RoHS Compliance

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SPECIFICATIONS

Messrs.
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Approved by

Product	CRYSTAL UNIT
Type of Holder	CM1610H
Nominal Frequency	32.768 kHz
Customer's Part Number	
Our Part Number	CM1610H32768DZFT

Sales
Manufacturer CITIZEN FINEDEVICE CO., LTD. Miyota Works. Micro Devices Division.
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Approved	Checked

CONFIDENTIAL

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Revision History

Record		Page	Section	Changes	Prepared
Revision number	Date				
1 st	2022/3/16				

1. Scope

The specifications are applicable to the crystal unit to be supplied by CITIZEN FINEDEVICE CO., LTD.

1.1 Any question arising out of the specifications or any matter undefined shall be settled through mutual consultations between both parties.

1.2 The specifications does not include product testing data. The contents except electrical specifications and dimensions are subject to change without prior notice.

1.3 The product is not intended to be incorporated in any equipment requiring extremely high reliability such as life supporting system.

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:(-0.036±10%) ppm／℃^{2}
2.6	Equivalent Series Resistance	90kΩ Max.at 25℃
2.7	Insulation Resistance	500MΩ Min./DC100V±15V
2.8	Shunt Capacitance	1.2pF Typ.

3. Test Conditions

3.1	Load Capacitance	12.5pF This Load Capacitance has been fixed on customer's request.
3.2	Level of Drive	0.1μW Typ.

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.	B	※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	Reflow Soldering Heat Resistance	See Fig.1 reflow condition.	C	※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 temperature variation cycles at -40℃ for 30 minutes and +100℃ 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 20kΩ.
B	Any variation between the pre- and post-test frequencies shall remain within ±15ppm. The equivalent series resistance shall remain within 20kΩ.
C	Any variation between the pre- and post-test frequencies shall remain within ±10ppm. The equivalent series resistance shall remain within 30kΩ.

※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.

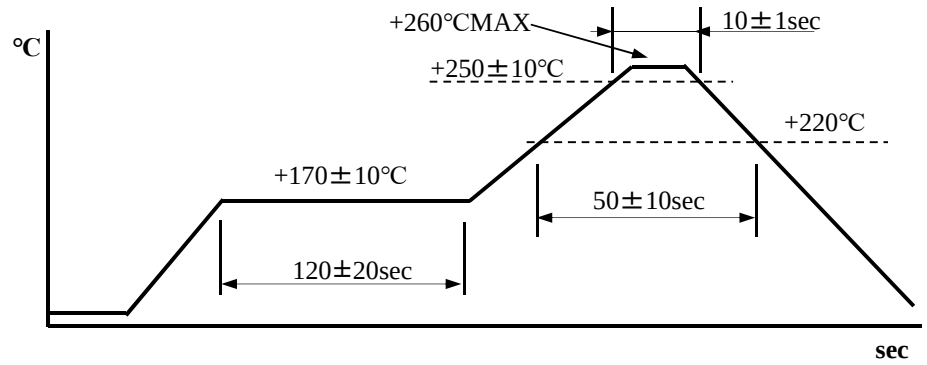
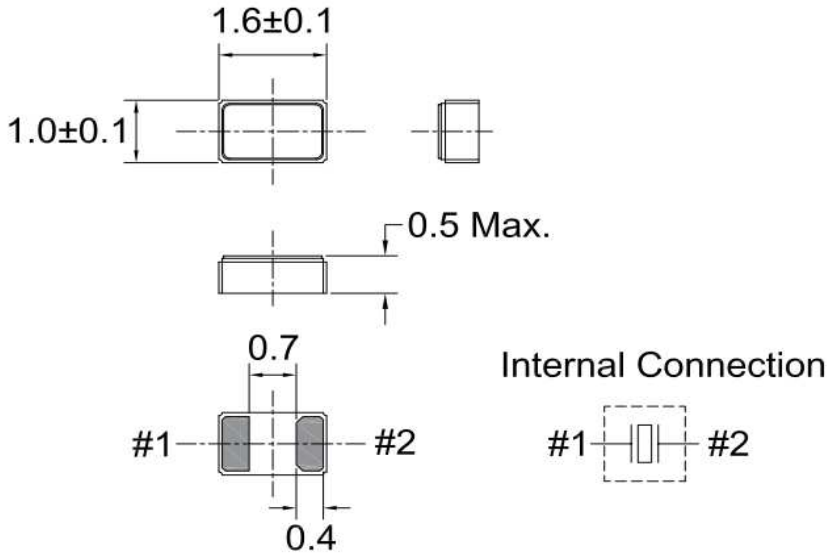


Fig.1

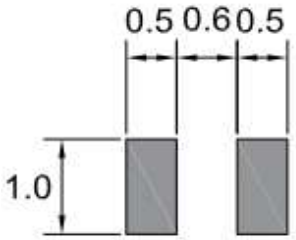
5. Dimensions

（unit:mm）



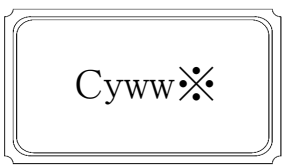
6. Solder Pad Layout

（unit:mm）



Remark: Please make sure that there is no pattern under CM1610H on the circuit board.

7. Marking Standards

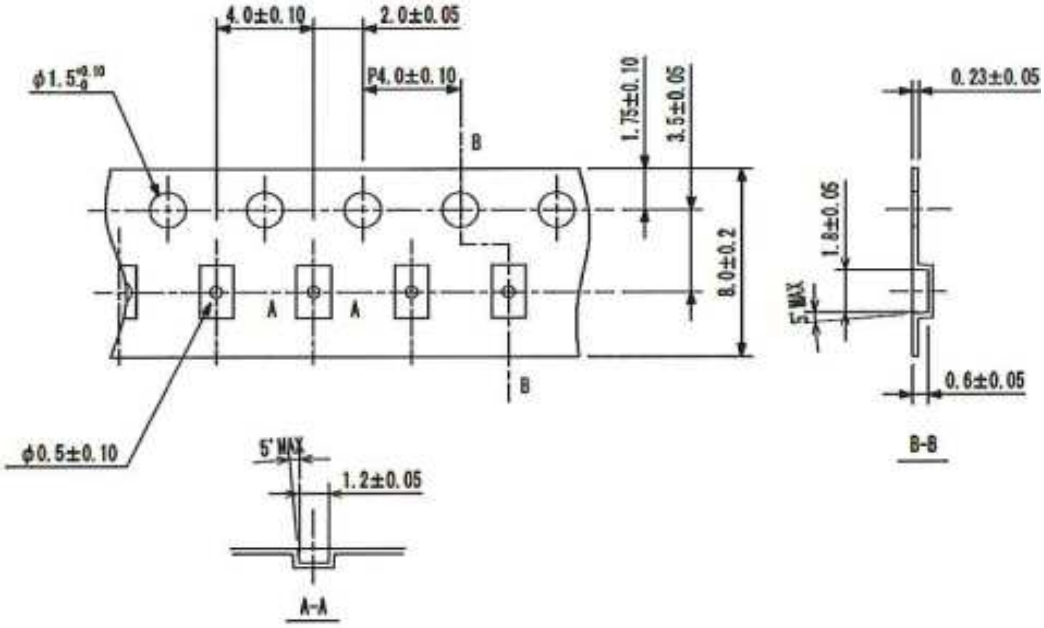


C: Manufacture's ID Code
y: The last digit of production year.
ww: Week Code
※: CL Code 6.0pF: B
7.0pF: Y
9.0pF: C
12.5pF: F

9. Tape and Reel Packaging

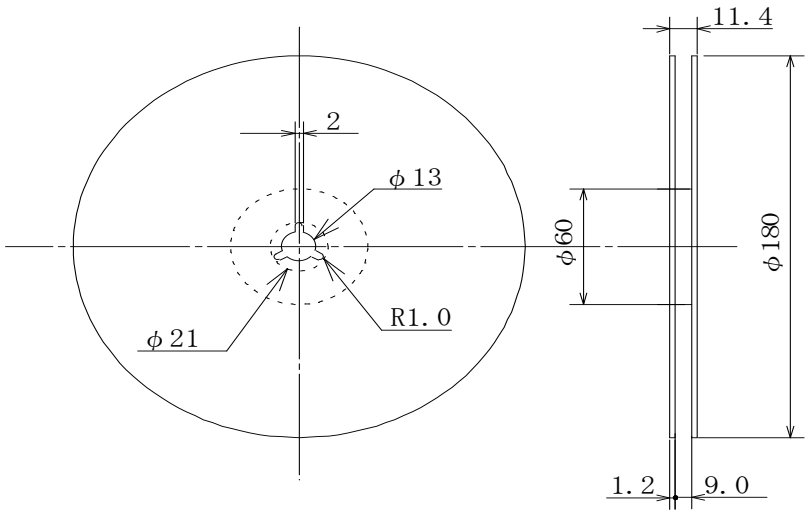
(1) Taping Specification

【Tape Dimensions】 (unit:mm)



【Reel Dimensions】 (unit:mm)

Conforming to ET-7200

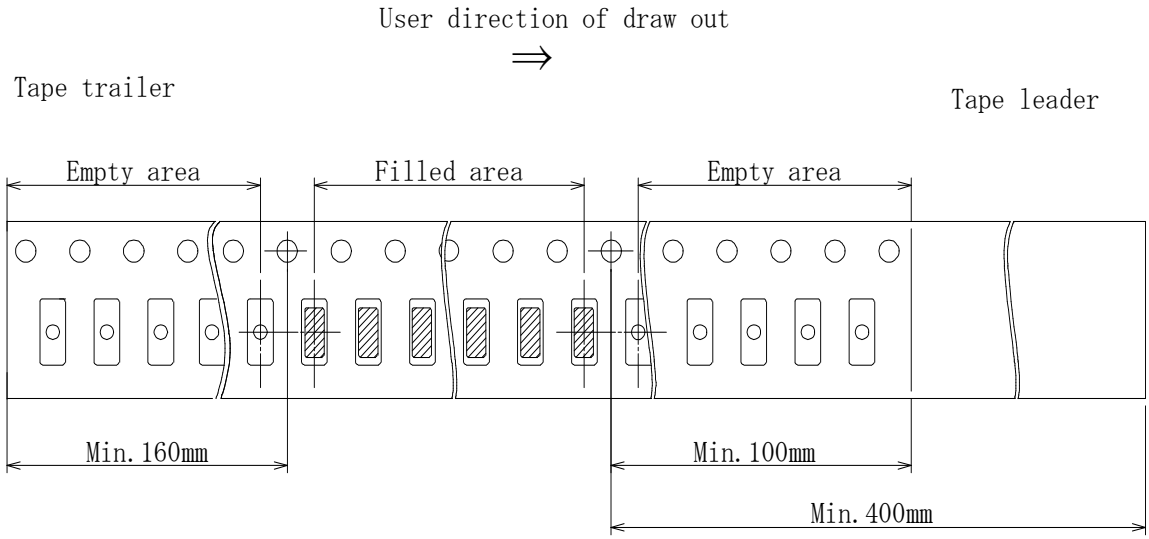


Material(Carried tape) : Black conductive PC

Material (Cover tape) : PET＋PE

Material (Reel) : Black conductive PS

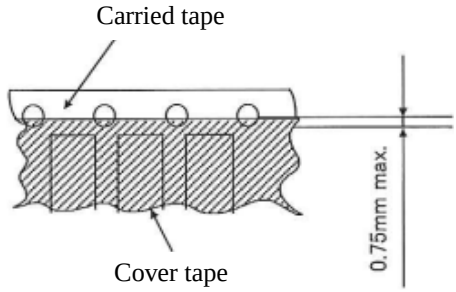
【Packing】

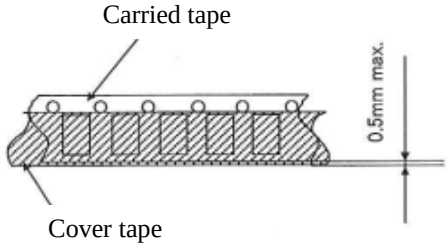


【Position gap of carried tape and the cover tape】

①The quantity that cover tape blocks up the forwarding hole of the carried tape assumes it 0.75mm max.

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





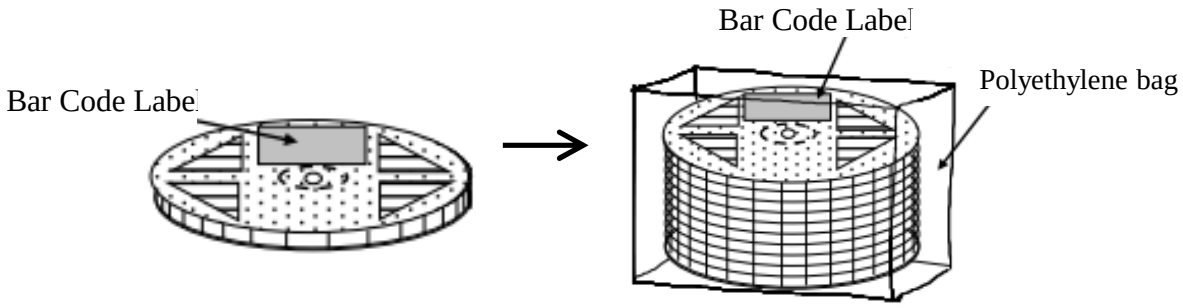
(2)Packaging

【Items shown on the Bar Code Label】

* Customer P/N
* Lot.No.
* CITIZEN P/N
* Ctl No
* Date Code ･･･yy : The last 2 digits of shipment year
･･･ww: Week Code
* Quantity

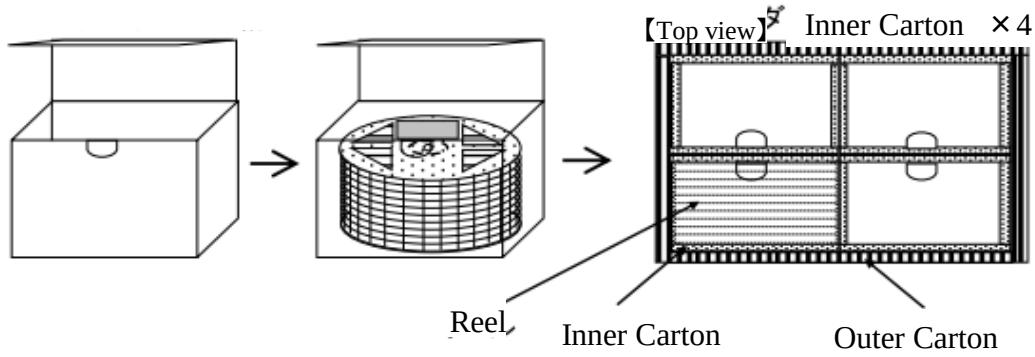
【Reel】

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

5000pcs/reel

10. Storage Condition

10.1 Storage Condition	Temperature	5 ～ 35℃
	Humidity	45 ～ 75%
10.2 Warranty Period	Twelve months	

11. Sales

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

12. Ozone Depleting Substance （ODS）

This Product does not use the classIODS for any of production processes or for component parts.

13. Handling Notes

13-1 When dropped by mistake

The crystal products are designed and manufactured to satisfy the test criteria for shock and vibration. Be sure, however, to check the product's performance before use in the event that they receive excessive shock, for example, by dropping onto the floor.

13-2-1 Mounting 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 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. does not assume any liability for any defect arising from improper use of the product beyond the specifications provided.

14-2 CITIZEN FINEDEVICE CO., LTD. does not assume any liability for any damage, loss or infringement of third partys' rights including industrial property rights or other related rights, which may result from the use of the product in this specifications.

14-3 The product in this specifications is designed to be used for general electronic equipment, and not intended to be incorporated in any medical equipment or safety control device requiring high reliability, where product defect may threaten human life and body, or may damage a property. CITIZEN FINEDEVICE CO., LTD. may decline your purchase request if the product is planned to be used for such applications, and does not assume any liability for any damages or loss arising from the use for the applications.

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