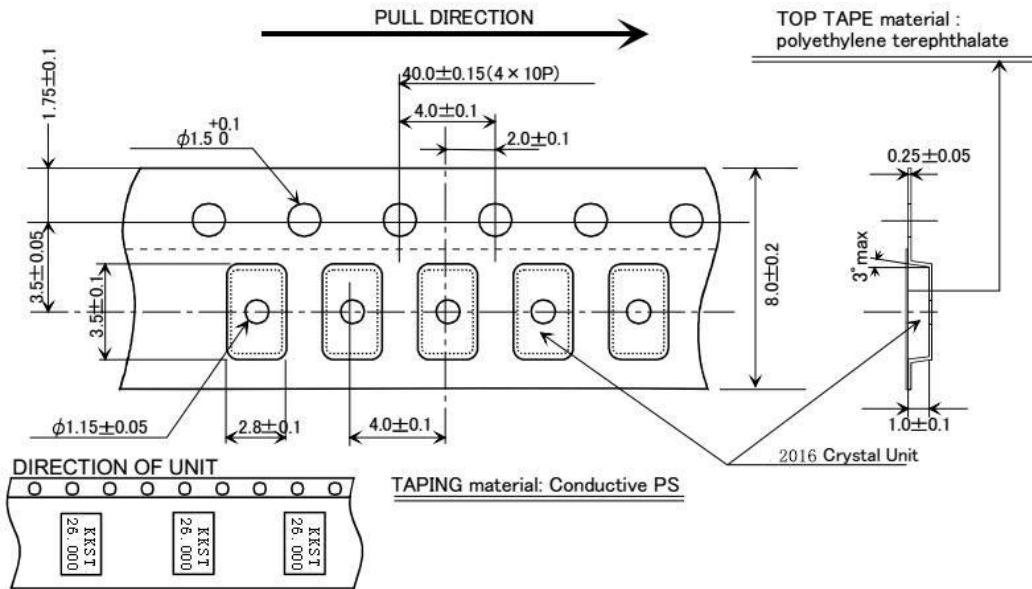


TYPE	H (SMD HIGH)	h (BODY HIGH)
S3	$3.8 \pm 0.3$	$3.3 \pm 0.3$
S2	$3.0 \pm 0.3$	$2.3 \pm 0.3$

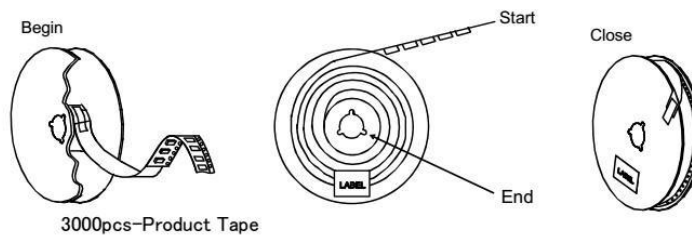
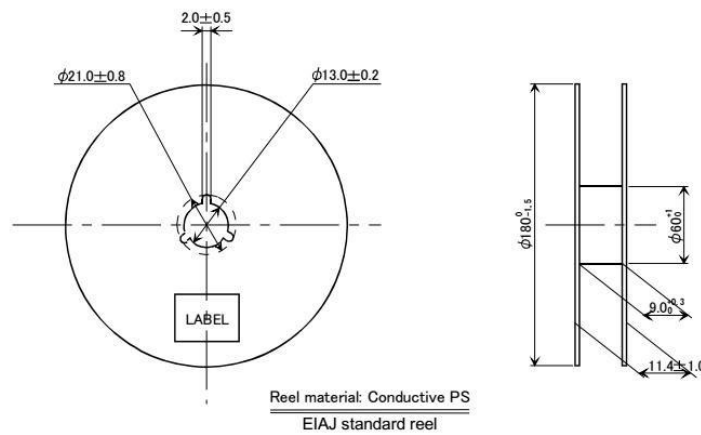


Units: mm

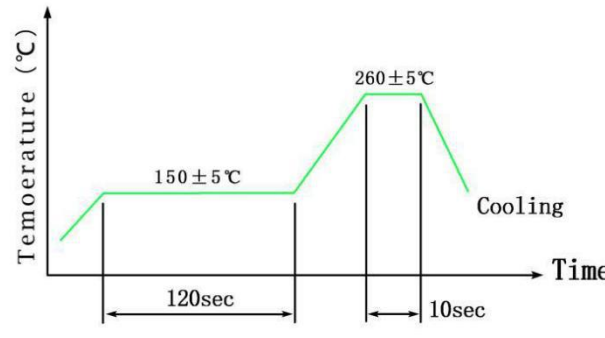
### 2.2 Carrier Dimensional Drawing (mm)



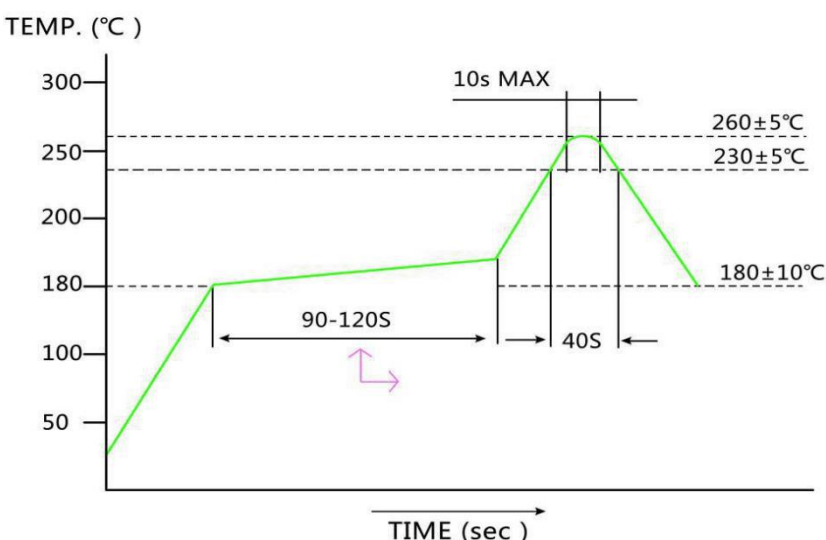
### 2.3 Reel Dimensional Drawing (mm)



### NO.3 Product reliability

Item	Condition	Result
A1	<b>Cold resistance</b> Stored at $-40\pm 2^{\circ}\text{C}$ for $1000\pm 2$ hrs then $25\pm 2^{\circ}\text{C}$ 1~2 hrs before testing	(I)
A2	<b>Heat resistance</b> Stored at $85\pm 2^{\circ}\text{C}$ for $1000\pm 2$ hrs then $25\pm 2^{\circ}\text{C}$ 1~2 hrs before testing	(I)
A3	<b>Salt Mist Test</b> Spray the $35^{\circ}\text{C}\pm 2^{\circ}\text{C}$ salt water (salt density 5%) to crystal for $48\pm 2$ hrs,then clean by water	(I)
A4	<b>Humidity Resistance Result</b> Steady temperature: $60\pm 2^{\circ}\text{C}$ ;humidity: 90 ~ 95 % RH; time:500h	(I)
A5	<b>Mechanical Shock</b> $14700\text{m/S}^2$ 0.5sec 5times in each of 6 direction	(I)
A6	<b>Aging</b> Stored at $85\pm 3^{\circ}\text{C}$ for $720\pm 12$ Hrs then $25\pm 2^{\circ}\text{C}$ 1~2 Hrs before testing Stored at $25\pm 2^{\circ}\text{C}$ for $1\pm 0.03$ year	(I)
A7	<b>Leakage</b> Fine leak: Helium leak test *JIS C 6701 10.6	(V)
A8	<p><b>Temperature Cycle</b> <math>-40^{\circ}\text{C} \sim 85^{\circ}\text{C}</math>, Dewell 30Min, 100 cycles</p>  <p>The graph shows a temperature cycle with two dwell periods. The first dwell is at <math>150\pm 5^{\circ}\text{C}</math> for 120 seconds. The second dwell is at <math>260\pm 5^{\circ}\text{C}</math> for 10 seconds. The cooling phase is labeled 'Cooling'.</p>	(I)

3.1 Mechanism characteristics

<p><b>B.1</b></p>	<p><b>Drop Test</b> Device are dropped from a height of 100 cm onto 20mm thickness stainless plate executing 3 times of random drops</p>	<p>(I)</p>
<p><b>B.2</b></p>	<p><b>Resistance of Vibration</b> Frequency: 10~55Hz, amplitude(total excursion): 1.5mm±15%,3 direction (X,Y,Z) each 2 hr</p>	<p>(I)</p>
<p><b>B.3</b></p>	<p><b>Resistance to soldering heat (Hand soldering method)</b> Temperature: 370~400°C; Time: 3~4sec; Frequency: 2 times; Soldering iron: 60W/Min</p>	<p>(I)</p>
<p><b>B.4</b></p>	<p><b>Solderability</b> 240±2°C, 3±0.5sec</p>	<p>(II)</p>
<p><b>B.5</b></p>	<p><b>Reflow) Resistance to soldering heat (Reflow)</b> 260±5°C; 10S; 2Times</p> <p style="text-align: center;">Reflow</p>  <p>TEMP. (°C)</p> <p>300 250 200 180 100 50</p> <p>90-120S</p> <p>10s MAX</p> <p>260±5°C</p> <p>230±5°C</p> <p>40S</p> <p>180±10°C</p> <p>TIME (sec)</p>	<p>(I)</p>





Item	Result NO.	Specification Requirements
1	( I )	Frequency variation $< \pm 10 \text{ppm}$ Resistance variation $< 5 \Omega$ or 15% of RR spec., select the bigger value
2	( II )	The covering rate of Tin-plating is more than 95%
3	( III )	There is no bubbles after the Crystal is dipped in the water Insulation Resistance: $500 \text{ M}\Omega$ Min $100 \text{VDC} / \pm 15 \text{VDC}$
4	( IV )	The Crystal is no crackle under the observation of 10 times Magnifier.
5	( V )	$1 * 10^{-9} \text{Pa.m}^3/\text{s}$ Max

## NO.4 Package specification

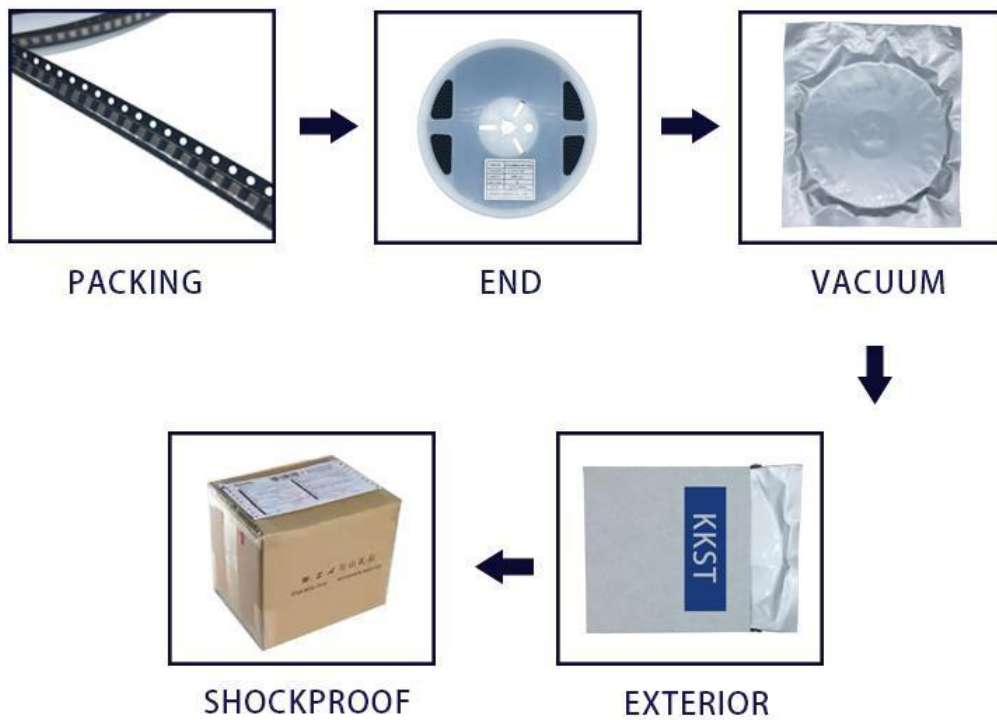
### 4.1 Marking



### 4.2 Label

KKST KEYUANXIN TECHNOLOGY GO.,LTD		
Item	Crystal	QTY: 1000PCS
P/N	KDT20000H03R	
FREQUENCY	20.000MHz	DATE: 2018-03-9

### 4.3 Package specification





KEYUANXIN TECHNOLOGY GO.,LTD

浏览网址：[www.szkyx.cn](http://www.szkyx.cn)