承　　認　　書
SPECIFICATION FOR APPROVAL

客戶 CUSTOMER：

日期 DATE	2010/7/16
廠牌 BRAND	CITIZEN
規格 DESCRIPTION	Cylinder Type 2*6 32.768KHz 12.5PF ±5PPM
鴻山料號 OUR PART NO.	CFS-20632768HZFB
客戶料號 CUSTOMER PART NO.	

客戶簽章

採　購	研發／工程部	品　管

供應商簽章

核　准	審　核	製　表
DATE：	DATE：	DATE：

1. Scope

This document contains specifications for the crystal unit to be supplied by CITIZEN FINETECH MIYOTA Co.,LTD.

1.1 If something defined ambiguously or undefined in document happened, the customer and CITIZEN FINETECH MIYOTA 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 in specifiations 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	-20～+70℃
2.3	Storage Temperature Range	-40～+85℃
2.4	Frequency Tolerance	±5ppm Max. at 25℃
2.5	Frequency Tolerance over Operating Temperature Range	Turnover Temp.：25±5℃ Temp.Coefficient：-0.034±0.006ppm／℃^{2}
2.6	Equivalent Series Resistance	35kΩ Max.at 25℃
2.7	Insulation Resistance	500MΩ Min./DC100V±15V
2.8	Shunt Capacitance	1.35pF Typ

3. Test Conditions

3.1	Load Capacitance	12.5 pF This Load Capacitance has been fixed on customer's request.
3.2	Level of Drive	1μW Max.

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4. Mechanical and Environmental Tests

Test Name		Test Conditions	Criteria №
1.Mechanical Tests			
1-1	Shock	Drop 3 times from the height of 75 ㎝ onto hard wooden board with thickness of 3 ㎝.	A
1-2	Vibration	Vibration Frequency : 10～500 Hz, 1.5mm, full wave, or acceleration 10G, Cycle : 1.5 minutes, Direction : X.Y.Z. Time : 2 hours in each direction, for 6 hours in total.	A
1-3	Lead Pull	Weight : 1.0kg , Time : 30±5 seconds.	A､C
1-4	Bending strength	Weight : 0.5kg , Bending Angle : 90 degrees, Bending Count : 2 times. (See Fig.1)	A､C
1-5	Solderability	After applying RMA flux, dip in solder. Dipping Time : 5±0.5seconds. Soldering Temperature : 230±5 ℃. Dipping Depth : 2 mm from the edge of terminals of samples.	D
1-6	Resistance to Soldering Heat	Dip in solder. Dipping Time : 10±0.5 seconds. Soldering Temperature : 260±5 ℃. Dipping Depth : 2mm from the edge of lead-wires of samples	A
1-7	Sealing Tightness	Leak rate shall be measured by using Helium Leak Detector.	E
2. Environmental Tests			
2-1	Storage In Low Temperature	Expose the sample in an inoperative mode to 240 hours at -40℃.	A
2-2	Storage In High Temperature	Expose the sample in an inoperative mode to 240 hours at +85℃.	B
2-3	Humidity	Expose the sample in an inoperative mode to 240 hours at +65℃, and 95%RH.	B
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

Criteria

Criteria №	Criteria
A	Any variation between the pre- and post-test frequencies shall remain within ±5ppm. The equivalent series resistance shall remain within its specified tolerance range after the post-test.
B	Any variation between the pre- and post-test frequencies shall remain within ±10ppm. The equivalent series resistance shall remain within its specified tolerance range,after the post-test.
C	After each test, no visible damage, nor the hermetic seal break down.
D	At least 90% of each dipped area shall be covered by fresh solder.
E	$1\times10^{-2}\mu Pa\cdot m^3/s$ Max.

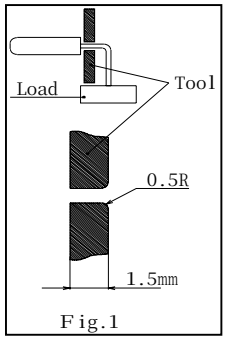
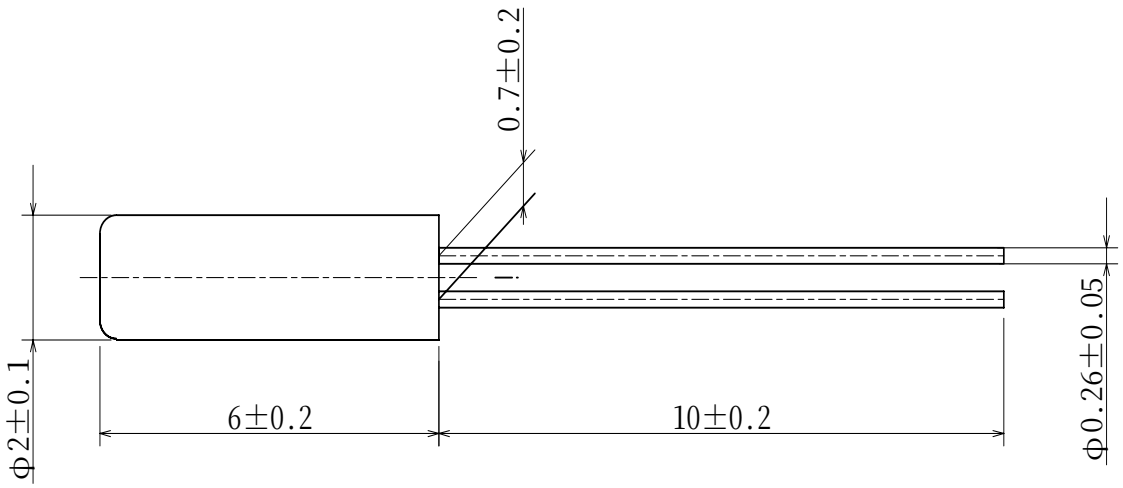


Fig.1

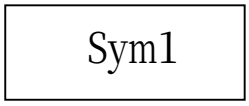
※ Measurements should be taken place at 25±2℃ after each test, the samples shall be left at 25℃ for one to two hours.

5. Dimensions

(unit:mm)



6. Marking Standards



S,1：Manufacture's ID Code

y：The last digit of production year.

m：Production month.(See Table 1)

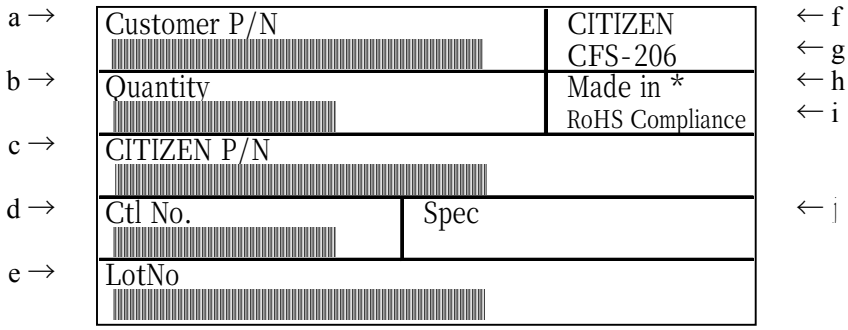
Table 1

Month	1	2	…	9	10	11	12
Code	1	2	…	9	X	Y	Z

7. Packing

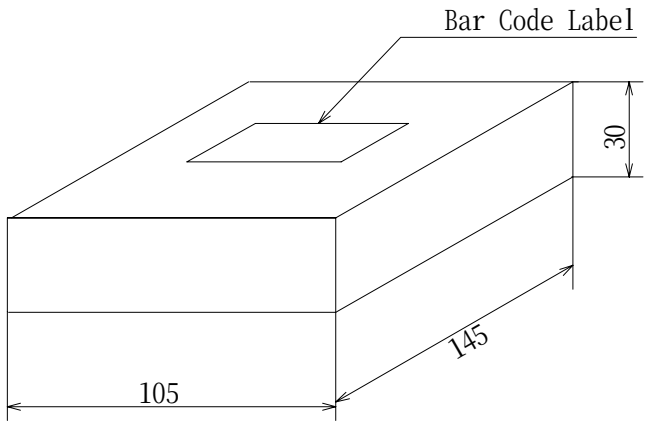
(1)Inner Carton

【Bar Code Label】

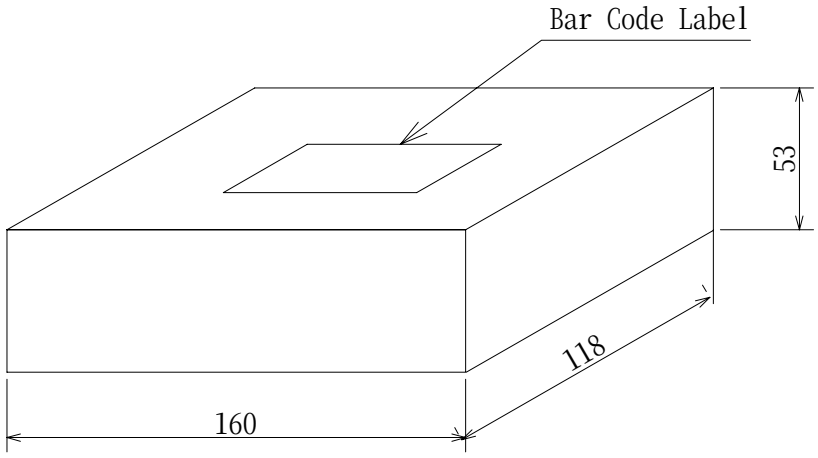


a. Customer P/N
b. Quantity
c. Our P/N
d. Control No.
e. Lot No.
f. Manufacturer's name or symbol
g. Type of Holder
h. Country of Origin *: Japan or China
i. RoHS Compliance
j. Spec.
: Nominal Frequency
: Load Capacitance
: Frequency Tolerance
: Equivalent Series Resistance
: Our character code

【Inner Carton for 5000pcs less than】 (unit:mm)



【Inner Carton for 10000pcs】



(2)Quantity

1000pcs/bag at max. 10000pcs/carton (10 bags)

8. Manufacturer

(Domestic) CITIZEN FINETECH MIYOTA CO.,LTD.
4107-5,MIYOTA,MIYOTA-MACHI,KITASAKU-GUN,NAGANO,389-0295,JAPAN

Country of Origin : JAPAN

(Oversea) MASTER CROWN ELECTRONICS (WUZHOU) LIMITED.
No3 BUILDING 137.XINXING ER ROAD, WUZHOU, GUANGXI, CHINA

Country of Origin : CHINA

* This manufacture is under the control of CITIZEN FINETECH MIYOTA CO.,LTD.

9. Ozone Depleting Substance (ODS)

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

10. Precautionary Statement

10-1 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.

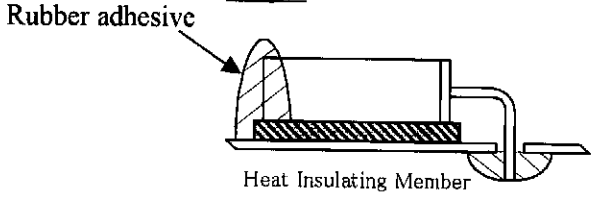
10-2 Soldering and Mounting

(1) Lead wires should be soldered within 3 seconds with the iron heated to a temperature no higher than 380degC.

(2) In solder-dip mounting ,it should be within 10 seconds with a temperature no higher than 260degC.
And beware not to heat the whole crystal unit in the dip mounting process.
Mounting in upright bearing is recommendable (prevent heat conduction directly to the body of a crystal unit.)
(Such as by isolating the unit body from the board with a heat insulating member, see Fig.2.)

(3) Soldering on the body of the cylinder type crystal unit must be strictly avoided due to deteriorate the characteristics or damage the products.
Rubber adhesive is recommended. (See Fig.-2)

Fig.-2



(4) Heating the whole crystal unit,for example,in a reflow oven may deterioration of the performance. Because the holder is quite small and it is sealed by solder material with press sealing so that such reflow process not allowed to be proceeded.

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10-3 Cleaning

(1) Crystal products may be affected and destroyed at worst by ultrasonic cleaning.Please be sure to check if your cleaning process affects any damage to crystal products prior to use

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

10-4 Storage

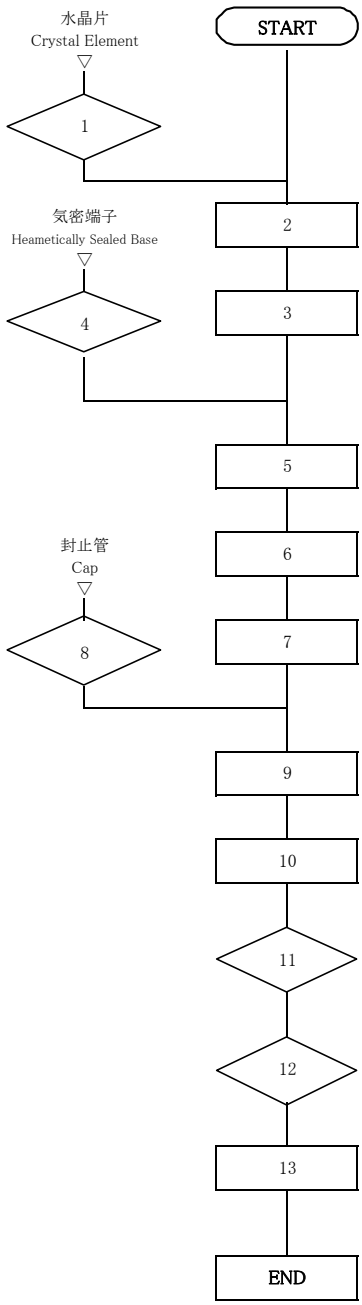
Storage of Crystal products under higher temperature or high humidity for a long term may affect frequency stability or solderability. Please store the Crystal products under the normal temperature and humidity without exposing to direct sunlight and dew condensation,and avoid the storage of Crystal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

11. QC Process Chart

Refer to attached sheet

QC工程図 QC Process Chart	水晶振動子 CFS-206F/CFV-206F Quartz Crystal Unit	2008年8月12日 August 12 2008 水晶デバイス部 技術課 Crystal Devices Div. Production Dept. Product Engineering Section	承認 Approved	審査 Checked	担当 Prepared

工程図
Flowchart



	工程名 Process Name	管理仕様 Control Specifications 管理項目 Control Item	管理規格 Control Criteria	抜取 Sampling	記録 Record
1	受入検査 (水晶片) Acceptance Inspection (Crystal Element)	仕様 Specification	納入仕様書 Specifications	品質受入 検査基準書 Quality Acceptance Inspection Standard	検査表 (水晶片) Inspection Sheets (Crystal Element)
2	蒸着 Evaporation	湿度 Humidity 真空度 Pressure トータル膜厚 Total Thickness	作業指示書 Manufacturing Process Instruction	— — —	記録紙 Printed Data 稼動表 Operating Sheets 推移グラフ Change Graph
3	周波数粗調整 Frequency Rough Tuning	周波数 Frequency 外観 Appearance	作業指示書 Manufacturing Process Instruction	抜取 Sampling 抜取 Sampling	チェックシート Check Sheets 送品検査表 Process Inspection Sheets
4	受入検査 (気密端子) Acceptance Inspection (Heametically Sealed Base)	仕様 Specification	納入仕様書 Specifications	品質受入 検査基準書 Quality Acceptance Inspection Standard	検査表 Inspection Sheets
5	組立 Assembly	外観 Appearance	作業指示書 Manufacturing Process Instruction	全数 100%	チェックシート Check sheets
6	周波数微調整 Fine Tuning	周波数 Frequency	作業指示書 Manufacturing Process Instruction	抜取 Sampling	分布図 Distribution Chart
7	アニール (半完成品) Annealing	真空度 Pressure 温度 Temperature 時間 Time	作業指示書 Manufacturing Process	— — —	チェックシート Check Sheets チェックシート Check Sheets チェックシート Check Sheets
8	受入検査 (封止管) Acceptance Inspection (Cap)	仕様 Specification	納入仕様書 Specifications	品質受入 検査基準書 Quality Acceptance Inspection Standard	検査表 Inspection Sheets
9	封止 Sealing	真空度 Pressure 寸法 Dimension	作業指示書 Manufacturing Process	— 抜取 Sampling	チェックシート Check Sheets Xbar-R管理図 Xbar-R Control Chart
10	ベーキング Baking	温度 Temperature 時間 Time	作業指示書 Manufacturing Process Instruction	— —	チェックシート Check Sheets 作業履歴票 Manufacturing Record
11	電気特性検査 Electrical Characteristics Inspection	電気的特性 Electrical Characteristics	作業指示書 Manufacturing Process Instruction	全数 100%	チェックシート Check Sheets
12	出荷判定 Delivery Judgment	電気的特性 Electrical Characteristics	出荷判定基準書 Delivery Judgment Standard	抜取 Sampling	出荷判定成績表 Delivery Judgment Sheets
13	梱包 Packing	個数 Quantity	梱包仕様書 Packing Specification	—	—

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