

# YSX146GA/YSX306GA



## Features



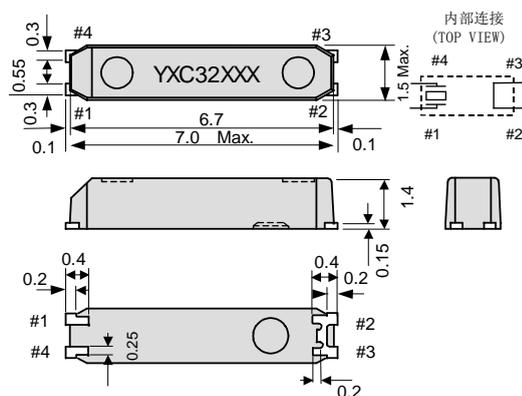
- External dimensions: 7.0 x 1.5 x 1.4 mm / 8.0 x 3.8 x 2.54 mm.
- Frequency range: 32.768KHz.
- portable consumer products reference clocks.
- High reliable environmental performance.
- RoHS compliant /Pb Free.
- Measurement Instrument : S&A 250B(Measured FL).

## Electrical Specifications

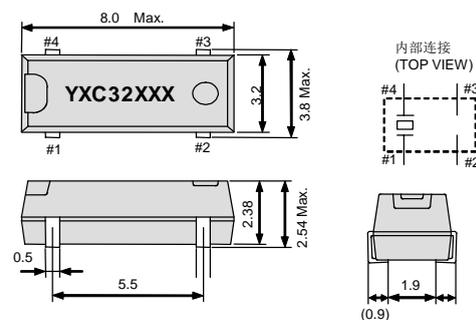
Item / Type	YSX146GA/YSX306GA
Nominal Frequency Range	32.768 KHz
Vibration Mode	AT Fundamental
Load Capacitance	12.5pF, or specify
Frequency Tolerance (at 25 °C)	± 20 ppm , or specify
Operating Temperature	- 40 ~ + 85 °C
Storage Temperature	- 55 ~ + 125 °C
Shunt Capacitance	2.0pF typical
Level Of Drive	1.0 μW Max.
Frequency Aging (at 25 °C)	± 5 ppm / year Max.
Turnover Temperature	25 °C ± 5 °C
Temperature Coefficient	-0.036 ± 0.006ppm/°C <sup>2</sup>
Motional Resistance	50KΩ Max.
Motional Capacitance	3.0pF typical
Mode of Vibration	+2°X-cut Fundameneta

## Dimensions

● YSX 146GA



● YSX 306GA



Units: mm

## 【Components】

### 1. Crystal blank(SiO<sub>2</sub>)

Electrode (Cr ,Cu,Ag)

### 2. Cup(Nickel silver)

Finish(Nickel plating)

### 3. Base(Glass,KV,Fe-Ni(42%))

Finish(Nickel under plating 4  $\mu$  , Tin plating 10  $\mu$  (Cu 2wt%)

### 4. Solder of a junction

RX307-207BHO (NIHON HANDA SHANGHAI)

Pb 93.5%, Sn 5%, Ag 1.5% (Melting points 260°C)

### 5. MOLD

Epoxy compound      KL-G100

## 【Physical and environmental characteristics】

### 1. Humidity

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

### 2. High Temperature Exposure

Subject the crystal to 85°C $\pm$ 5°C for 96 $\pm$ 4 hours. Then release the crystal into the room conditions for 2 hours prior to the measurement .

### 3. Low Temperature

Subject the crystal to -20°C $\pm$ 5°C for 96 $\pm$ 4 hours . Then release the crystal into the room conditions for 2 hours prior to the measurement.

### 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 .

### 5. Temperature Cycling

Subject the crystal to -30°C for 30 min. followed by a high temperature of +85°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 2 hours prior to the measurement .

### 6. Vibration

Subject the crystal to vibration for 2 hours 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.

## 7. Resistance to Solder Heat

Dip the crystal terminals no closer than 2mm 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 2 hour prior to the measurement .

## 8. Solder Ability

Dip the crystal terminals no closer than 2mm 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 .

## 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 degrees bending at its stem. This operation shall be done towards both directions; The crystal shall no evidence of damage and shall fulfill all the initial electric characteristics.

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

### 1. Shock resistance

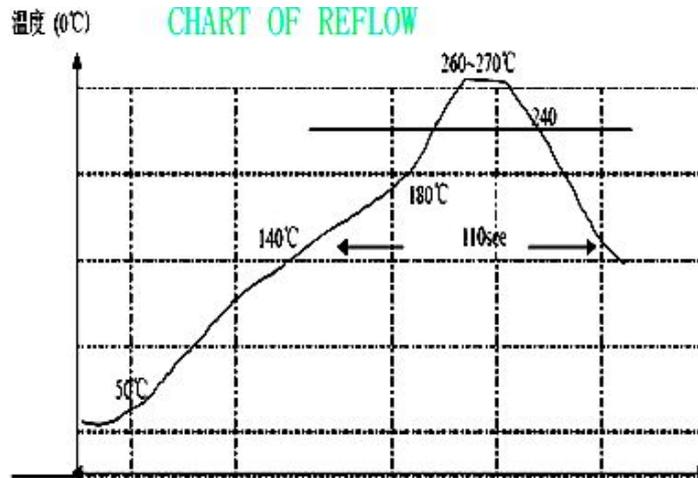
It may deteriorate the characteristics or cause of no oscillation if excess physical shock given. Please be careful not to drop. Please use under condition to minimize the shocks as much as possible. Please review the conditions if it is used by auto mounting or after the conditions are changed.

### 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.

### 3. Solder heat resistance

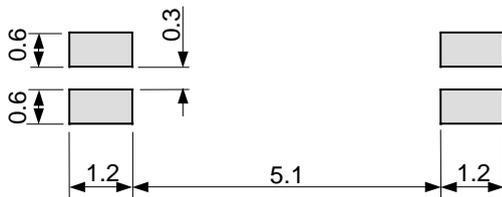
Standard type crystal products use Material have a  $280^{\circ}\text{C}$  melting point. Heating up the package more than  $270^{\circ}\text{C}$  may deteriorate the characteristics or cause of no oscillation the products.



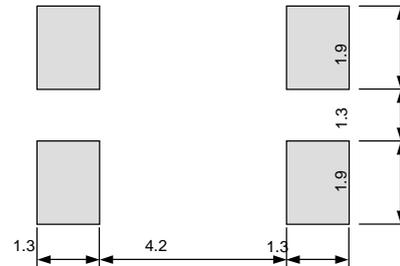
## 4. Mounting method to PCB

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.

● YSX146GA



● YSX306GA



## 5. Ultrasonic cleaning and ultrasonic soldering

Soldered by ultrasonic cannot be guaranteed, because crystal maybe sympathetic vibrated and may damage. Please study at your side about ultrasonic cleaning.

## 6. Drive level

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

## REVIEW OF SPECIFICATION

When something get doubtful with this specifications, we shall jointly work to get an agreement.

# YSX146GA/YSX306GA



★ **PART NUMBER GUIDE 部件号示例** *e.g. X701532768KSD4GI* *YSX146GA = 7.0×1.5 SMD SEAM TYPE*

Quartz Crystal Resonator	Dimensions	Frequency (Hz)	Load Capacitance (Pf)	Frequency Stability Overall (ppm)	Pin	Material	Operating Temp. Range
X	7015	32768K	S	D	4	G	I