



Serial No. : 2010-0976

DATE : 2010/08/10

Shenzhen Star Instrument Co.,Ltd

ITEM :

CRYSTAL RESONATOR

TYPE :

DMX-26S

NOMINAL FREQUENCY :

32.768kHz

SPEC No. :

1TJS125DJ4A782Q

Please acknowledge receipt of this specification by signing and returning a copy to us.

RECEIPT	
DATE	
RECEIVED	(signature) (name)

General Manufacturer of Quartz Devices

DAISHINKU CORP.

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C.ENG.

M. Sijuka

ENG.

H. Nasu

1. Electrical characteristics (+25 ± 2°C)

(1) Nominal frequency	32.768 kHz
(2) Frequency tolerance	± 20 × 10 ⁻⁶ max.
(3) Loading capacitance	12.5 pF
(4) Motional resistance	50 kΩ max. / Series
(5) Drive level	1.0 ± 0.2 μW
(6) Q factor	40000 min.
(7) Turnover temperature	+ 25 ± 5 °C
(8) Parabolic coefficient	- 0.04 × 10 ⁻⁶ / °C ² max.
(9) Insulation resistance	500 MΩ min. / DC100V (Pin: #1 to #4)(Pin: #1, #4 to #2, #3)
(10) Operating temperature range	- 40 ~ + 85 °C
(11) Storage temperature range	- 40 ~ + 85 °C
(12) Shunt capacitance	1.25 pF typ.
(13) Capacitance ratio	518 typ.

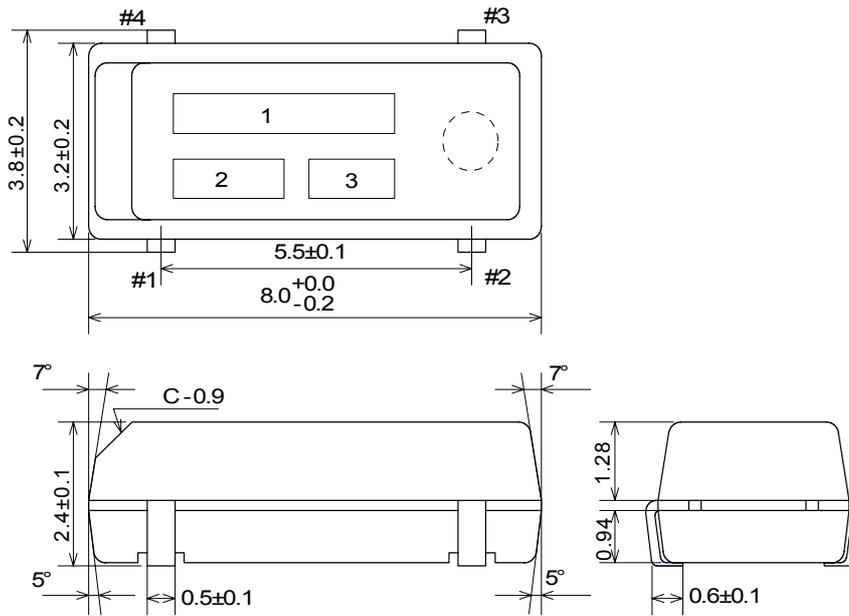
Manufacturing location	Spec. No.
Japan	1TJS125DJ4A782Q

2. Construction

(1) Holder	DMX-26S
(2) Dimensions and marking	Refer to Fig-1.

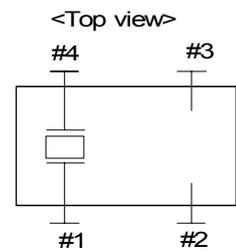
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3. Dimensions



- (1) Frequency
EX) 32.768kHz
→ 32.768
- (2) Maker (KDS)
- (3) Lot No.(*)

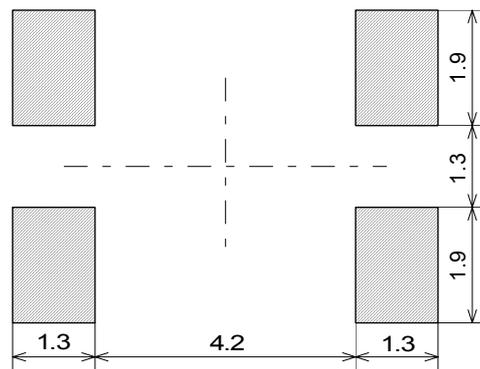
* Year: The last two digits of the manufactured year
 Week: Arabic numerals in two digits form
 Ex.) 2010.08.09 → 1033



(Unit: mm)

Fig-1

4. Land pattern



(Unit: mm)

Fig-2

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5. Mechanical endurance

5.1. Vibration

After this test, frequency tolerance and CI value shall be complied in accordance with paragraph 7.(1).

- (1) Vibration frequency 10 ~ 55Hz
- (2) Full cycle 1.5mm
- (3) Direction X.Y.Z
- (4) Time 2h / Each direction

5.2. Shock

A free drop from a height of 75cm to a hard wooden board of thickness more than 30mm is to be performed three times.

After the following test, Frequency tolerance and CI value shall be complied with paragraph 7.(2).

5.3. Hermetic seal

Less than 3.5×10^{-9} Pa·m³/s by Helium leak detector.
(Checked: Before the molded crystal unit.)

5.4. Solderability

Dip the terminals in rosin methanol solution for 5~10s (rosin: JIS-K-5902; methanol: JIS-K-5101; solution:7~10%). Then dip the terminals in the melted solder tank where the solder (Sn-3.0Ag-0.5Cu) is at a temperature of +245±5°C until 90% or more of the dipped area is covered with new solder.

5.5. Solder reflow

After 24h past from following test, frequency tolerance and CI value shall be complied with paragraph 7.(3).

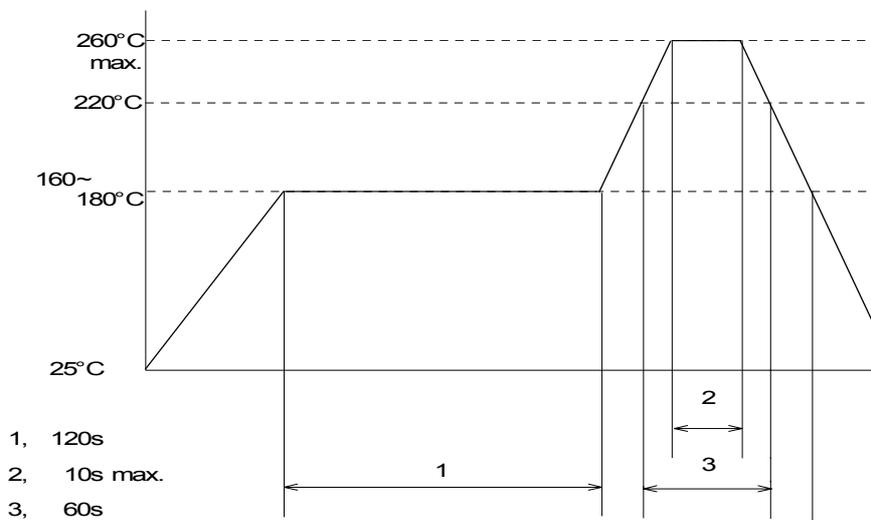


Fig-3

<Notice>

Using the infrared lamp at soldering process may cause uneven temperature rise on the plastic surface of the parts, so please keep the package temperature within the above conditions.

Also do not dip the plastic part into solder.

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6. Environmental endurance

6.1. High temperature

After 1~2h past at room temperature from following test, Frequency tolerance and CI value shall be complied with paragraph 7.(3).

240h at $+85\pm 2^{\circ}\text{C}$.

6.2. Low temperature

After 1~2h past at room temperature from following test, Frequency tolerance and CI value shall be complied with paragraph 7.(2).

240h at $-40\pm 2^{\circ}\text{C}$.

6.3. Humidity

After 1~2h at room temperature from following this test, frequency tolerance and CI value shall be complied with paragraph 7.(3).

240h at $+85\pm 2^{\circ}\text{C}$, relative humidity 90~95%.

6.4. Temperature cycle

After supplying the following temperature cycle (50 cycles).

Frequency tolerance and CI value shall be complied with paragraph 7.(3).

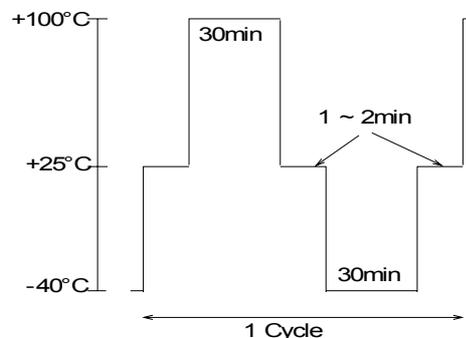


Fig-4

7. Specification

(1)	Frequency tolerance($\Delta F/F$) CI value(ΔCI)	$\pm 3 \times 10^{-6}$ max. $\pm 15\%$ max. or 5k Ω max.
(2)	Frequency tolerance($\Delta F/F$) CI value(ΔCI)	$\pm 5 \times 10^{-6}$ max. $\pm 15\%$ max. or 5k Ω max.
(3)	Frequency tolerance($\Delta F/F$) CI value(ΔCI)	$\pm 10 \times 10^{-6}$ max. $\pm 25\%$ max. or 10k Ω max.

Provided that measurement shall be carried out after letting it alone in the room temperature for 1h.

<Note>

(a) It may be seen a part of the inside metal case from mold.

Pin #2 and #3 should be soldered to be electrically OPEN to the PCB.

(b) Ultrasonic welding

Since mounting by ultrasonic welding and processing have a possibility of an excessive vibration spreading inside a crystal resonator and becoming the cause of characteristic deterioration and not oscillating, it does not recommend.

(c) Ultrasonic cleaning

Please make sure whether or not tuning fork crystals withstand your ultrasonic cleaning conditions.

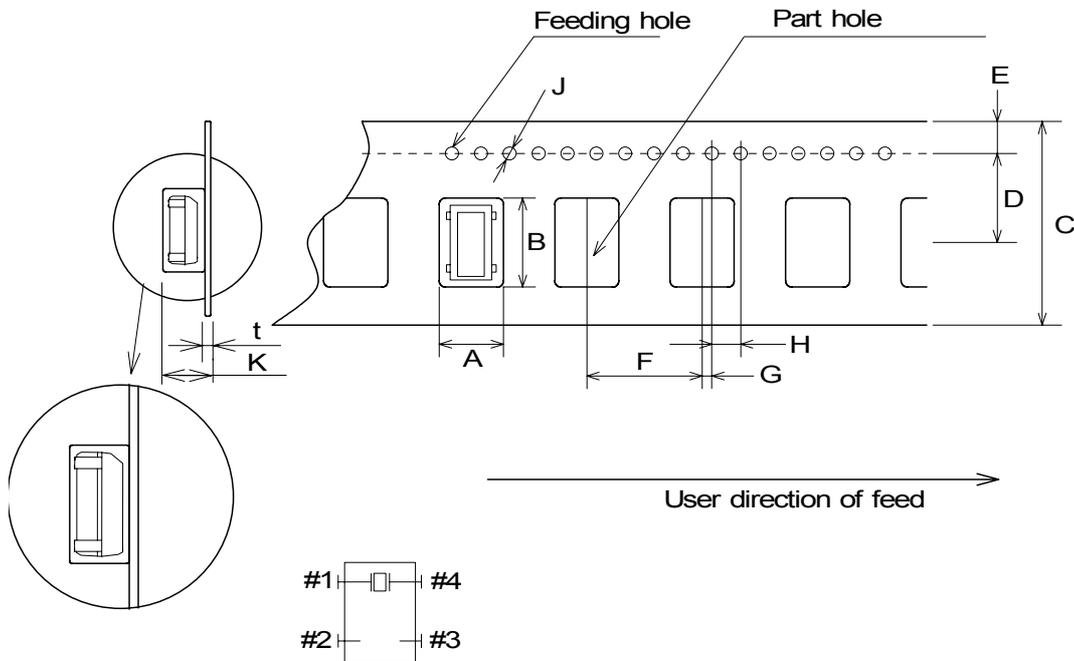
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8. Carrier tape and tape reel

8.1. Refer to EIA-481A and EIAJ RC-1009.

Tape materials Carrier tape: PS
Cover tape: PET+PE

8.2. Dimensions of carrier tape



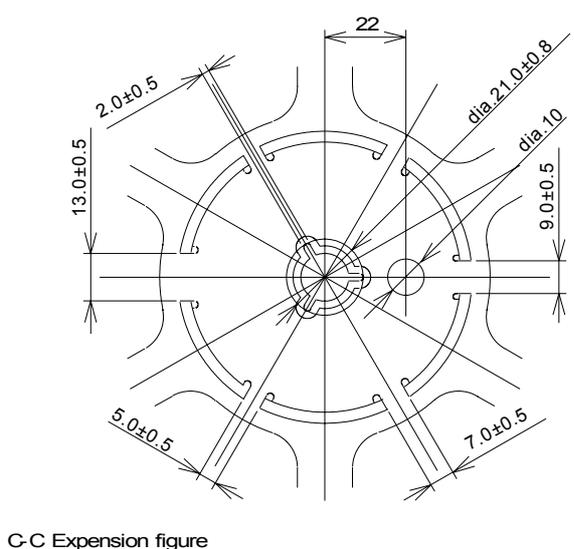
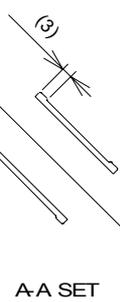
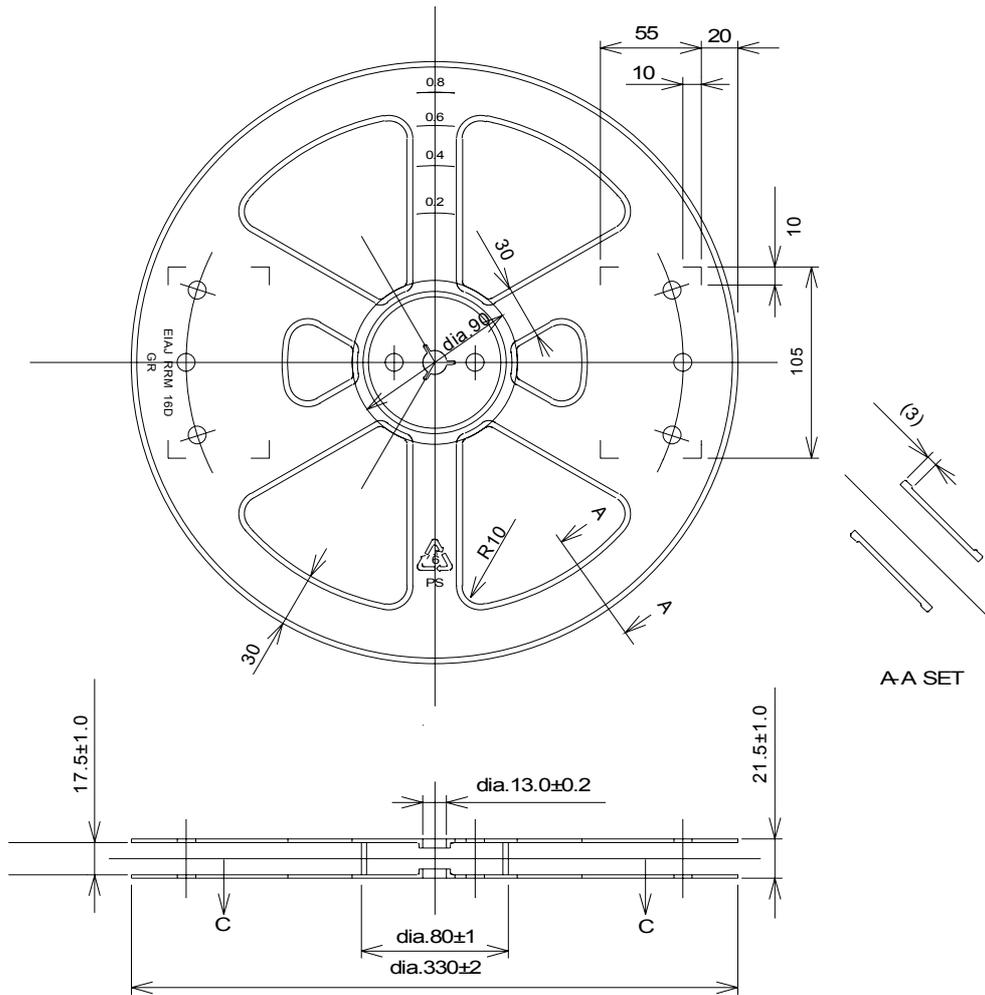
Dimensions

Mark	Dimension
A	4.1 ±0.1
B	8.5 ±0.1
C	16.0 ±0.3
D	7.5 ±0.1
E	1.75±0.10
F	8.0± 0.1
G	2.0± 0.1
H	4.0± 0.1
J	dia. 1.5+0.1,-0.0
K	2.7 ±0.1
t	0.30 ±0.05

(Unit: mm)

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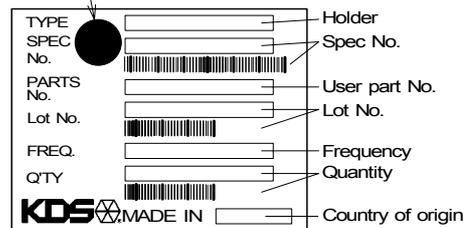
8.3. Dimensions of tape reel and marking



Reel: PS
(Unit: mm)

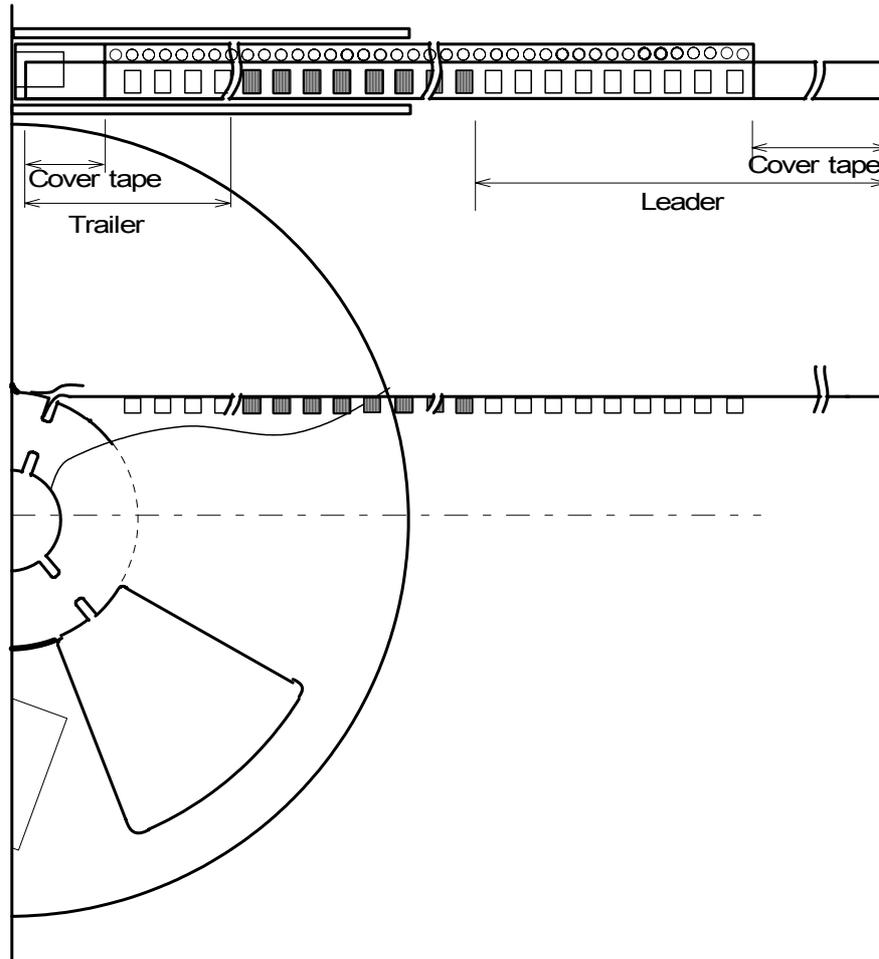
Label

A green dot is marked onto the shipping label.



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8.4. Carrier tape leader and trailer specifications



Leader	Cover tape	The length of cover-tape in the leader is more than 400~560 mm including empty embossed area.
	Carrier tape	After all products were packaged, must remain more than twenty pieces or 30~70 mm empty area, which should be sealed by cover-tape.
Trailer	Cover tape	The tip of cover-tape shall be fixed temporary by paper tape and roll around the core of reel one round.
	Carrier tape	The empty embossed area which are sealed by top cover-tape must remain more than 110 mm.

8.5. Storage condition

Temperature: +40°C max. Relative humidity: 80% max.

8.6. Standard quantity

2500pcs./Reel

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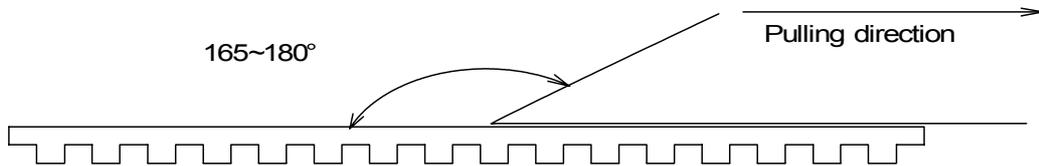
8.7. Release strength of cover tape

It has to be between 0.1~0.7N under following condition.

Pulling direction: 165 ~180°

Speed : 300mm/min

Otherwise unless specified



8.8. Vacant sections of the products

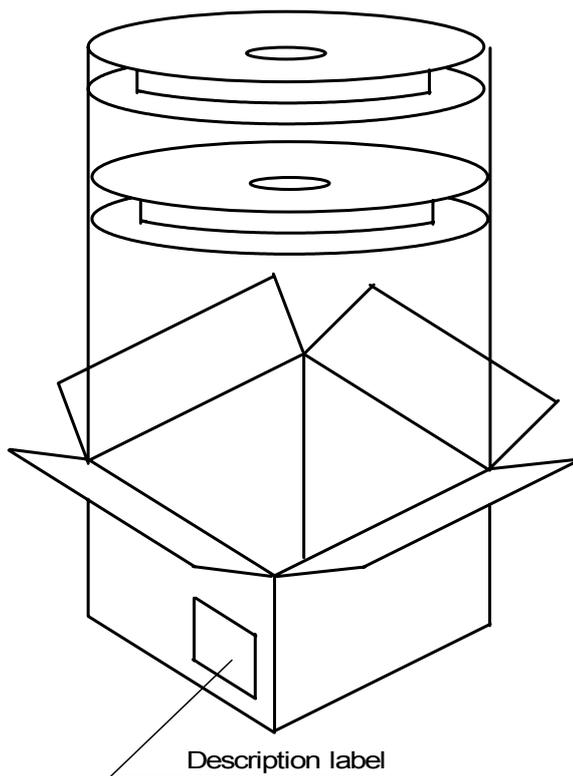
There is no more than two vacant sections in the series except for the areas of leader and terminal.

8.9. Outer box

Crystal unit shall be packed in inner box by production lot.

Outer carton size would be changed depending on lot size.

The description label shall be put on outer carton.

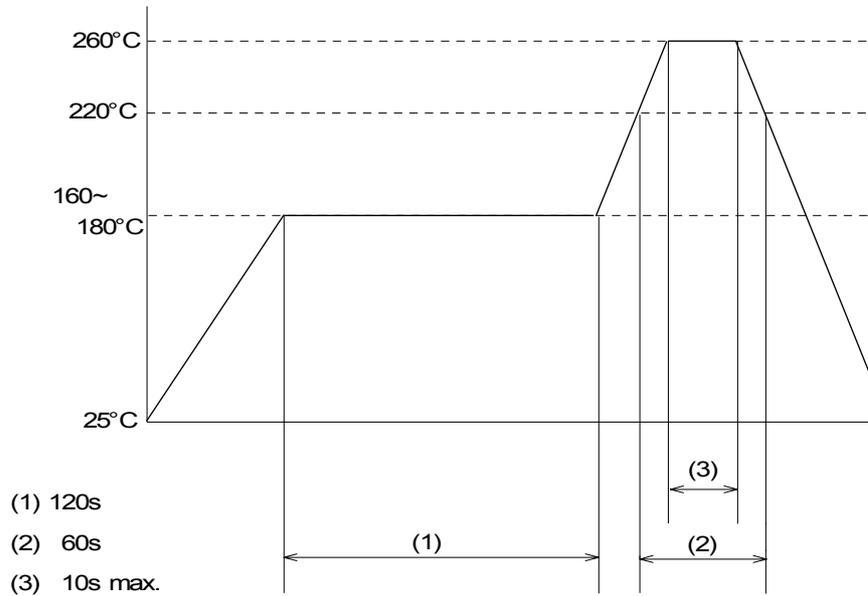


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9. Handling guide to DMX type crystal units

9.1. Reflow soldering

9.1.1. Individual specification is followed and the following items should be referred.
 Preheating at +160~+180°C 120s, peak temperature +260°C max.
 (Within 60s over +220°C)



Wave soldering is not available.

Hand soldering is available on the condition of 3s max. below +350°C.

9.2. Ultrasonic welding

Since mounting by ultrasonic welding or processing have a possibility of an excessive vibration spreading inside crystal products and becoming the cause of characteristic deterioration and not oscillating, we do not recommend it.

9.3. Cleaning

9.3.1. The crystal units can be cleaned in organic solvent for 5 min. or so.

9.3.2. Using ultrasonic cleaning may result in damage to the tuning fork crystal units.

This is because the ultrasonic frequency is close to the resonance frequency of tuning fork crystal units. Therefore, the internal crystal blank tends to be resonated by the ultrasonic frequency, and may be broken.

Please make sure whether or not the tuning fork crystal unit can withstand the ultrasonic cleaning.

9.4. Drive Level

If higher drive level over 2μW is applied to the crystal unit, the frequency may shift down and the internal crystal element may be broken eventually.

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9.5. Handling

KDS crystal units are designed to endure mechanical shocks and vibrations required, however excessive shocks more than expected may be applied to the crystal unit. If a crystal unit is accidentally dropped, please check it electrically before using with your application.

9.6. Storage

9.6.1. Please keep the crystal units in the temperature range of +5~+35°C and the humidity range of 45~75% for storing, because the solderability of the crystal units may deteriorate if it is stored under high temperature and high humidity environment.

9.6.2. The crystal units must not be subjected to direct sunlight, and please store in a non-condensing place.

9.6.3. Solderability of the crystal units may deteriorate in long-term storage, so it is recommended the crystal units be used within 6 months after shipped from KDS.

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