RoHS Compliance

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SPECIFICATIONS

Messrs.

Approved by

Product	CRYSTAL UNIT
Type of Holder	CM212
Nominal Frequency	32.768 kHz
Customer's Parts Number	
Our Parts Number	CM212 32768KHZ

Sales CITIZEN FINEDEVICE CO., LTD. Miyota Works. Crystal Devices Department.
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Revision History

Record		Page	Section	Changes	Prepared
Revision number	Date				
1 st	2015/1/7				

1. Scope

This document contains specifications for the crystal unit to be supplied by CITIZEN FINEDEVICE CO., LTD.

1.1 If something defined ambiguously or undefined in document happened, the customer and CITIZEN FINEDEVICE would discuss and take necessary steps by mutual consent.

1.2 Product test data can't be attached to this document.
The contents except Electrical Specifications are subject the change without notice.

1.3 This product is not authorized for use as a critical component in life support devices or systems.

2. Electrical Specifications

2.1	Nominal Frequency	32.768 kHz
2.2	Operating Temperature Range	-40 ～ +85℃
2.3	Storage Temperature Range	-55 ～ +125℃
2.4	Frequency Tolerance	±20ppm Max. at 25℃
2.5	Frequency Tolerance over Operating Temperature Range	Turnover Temp.;25±5℃ Temp.Coefficient:-0.033±0.003ppm／℃^{2}
2.6	Equivalent Series Resistance	70kΩ Max.at 25℃
2.7	Insulation Resistance	500MΩ Min./DC100V±15V

3. Test Conditions

3.1	Load Capacitance	7.0pF This Load Capacitance has been fixed on customer's request.
3.2	Level of Drive	1.0μW Max.

4. Mechanical and Environmental Tests

Test Name		Test Conditions	Criteria №	
1.Mechanical Tests				
1-1	Shock	Drop 3 times from the height of 75 cm onto hard wooden board with thickness of 3 cm.	A	※2
1-2	Vibration	Vibration Frequency : 10～60 Hz, 1.5mm, full wave, Cycle : 2～3 minutes, Direction : X.Y.Z.Time : 2 hours in each direction, for 6 hours in total.	A	※2
1-3	Solderability	After applying RMA flux, dip in solder. Dipping Time : 5±0.5seconds. Soldering Temperature : 245±5 ℃.	C	—
1-4	Reflow Soldering Heat Resistance	See Fig.1 reflow condition.	B	※1
2. Environmental Tests				
2-1	Storage In Low Temperature	Expose the sample in an inoperative mode to 500 hours at -40℃.	A	※1
2-2	Storage In High Temperature	Expose the sample in an inoperative mode to 500 hours at +85℃.	A	※1
2-3	Humidity	Expose the sample in an inoperative mode to 500 hours at +85℃, and 85%RH.	A	※1
2-4	Thermal Shock	Subject the sample to 5、20 temperature variation cycles at -25℃ for 30 minutes and +80℃ for the next 30 minutes in each cycle.	A	※1

Criteria

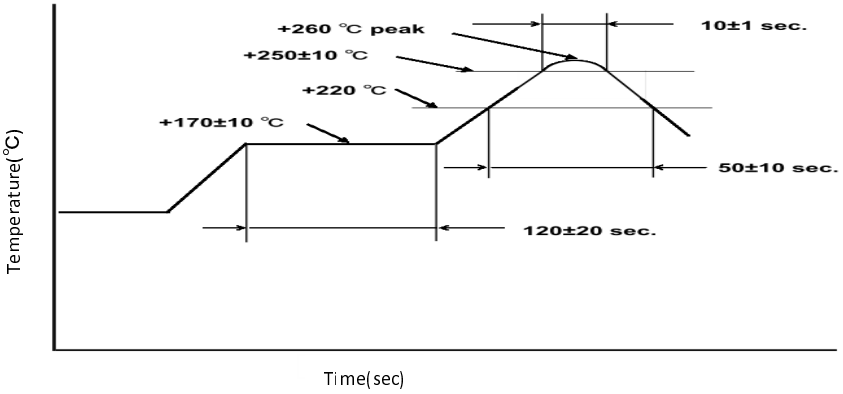
Criteria №	Criteria
A	Any variation between the pre- and post-test frequencies shall remain within ±10ppm. The equivalent series resistance shall remain within 15kΩ.
B	Any variation between the pre- and post-test frequencies shall remain within ±10ppm. The equivalent series resistance shall remain within 20kΩ.
C	At least 90% of each dipped area shall be covered by fresh solder.

※1 Measurements should be taken place at 25±2℃ after each test, the samples shall be left at 25℃ for 24hours.

※2 Measurements should be taken place at 25±2℃ after each test, the samples shall be left at 25℃ for 2hours.

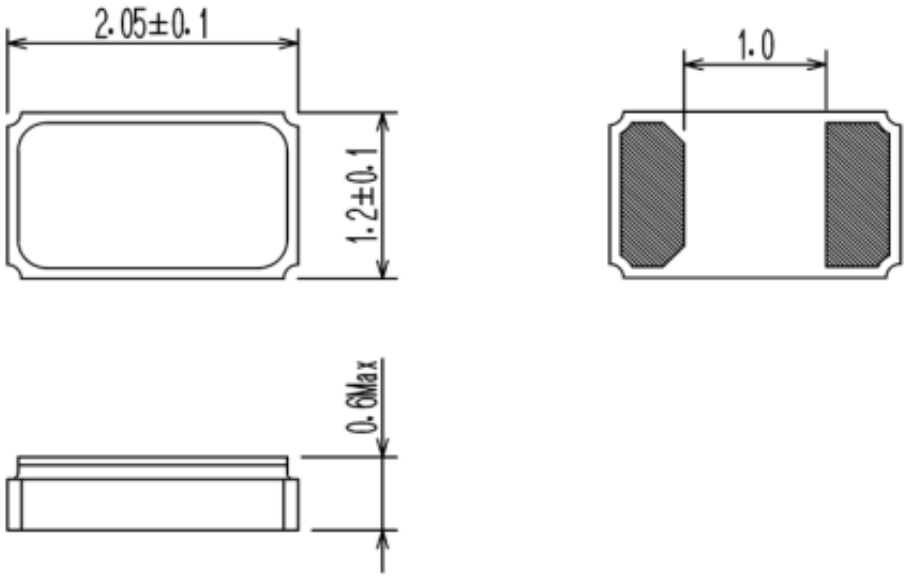
【Refloe condition】

Fig.1



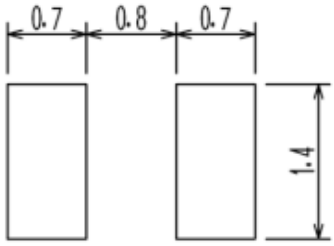
5. Dimensions

(unit:mm)



6. Solder Pad Layout

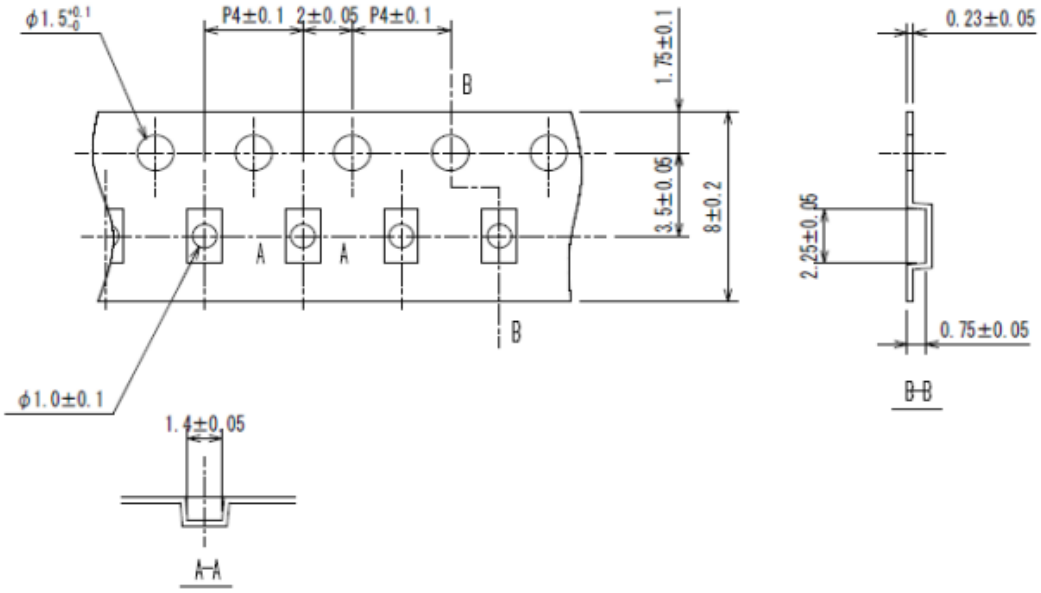
(unit:mm)



7. Tape and Reel Packaging

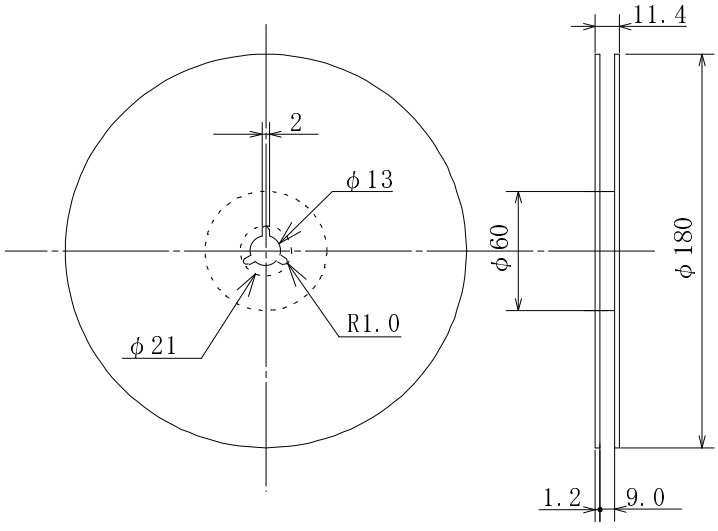
(1) Taping Specification

【Tape Dimensions】 (unit:mm)



【Reel Dimensions】 (unit:mm)

Conforming to ET-7200

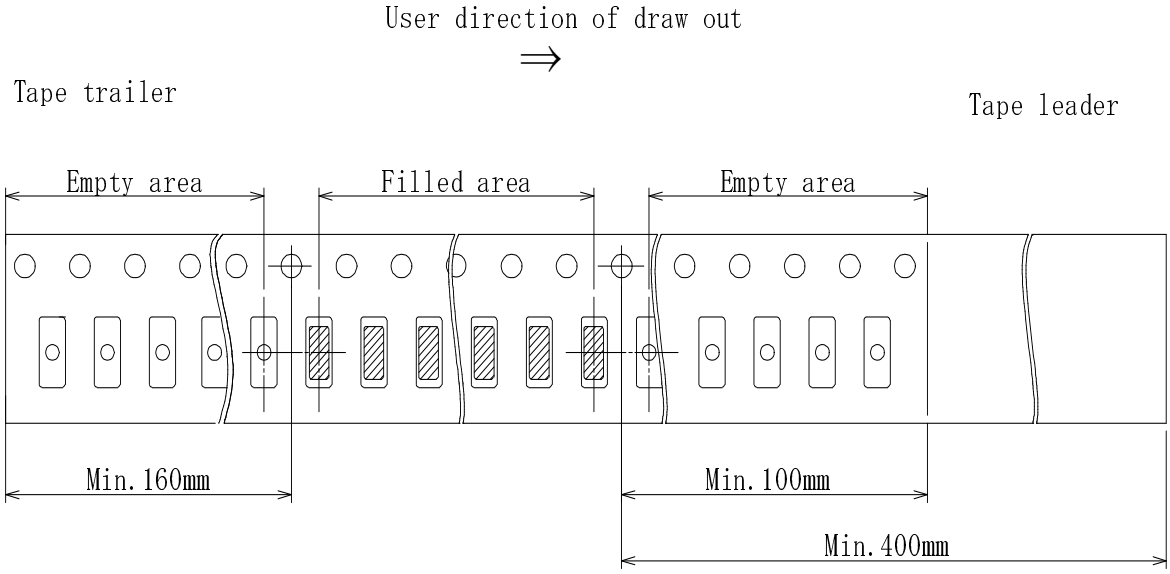


Material(Carried tape) : Black conductive PC

Material (Cover tape) : PET＋PE

Material (Reel) : Black conductive PS

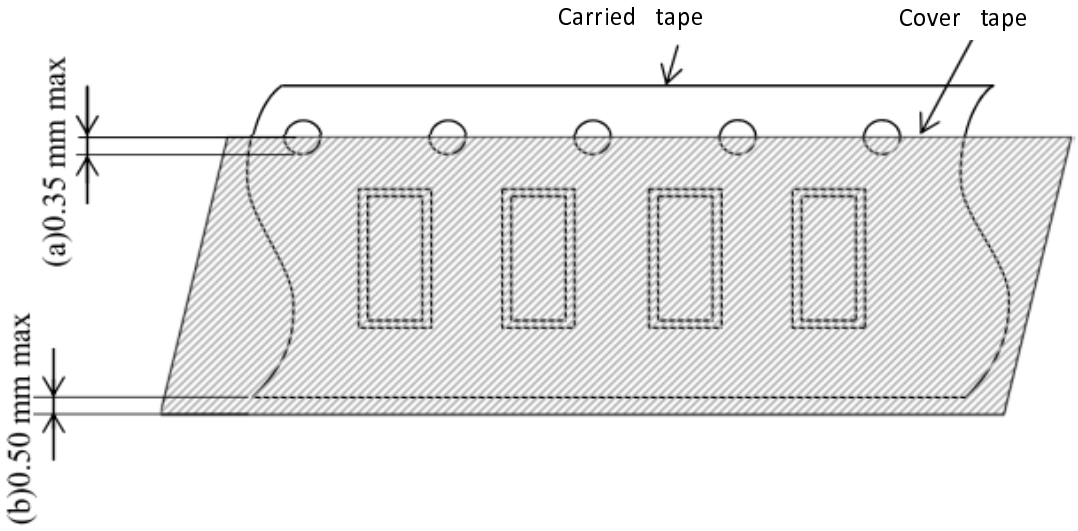
【Packing】



【Position gap of carried tape and the cover tape】

①The quantity(a) that cover tape blocks up the forwarding hole of the carried tape assumes it 0.35mm max.

② The runover(b) of the cover tape from carried tape assumes it 0.5mm max.

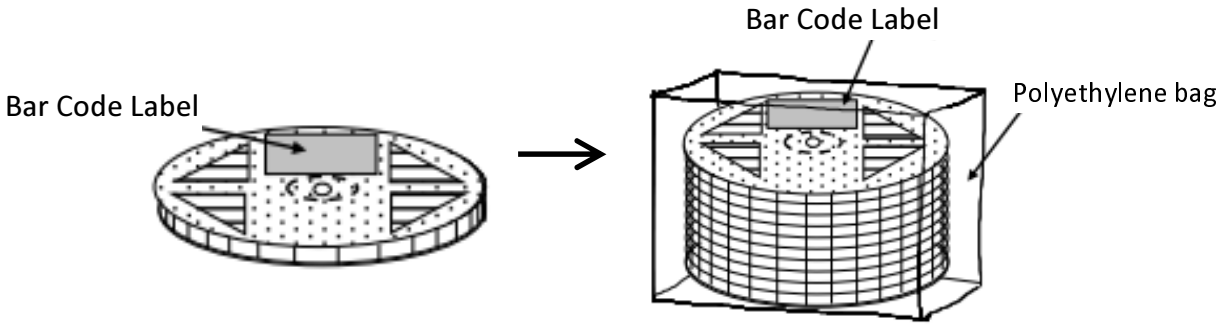


(2)Packaging

【Bar Code Label Item】

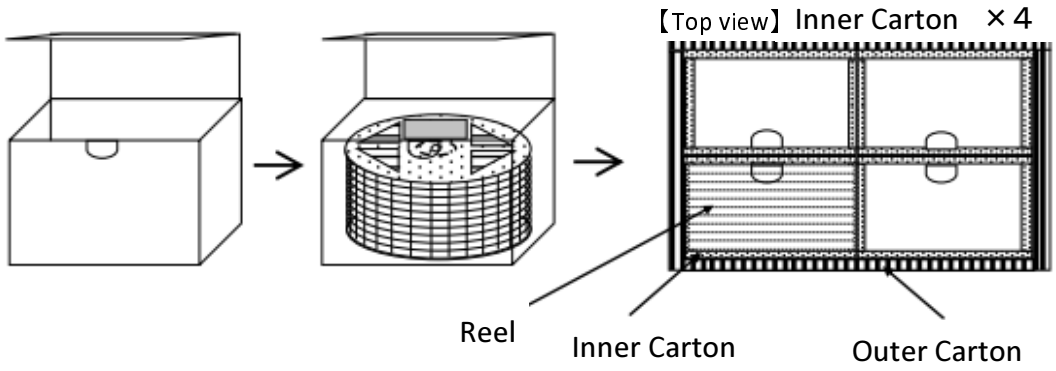
【Reel】

It puts in the wrapping inner carton with the polyethylene bag every ten reels.



【Outer Carton Packing Form】

Four inner carton are stored in the outer carton. (MAX 40 reels)



(3)Quantity

3000pcs/reel

10. Storage Condition

10.1 Storage Condition	Temperature	5 ～ 35℃
	Humidity	45 ～ 75%
10.2 A period of guarantee	Twelve months	

11. Sales

CITIZEN FINEDEVICE CO., LTD. Miyota Works.
4107-5, Miyota, Miyota-machi, Kitasaku-gun, Nagano 389-0295, Japan

TEL : +81-267-31-1111

12. Ozone Depleting Substance （ODS）

This Product doesn't use the class Ⅰ ODS at any of production processes, and component parts.

13. Precautionary Statement

13-1 When dropped by mistake

The crystal products are designed and manufactured to resist physical shocks. However,in the event the crystal is subjected to excessive impact such as being dropped onto the floor or giving shocks during mounting. Need to make sure its satisfactory performance before using it.

13-2-1 Mounting of quartz crystal units onto circuit board

When using an automatic loading machine,test and confirm to cause on the crystal productsbefore mounting.
Bending the circuit board in the process of cleaving boards after mounting and solderingcrystal products may cause peeling off the soldering or package cracks by mechanical stress.
Please be sure that the layout of crystal products position is on the less stressed and the cleaving process is under less stressed for crystal products.

Please see the solder pad layout we recommend when you design the circuit.

Reflow process is only allowed twice.

13-2-2 Mounting of quartz crystal units onto circuit board and transportation of circuit board

For picking-up the product, we recommend to use 'plastic collet chuck'.
In case using ' metallic collet chuck', please handle carefully and adjust the machines when you pick-up or mount to the circuit board to avoid a shock to products.

Please be sure that the crystal products are not in contact or no friction with carrier rails or guide pins when the products are assembled on the periphery of circuit board.

If you need to separate circuit board after mounting, please make sure not to give a shock to crystal product while your processing.
Please avoid to mount this crystal product near the tie bar where gets internal stress easily.
If you want to cut the substrate with cut saw etc., please secure/fix the board firmly and make sure that there is no resonance.

13-3 Cleaning

Some kind of cleaning fluid may cause any damage to crystal products .
Please be sure to check suitability of the cleaning fluid in advance.

Ultrasonic cleaning may affect crystal units and caused resonance destruction at worst due to crystal blank which sealed in products. Please do not clean by using ultrasonic cleaner.

13-4 Wiring pattern of circuit board

Please connect oscillation circuit and electrode of the crystal products by the most direct way.

Please do not install wiring between the electrode terminals of the crystal products.
Please do not wire other signal lines near the crystal products to block the induction from those other signal lines.

13-5 Storage

Storage of Crystal products under higher temperature or high humidity for a long term may affect frequency stability or solderability. Please store the Crystal products under the normal temperature and humidity without exposing to direct sunlight and dew condensation,and avoid the storage of Crystal products for more than 6 months, and mount them as soon as possible after unpacking.

14. Note

14-1 CITIZEN FINEDEVICE CO., LTD. absollutely does not assume any liability for the occurrence of any defectives recalls and etc. caused by inadequate use beyond the specifications.

14-2 CITIZEN FINEDEVICE CO., LTD. absolutely does not assume any liability for the occurrence of any losses caused by customers products used it in this specifications or infringement of any tights,which is industrial property,intellectual property and other rights of third party.

14-3 The product in this specifications are designed to be used for general electronic equipment. It is absolutely recommended to consult with our sales representative in advance if you plan to use it for medical equipment,safety control device and others that are requiring extremely high quality and reliability.
CITIZEN FINEDEVICE Co., LTD. does not assume any liability for using it for the applications as above may cause any losses.