

## 产 品 规 格 书

### SPECIFICATIONS FOR PRODUCT

产品类型 TYPE : Quartz Crystal

产品规格 SPEC : 32.768KHz/7015/6PF/20PPM

产品型号 P/N : CJK05-327680620B20

日期 DATE : 2021/05/06

<b>核准及签名</b>			<b>部门</b>
R&D APPR. SIGNATURED			DEPT.
<b>拟制</b>	<b>审核</b>	<b>批准</b>	频率器件事业部
ISSUE	CHECK	APPROVAL	
Ivan 2021/05/06	Abbey 2021/05/06	Ken 2021/05/06	

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## SMD CJ-146 Quartz Crystal

### CJK05-327680620B20

#### 1. Scope:

- 1.1 This specification applies to the RoHS/SONY compliance quartz crystal unit with a frequency of 32.768KHz which will be used in crystal oscillator applications.

#### 2. Construction:

- 2.1 Type of Quartz Resonator: CJ-146

#### 3. Electrical Characteristics

- |  |                                   |
|--|-----------------------------------|
| 3.1 Mode of Vibration:                                   | +2°X-cut , Fundamental            |
| 3.2 Nominal frequency(F):                                | 32.768KHz                         |
| 3.3 Load Capacitance(C <sub>L</sub> ):                   | 6PF                               |
| 3.4 Frequency Tolerance at 25 °C                         | ±20ppm                            |
| 3.5 Series Resistance(R <sub>r</sub> ):                  | 60 KΩ Max                         |
| 3.6 Quality Factor(Q):                                   | 60K TYP                           |
| 3.7 Turnover Temperature(T <sub>o</sub> ):               | 25 °C ± 5 °C                      |
| 3.8 Temperature Coefficient(K):                          | -0.035±0.006 ppm/ °C <sup>2</sup> |
| 3.9 Operation Temperature:                               | -40 °C ~ +85 °C                   |
| 3.10 Preservation Temperature:                           | -55 °C ~ +125 °C                  |
| 3.11 Shunt Capacitance(C <sub>o</sub> ):                 | 1.5PF Typical                     |
| 3.12 Aging 1st Year(Δf /f):                              | ±5 ppm max.                       |
| 3.13 Shock Resistance:                                   | ±5 ppm max.                       |
| 3.14 Capacitance Ratio(C <sub>o</sub> /C <sub>1</sub> ): | 520 Typical                       |
| 3.15 Insulation Resistance:                              | 500MΩ at DC 100V±15V              |
| 3.16 Drive Level:  | 1 μ W                             |

## Reliability Specifications

### 4. Reliability Specifications

This is the quality control and quality assurance and reliability tests performance data for the RoHS/SONY compliance 32.768KHz CJ-146 Quartz Crystal.

related to the specification and approval sheet provided by JSCJ .

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

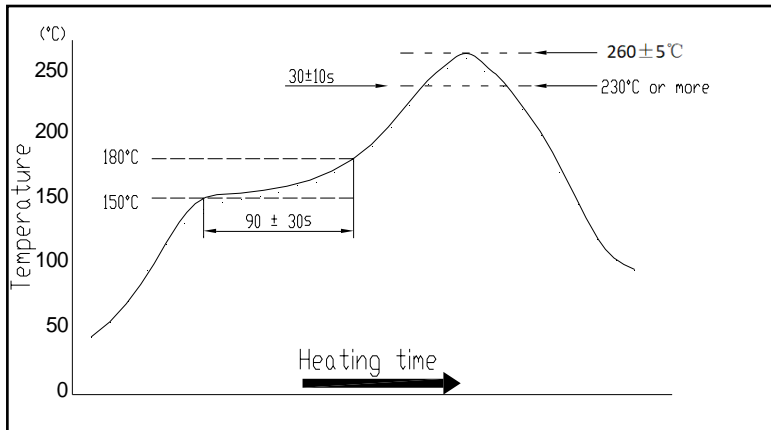
For any discrepancy in GO/NG, test will be done at TEMP.25±2°C, R.H. 65±5%.

NO.	PROCESS	SPECIFICATION	TEST METHOD
4.1	Temperature Cycle (GB/T 2423.22-2002, Method Nb)	Frequency change after test $\leq \pm 5$ 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 $\leq \pm 5$ 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 $\leq \pm 5$ 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 $\leq \pm 5$ 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 $\leq \pm 5$ 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 $\leq \pm 5$ 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 $\leq \pm 5$ 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 0.75 m heights for 3 times.
4.8	Solderability ( IEC60068-2-58, Test Td:)	Terminals shall be covered more than 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 0.5kg for at least 60 seconds.
4.10	Resistance to Soldering Heat (IEC60068-2-58, Test Td: Table 4)	Frequency change after test $\leq \pm 5$ 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 soldering 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:  $150 \sim 180^\circ\text{C}$ ,  $90 \pm 30\text{s}$



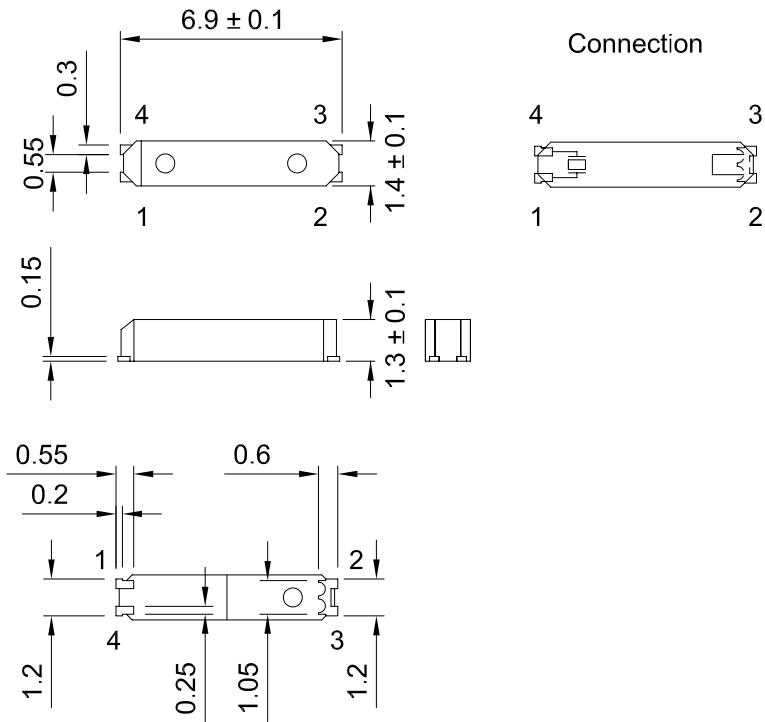
Temperature profile for reflow soldering

6. Soldering iron method

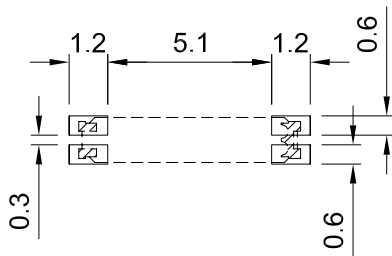
Bit temperature:  $350 \pm 10^\circ\text{C}$  Application time of soldering iron:  $3+1\text{ s}$ . For other procedures, refer to IEC 60068-2-20.

## Package Outline Dimensions

Units:mm



## Suggested Pad Layout



### NOTICE

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