

## 产 品 规 格 书

### SPECIFICATIONS FOR PRODUCT

产品类型 TYPE : HC-49/S

产品规格 SPEC : 11.0592MHz/49S/20PF/20PPM

产品型号 P/N : CJ02-110592020A20

日期 DATE : 2020/08/02

| 核准及签名                |                   |                   | 部门      |
|----------------------|-------------------|-------------------|---------|
| R&D APPR. SIGNATURED |                   |                   | DEPT.   |
| 拟制                   | 审核                | 批准                | 频率器件事业部 |
| ISSUE                | CHECK             | APPROVAL          |         |
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HC-49/S Quartz Crystal

**CJ02-110592020A20**

1. Scope:

- 1.1 This specification applies to the RoHS/SONY compliance quartz crystal unit with a frequency of 11.0592MHz which will be used in crystal oscillator applications.

2. Construction:

- 2.1 Type of Quartz Resonator: HC-49/S

3. Electrical Characteristics

- 3.1 Nominal Frequency(f): 11.0592MHz
- 3.2 Load Capacitance( $C_L$ ): 20pF
- 3.3 Frequency Tolerance( $\Delta f/f$ ):  $\pm 20$ ppm
- 3.4 Frequency Temperature Stability:  $\pm 20$ ppm
- 3.5 Resonance Resistance(ohm): 40ohms Max
- 3.6 Osc mode: Fundamental mode
- 3.7 Shunt Capacitance( $C_0$ ):  $< 7$ pF
- 3.8 Drive Level( $D_L$ ):  $< 300 \mu W$
- 3.9 Operating Temperature Range( $T_{OPR}$ ):  $-20$  to  $+ 70^\circ C$
- 3.10 Storage Temperature Range( $T_{STG}$ ):  $-55$  to  $+ 125^\circ C$
- 3.11 Insulation Resistance(IR):  $> 500 M$  ohms
- 3.12 Aging( $\Delta f_A$ ):  $\pm 3$ ppm per Year

## 4. Reliability Specifications

This is the quality control and quality assurance and reliability tests performance data for the RoHS/SONY compliance 11.0592MHz HC-49/S Quartz Crystal .

related to the specification and approval sheet provided by JSCJ .

Standard test condition (TEMP.: 20±5°C. Relative humidity: 65±20%)

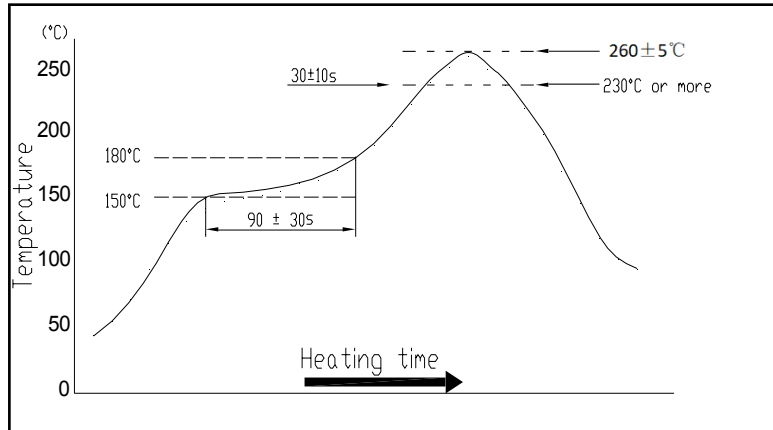
For any discrepancy in GO/NG, test will be done at TEMP.25±2°C, R.H. 65±5%.

| NO.  | PROCESS  | SPECIFICATION  | TEST METHOD  |
|------|--|--|--|
| 4.1  | Temperature Cycle (GB/T 2423.22-2002, Method Nb)               | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.                                | 10 cycles from -55°C to 125°C. Measurement taken after DUT being left at room temperature for 24±2 hours.  |
| 4.2  | Low Temperature Storage (GB/T 2423.1-2001, Method Aa)          | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.                                | Spending 72 hrs at -55°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.  |
| 4.3  | High Temperature Storage (GB/T 2423.2-2001, Method Ba)         | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.                                | Spending 72 hrs at 125°C±3°C constant temperature. Measurement taken after DUT being left at room temperature for 24±2 hours.  |
| 4.4  | Humidity (GB/T 2423.3-2006, Method Cab)                        | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.                                | Spending 96 hrs at 40 °C ± 3 °C, with 93 %R.H, Then keep the DUT in dry oven at 40 ± 5 °C for 24 hour. Measurement taken after DUT being left at room temperature for 1 to 2 hours.  |
| 4.5  | Vibration (GB/T 2423.10-1995, Method Fc)                       | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.                                | Apply 0.75mm vibration at sweep frequency 10~500 Hz, 10 cycles in each direction of 3 axis. Measurement taken after 1 hour.  |
| 4.6  | Shock (GB/T 2423.5-1995, Method Ea)                            | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms. and exhibit no visible damage. | Peak 1000m/s <sup>2</sup> , normal width 6ms half sine wave form, 3.7m/s, 3 perpendicular axis of samples, 3 cycles / direction, total 18 cycles. Measurement taken after 1 hour.  |
| 4.7  | Drop (GB/T 2423.8-1995, Method Ed)                             | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms. and exhibit no visible damage. | Free drop to the steel plate with thickness of 3 mm from 1.00 m heights for 3 times.   |
| 4.8  | Solderability ( IEC60068-2-58, Test Td:)                       | Terminals shall be covered more then 95% with solder.  | Passed through the re-flow oven under the following condition. Preheat 150 to 180°C for 60 to 120sec, and soldering time for 20s ± 5s at 235°C, peak soldering time for 10s ± 1s between 240 and 250°C. There is no need to do functional test. 8-12X magnifier.             |
| 4.9  | Terminal Strength (JIS-C-6429 Method 1 & 2 )                   | No visible damage  | Mount on a glass-epoxy board (100x50x1.6mm), then bend to 2mm displacement (velocity 1mm/sec) and keep for 5 seconds. or pulling force 1.8kg for at least 60 seconds.  |
| 4.10 | Resistance to Soldering Heat (IEC60068-2-58, Test Td: Table 4) | Frequency change after test $\pm 5$ ppm. Resonance resistance change after test $\leq 10$ ohms.                                | Passed through the re-flow oven under the following condition. Preheat 150 to 180°C for 60 to 120sec, and sodering time for 60s max at 235°C, peak soldering time for 20s max at 265°C max. Measurement taken after DUT being left at room temperature for at least 2 hours. |
| 4.11 | OTHERS   |  |  |

5. Recommended Reflow soldering condition (SMD)

Solder profile

Peak:  $260 \pm 5^\circ\text{C}$  Soldering zone:  $230^\circ\text{C}$  or more,  $30 \pm 10\text{s}$ . Pre-heating zone 1:  $150 \sim 180^\circ\text{C}$ ,  $90 \pm 30\text{s}$



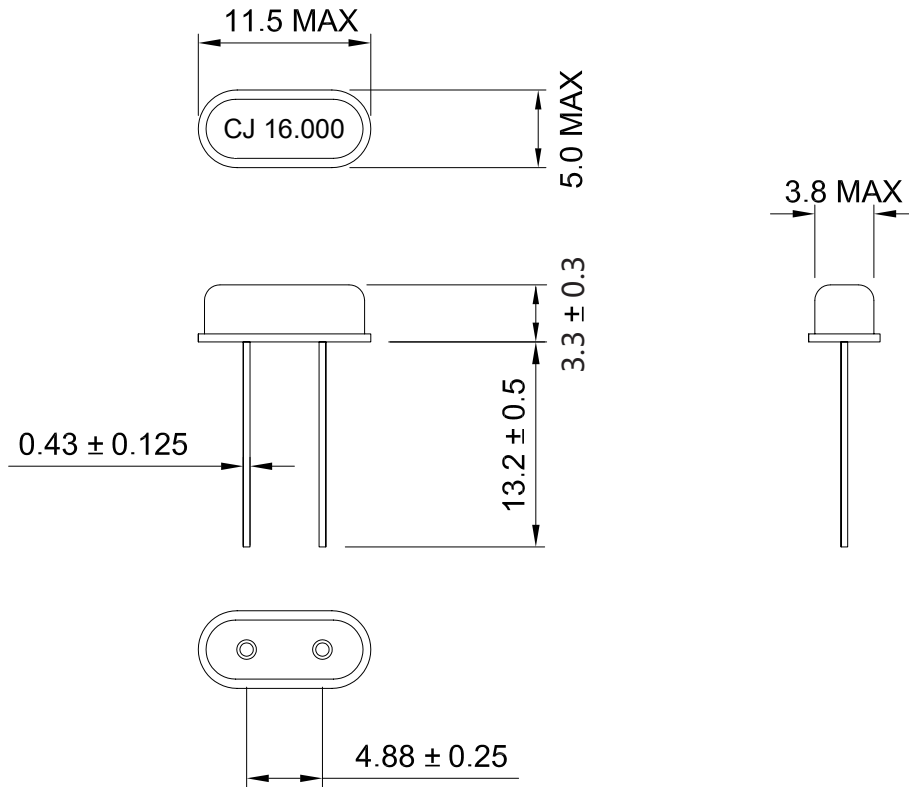
Temperature profile for reflow soldering

6. Soldering iron method

Bit temperature:  $350 \pm 10^\circ\text{C}$  Application time of soldering iron:  $3+1\text{ s}$ . For other procedures, refer to IEC 60068-2-20.

## Package Outline Dimensions

Units:mm



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