

# CRYSTAL SPECIFICATION



CUSTOMER PART NO. : 9SM1200020AFHHF0  
PRODUCT CODE : 9SM1200020AFHHF0  
PRODUCT DESCRIPTION : HC49US CRYSTAL THRU HOLE TYPE


Customer Approval :

Hong Kong X'tals Limited



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|                                    |   |
|------------------------------------|---|
| Date : 02/07/2024                  |   |
| Approved by :                      |  |
| Mr. Ronald Chan / Product Engineer |   |

## CRYSTAL SPECIFICATION

Product Code : 9SM1200020AFHHF0

Description : Quartz Crystal

### Revision History

| Rev. | Date       | Reason | Issued By |
|------|------------|--------|-----------|
| 0    | 14/06/2012 |        | Xiao Cui  |

# CRYSTAL SPECIFICATION

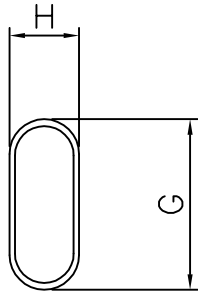
Customer Part No. : 9SM1200020AFHHF0  
Product Code : 9SM1200020AFHHF0  
Description : Quartz Crystal  
Nominal Frequency : 12.000 MHz  
Oscillation Mode : Fundamental  
Holder Type : 9S

## Measure equipment

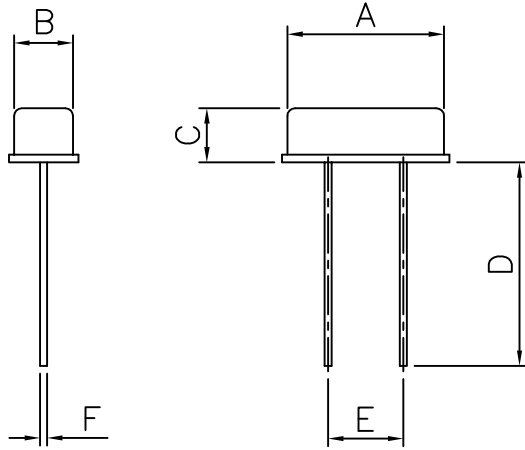
Electrical characteristics measured by Kolinker KH1240 or HP5100 equivalent.

Electrical Characteristics :

|                              |                          |
|------------------------------|--------------------------|
| Load Capacitance             | 20 pF                    |
| Frequency Tolerance At 25 °C | ± 30 ppm                 |
| Frequency Stability          | ± 50 ppm                 |
| Temperature Range            | -20 ~ 70 °C              |
| Operable Temperature Range   | -40 ~ 85 °C              |
| Ageing                       | < ± 5 ppm first year     |
| Drive Level                  | 50 µW typ. (300 µW Max.) |
| Equivalent Series Resistance | 40 ohms Max.             |
| Shunt Capacitance            | 7 pF Max.                |
| Insulation Resistance        | 500M ohm Min at 100 VDC  |
| Marking                      | 12.000+TRACEABILITY CODE |
| SPQ / Pack Type              | 2000 / PACK              |



TOP VIEW



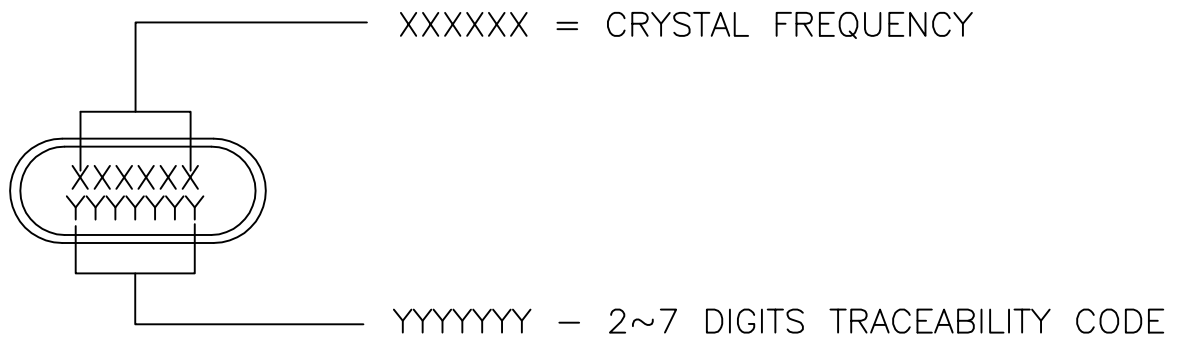
FRONT VIEW

SIDE VIEW

| ITEM | DIMENSION   |              |
|------|---|--------------|
| A    | 10.16 Max.  |              |
| B    | 3.81 Max.   |              |
| C    | TYPE  | HEIGHT       |
|      | 92  | 2.25/2.35mm* |
|      | 93  | 2.50mm Max.  |
|      | 9S  | 3.50mm Max.  |
|      | 94  | 4.00mm Max.  |
| D    | 1.LEAD LENGTH 13.2±0.5(STANDARD)                        |              |
|      | 2.LEAD LENGTH (2.8~16)±0.5<br>REFER TO CUSTOMER REQUEST |              |
| E    | 4.88 ±0.2   |              |
| F    | 0.45 ±0.05  |              |
| G    | 11.05 Max.  |              |
| H    | 4.7 Max.  |              |

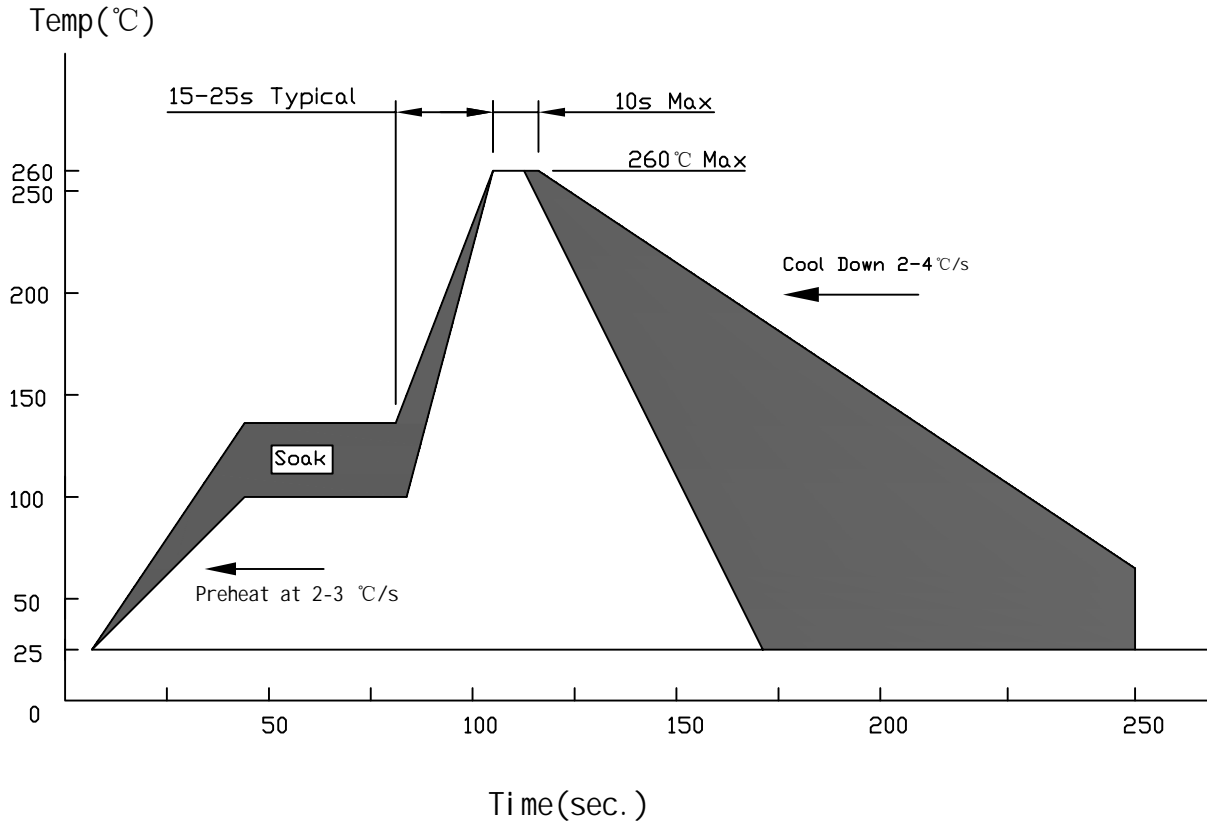
\* >5MHz = 2.25mm MAX  
 <5MHz = 2.35mm MAX

MARKING INFORMATION



| 49S DETAILS & MARKING INFORMATION   |      |                     |       |      |                            |            | CREATIVE    |         |
|---|------|---------------------|-------|------|----------------------------|------------|-------------|---------|
| ITEM  | QTY. | DESCRIPTION         | MAT'L | HDN. | SURFACE                    | MAT'L SIZE | REMARK      |         |
| GENERAL TOLERANCE:<br>.X=±0.5<br>.XX=±0.1<br>.XXX=±0.05                             |      | DATE                | NAME  |      | TITLE :<br>HC-49US CRYSTAL |            |             |         |
| PROPRIETARY NOTICE :<br>THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTIES OF HKC. |      | DRAWN<br>2016-2-19  | TAN   |      | PART No.: 92 93 9S 94 95   |            |             |         |
|   |      | CHECK<br>2016-2-19  | PANG  |      | DRAWING No.: 12033780      |            |             |         |
| DO NOT SCALE DRAWING  |      | APROV.<br>2016-2-19 |       |      | SCALE: NA                  |            | SHT. 1 OF 1 | REV. 05 |
| ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED  |      |                     |       |      |                            |            |             |         |

## Wave Soldering Profile



**Note:**

- 1. Only the lead wire region is exposed to high temperature**
- 2. Ramp down rate : 4°C/ Sec. Max**
- 3. Effective products:**
  - Thru-hole AT cut 49US crystals, oscillators
  - Thru-hole ceramic resonators.

| ITEM  | QTY.        | DESCRIPTION           | MAT'L     | HDN.   | SURFACE  | MAT'L SIZE | REMARK    |
|---|-------------|-----------------------|-----------|--|--|------------|-----------|
| GENERAL TOLERANCE:  |             | DATE                  | NAME      |  | TITLE: Thru-hole Packages(AT/CR)<br>typical wave soldering profile |            |           |
| X=±0.5  | X°=±0.5°    | DRAWN                 | TAN       |  |  |            |           |
| X=±0.1  | X°=±0.1°    | CHECK                 | PANG      |  |  |            |           |
| .XX=±0.05   | .XX°=±0.05° | APROV.                | 2015-3-10 |  |  |            |           |
| PROPRIETARY NOTICE :<br>THIS DRAWINGS AND<br>SPECIFICATIONS ARE THE<br>PROPERTY OF HKC. |             | HONG KONG X'TALS LTD. |           |  | PART No.: Refer to DWG Description                                 |            |           |
|   |             |                       |           |  | DRAWING No.: 13000003  |            |           |
|   |             | DO NOT SCALE DRAWING  |           | ALL DIMENSIONS IN mm UNLESS OTHERWISE STATED |  |            | SCALE: NA |