



**江苏长晶科技股份有限公司**  
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

## 产 品 规 格 书

### SPECIFICATIONS FOR PRODUCT

**产品类型** TYPE : Quartz Crystal

**产品规格** SPEC : 32.768KHz/3x8/12.5PF/20PPM

**产品型号** P/N : CJK01-327681220A20

**日期** DATE : 2022/01/18

<b>核准及签名</b>			<b>部门</b> DEPT.
R&D APPR. SIGNATURED			
<b>拟制</b>	<b>审核</b>	<b>批准</b>	频率器件事业部
ISSUE	CHECK	APPROVAL	
Ivan 2022/01/18	Abbey 2022/01/18	Ken 2022/01/18	

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## CJK01 Quartz Crystal

### CJK01-327681220A20

#### 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: CJK01

#### 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> ):	12.5 PF
3.4	Frequency Tolerance at 25 °C :	±20ppm
3.5	Series Resistance(R <sub>r</sub> ):	40 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:	-20 °C ~ +70 °C
3.10	Preservation Temperature:	-55 °C ~ +125 °C
3.11	Shunt Capacitance(C <sub>0</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>0</sub> /C <sub>1</sub> ):	520 Typical
3.15	Insulation Resistance:	500MΩ at DC 100V±15V
3.16	Drive Level:	1 μW

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## PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

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### 4. Reliability Specifications

#### 4.1. Humidity

Subject the crystal at  $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$  and 90% - 95%RH for  $96 \pm 4$  hours. Then release the crystal into the room conditions for 2hour prior to the measurement.

#### 4.2. High Temperature Exposure

Subject the crystal to  $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for  $96 \pm 4$  hours. Then release the crystal into the room conditions for 2hour prior to the measurement.

#### 4.3. Low Temperature

Subject the crystal to  $-20^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for  $96 \pm 4$  hours. Then release the crystal into the room conditions for 2hour prior to the measurement.

#### 4.4. Mechanical Shock

Drop the crystal randomly onto a concrete floor from the height of 75cm 3 times. Then release the crystal into the room temperature for 15 minutes prior to the measurement.

#### 4.5. Temperature Cycling

Subject the crystal to  $-30^{\circ}\text{C}$  for 30 min. followed by a high temperature of  $+85^{\circ}\text{C}$  for 30 min. Cycling shall be repeated 5times with a transfer time of 15sec. at the room condition. Then release the resonator into the room temperature for 2hours prior to the measurement.

#### 4.6. Vibration

Subject the crystal to vibration for 2hours each in x, y, and z axes with the amplitude of 1.5mm, the frequency shall be varied uniformly between the limits of 10-55 Hz. Then release the crystal into the room temperature for 15 minutes prior to the measurement.

#### 4.7. Resistance to Solder Heat

Dip the crystal terminals no closer than 2 mm into the solder bath  $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for  $5 \pm 1$  sec; Then release the crystal into the room temperature for 2hour prior to the measurement.

#### 4.8. Solder Ability

Dip the crystal terminals no closer than 2 mm into the solder bath at  $235^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for  $3 \pm 0.5$  sec. more than 95% of the terminal surface of the crystal shall be covered with fresh solder. Then release the crystal into the room temperature for 2hour prior to the measurement.

#### 4.9. Lead Fatigue

##### 1) Pulling Test

Weight along with the direction of terminals without any shock 0.5kg for  $10 \pm 1$ sec.; The crystal shall no evidence of damage and shall fulfill all the initial electric characteristics.

##### 2) Bending Test

Lead shall be subject to withstand against 90 degree bending at its stem. This operation shall be done towards both direction; The crystal shall no evidence of damage and shall fulfill all the initial electric characteristics.

## 5. Reliability Specifications

### 5.1. Shock Resistance

It may deteriorate the characteristics or cause of no oscillation if excess physical shock given. Please be careful not to drop. Please use under condition to minimize the shocks as much as possible.

Please review the conditions if it is used by auto mounting or after the conditions are changed.

### 5.2. Heat and Humidity Resistance in Storage

Storing the crystal products under higher or lower temperature or high humidity for a long period may deteriorate the characteristics of crystal units.

Please store and use the crystal products at the normal temperature and humidity.

### 5.3. Solder Heat Resistance

Standard type crystal products use Material have a 230°C melting point.

Heating up the package more than 210°C may deteriorate the characteristics or cause of no oscillation the products. If the crystal products need to be soldered at temperature of more than +210°C, please study heat-resistance products or SMD products.

Please review the condition or consult us about flow solder process.

Our soldering condition is under 280°C within 5sec or 260°C within 10sec for lead parts.

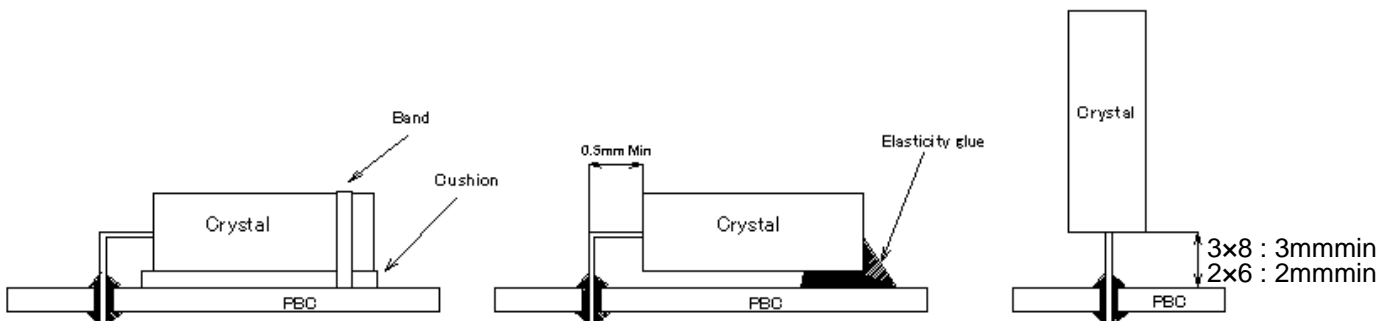
Please don't solder the crystal unit (case) directly. It may cause of deteriorate the characteristics.

### 5.4. Mounting Method to PCB

When the crystal products need to be lay down please fix to PCB securely.

If the crystal is used with mechanical vibration location, please put cushion in between PCB or fix with elasticity glue (Silicon etc) as shown in below figure. Please don't gluing hermetic seal grass.

When the crystal products need to be mounted vertically, gap between crystal units and PCB more than 3mm for 3×8 type ,more than 2mm for 2×6 type is recommended.



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## Handling Notice for Standard Tuning Fork Crystal (Cylindrical Type)

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### 6. Lead Process

When the lead needs to be cut please maintenance the cutter.

When the lead needs to be bent or repaired please be careful not to giving excess pressure at the root of the lead to avoid crack of the hermetic seal glass. Also please be careful not to giving excess pressure at sealing to avoid sealing tightness deteriorate.

Leave more than 0.5 mm of lead from the case.

### 7. Ultrasonic Cleaning and Ultrasonic Soldering

Soldered by ultrasonic cannot be guaranteed, because crystal may be sympathetic vibrated and may damage.

Please study at your side about ultrasonic cleaning.

### 8. Drive Level

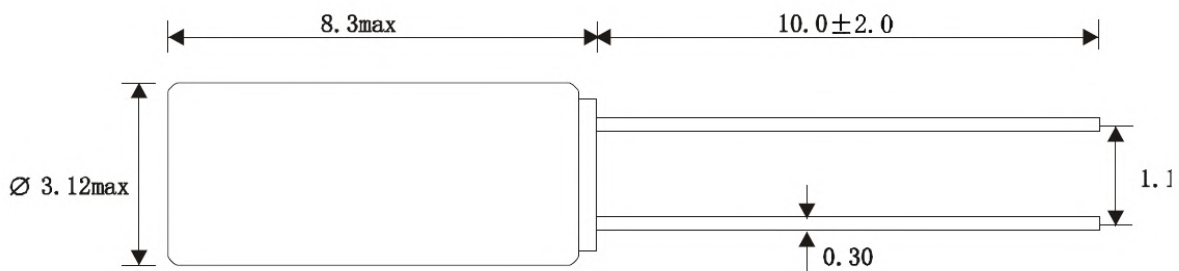
Applying excessive drive level to the crystal units may cause deterioration of characteristics or damage. Less than  $1.0\mu\text{W}$  is recommended to this products. More than  $2.0\mu\text{W}$  cannot be guaranteed.

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## Package Outline Dimensions

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Units:mm



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