

NO.

ECAB2306090

Acknowledgement Book

Customer : _____

Production name: HC-49S X'TAL 11.50×4.70×3.68

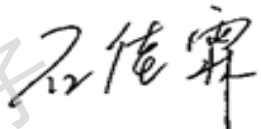

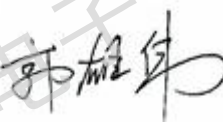
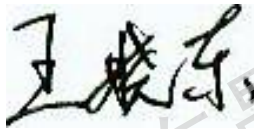
Nominal Freq. : 16.000000MHz

Customer P/N : _____

P/N : B16000J157

Receiver

Please return one after acknowledgement

Approved By	MFG	QA	PE/RD
			

BOOK OF MODIFICATION

No.	DATE	CONTENT OF MODIFICATION	REASON OF MODIFICATION	PAGE	ITEM	APPROVE
0	2023/6/25	INITIAL RELEASED				
1						
2						
3						
4						
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6						
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8						
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10						
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12						
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QUARTZ CRYSTAL UNITS

No:

ECAB2306090

Date:

2023/6/25

SPECIFICATION OF QUARTZ CRYSTAL UNITS

1.HOLDER TYPE HC-49S X'TAL 11.50×4.70×3.68

2.GENERAL

2-1 FREQUENCY (F0)	16.000000MHz
2-2 MODE OF OSCILLATION (Mn)	FUNDAMENTAL
2-3 OPERATION TEMPERATURE RANGE (T ₀)	-20℃ ~ +70℃
2-4 STORAGE TEMPERATURE RANGE (Ts)	-50℃/+125℃
2-5 TEST SET	S&A 250B ANALYSIS SYSTEM
2-6 DRIVE LEVEL (DL)	100μw TYPE (500μw MAX)
2-7 LOADING CAPACITANCE (CL)	20PF

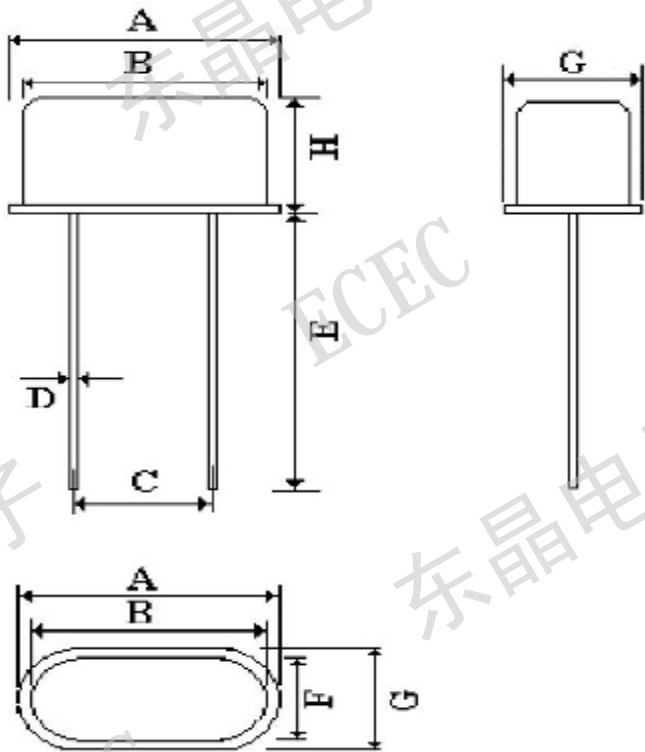
3.ELECTRICAL CHARACTERISTICS

(This test shall be performed under the condition of temperature at 25±3℃.)

3-1 FREQUENCY TOLERANCE (Δf)	±10 ppmMAX
3-2 EQUIVALENT RESISTANCE (Rr)	30ΩMax/Series
3-3 TEMPERATURE DRIFT (Tc)	±20ppm/MAX -20℃+70℃
3-4 SHUNT CAPACITANCE (Co)	<7.0PF
3-5 INSULATION RESISTANCE	500MΩmin/DC 100V±15V (Lead to lead ,case to lead)

4.DIMENSIONS AND MARKING

4-1 HOLDER TYPE HC-49S X'TAL 11.50×4.70×3.68



JinHua East Crystal Electronic
Co.,Ltd.

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郑紫薇

INSPECTION

王晓东

QUARTZ CRYSTAL UNITS

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4-2 DIMENSION (mm)

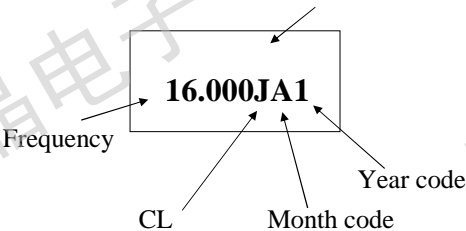
	HC-49U/S
A	11.50MAX
B	10.30MAX
C	4.88±0.2
D	0.45±0.05
E	13.2±0.5
F	3.80MAX
G	4.70MAX
H	3.68MAX

可根据客户需求放绝缘垫片

4-3 MARKING

HC-49S

Corporation name



Frequency: as shown in the table
EX)

Frequency	4.000MHz	16.9344MHz	20.000MHz
Frequency Code	4.000	16.934	20.000

Month code: as shown in the table
EX) December shall be marked as "M"

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Symbol	A	B	C	D	E	F	G	H	J	K	L	M

Year code: as shown in the table
EX) 2021 Shall be marked as "1"

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	----
Symbol	0	1	2	3	4	5	6	7	8	9	0	----

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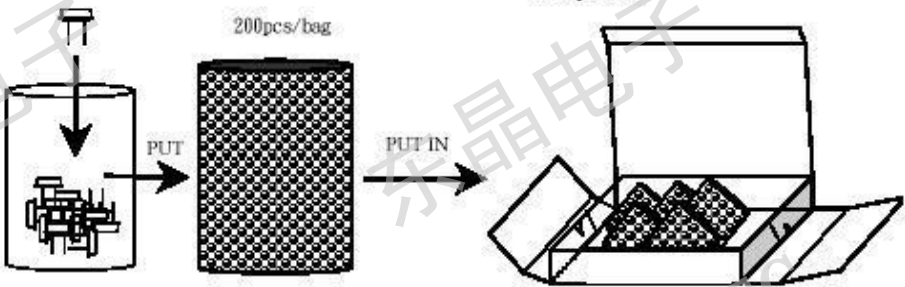
Date:

2023/6/25

4-4 PACKING

Put 200pcs crystals into a plastic bags with bubbly sheet surrounded into inner-box,put 20 inner-boxes with foam sheet surrounded into a paper case, then write HOLD.FREQ.QTY in inner-box and paper case.

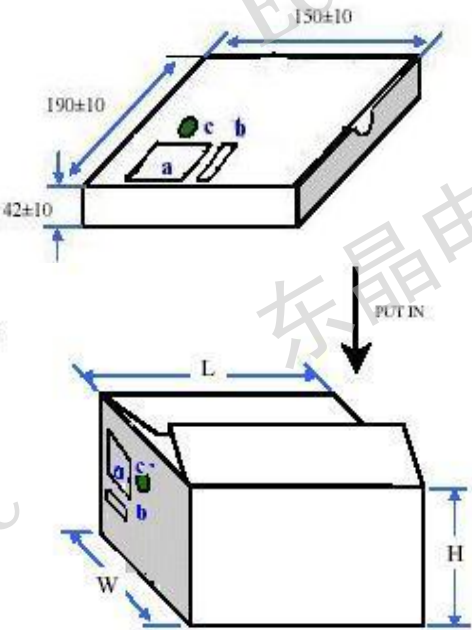
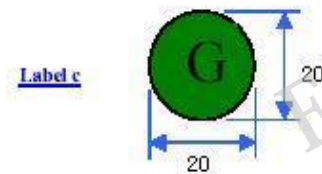
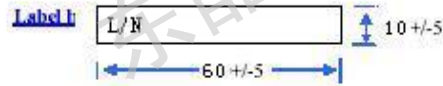
1.INNER BOX : (Unit : mm)



2.LOGO STICKER(CARTON and INNER BOX) : (Unit : mm)

Label a

CRYSTAL UNITS	
CUST P/N	
ECEC P/N	
P/O	
FREQUENCY	
QTY	
MARKING	
MADE IN CHINA	



Box type	size (L×W×H) mm
Atype (Box 1~3K)	200×200×165
Btype (Box 4~6K)	205×205×290
Ctype (Box 7~10K)	400×205×290
Dtype (Box 11~20K)	420×320×250

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QUARTZ CRYSTAL UNITS**No:****ECAB2306090****Date:****2023/6/25****5.MECHANICAL ENDURANCE**

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

5-1.SHOCK

Electrical characteristics shall be satisfied after dropping three times from the height of 75cm onto the board of the 3cm thickness.

5-2.VIBRATION

Electrical characteristics shall be satisfied after supplying following vibration.

- | | |
|---------------------------|-----------------------|
| a).ENTIRE FREQUENCY RANGE | 10~55Hz |
| b).REPEATED PERIOD | 1~2min |
| c).AMPLITUDE | 1.5mm |
| d).DIRECTION | X.Y.Z |
| e).PERIOD | 2hours/Each Direction |

5-3.STRENGTH OF TERMINALS/LEAD-WIRES**①TENSILE**

- a).Body of specimen shall be fixed,and 900g of tension weight shall be supplied gradually to axial direction of terminals/lead-wires for 30 sec.
- b).After above test a),there is no distinct damage or damage to sealing.

②BENDING

- a).Body of specimen shall be fixed,and 90 degree bending shall be given,being supplied 225g tension weight.After that,terminals/lead-wires shall be straightened gradually. Then the same bending and straightening shall be supplied to the opposite direction in the same axial.
- b).After above test a),there is no observation of any visual damages on the specimen.

5-4.SEALING TIGHTNESS

Put the specimens in C_2H_5OH ,raise pressure it with 0.5Mpa for 10 min, test the insulation resistance at DC.100V,the result shall be over 500M Ω .

Electrical characteristics shall be satisfied and no sealing damage.

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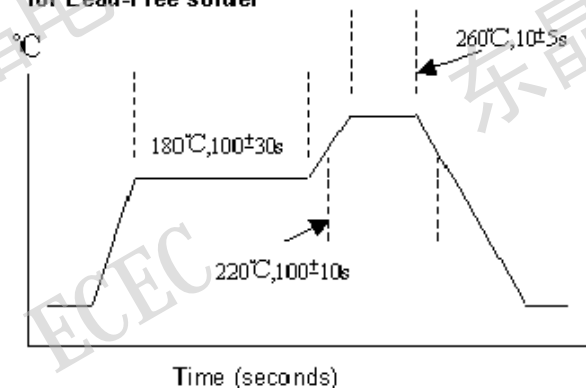
5-5.SOLDERING HEAT RESISTANCE

Electrical characteristics shall be satisfied .Without distinct looseness of terminals.

①.FLOW(WAVE)SOLDERING

Following profile of heat stress is applied to resonator,then being place in the natural condition for 1 hour,resonator shall be measured.

Recommendation of flow condition for Lead-Free solder



Peak temperature	260°C
Dipping time	10±5 sec
Soldering	1 time
Dipping to the lead joint of component	

②.SOLDERING DIP

Terminals/lead-wires of specimen shall be dipped into solder melter tank at $+230^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 3 sec.

Dipping depth shall be 2mm from the bottom of specimens body.(After applying ROSIN FLUX) soldering portion shall be covered in over 95% of Terminals/lead-wires dipped.

5-6.BEND STRENGTH PCB

①.Resonator is soldered into the ceater of PCB which is laid on the 2 small supporters spaced 90cm. PCB deflected to 1mm below from horizontal level by the pressing force with 20 x10.R10 stick.

The force is supplied for 1 second,5 times repeatedly.

②.After above test ①.there is no observation of any visual damages on specimen and the electical characteristic shall be satisfied.

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5-7.ENVIRONMENTAL ENDURANCE

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

①HUMIDITY

Electrical characteristics shall be satisfied after letting it alone at $65\pm2^{\circ}\text{C}$ in humidity of 90~95% for 250 hours.

②.STORAGE IN LOW TEMPRATURE

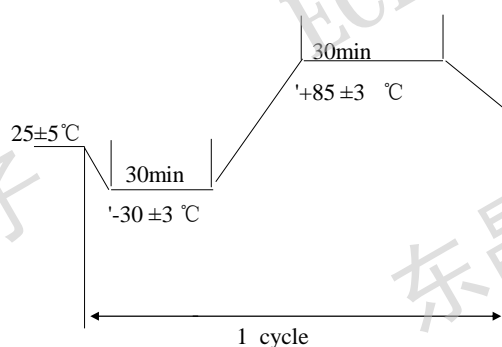
Electrical characteristics shall be satisfied after letting it alone at $-45\pm2^{\circ}\text{C}$ for 250 hours.

③.STORAGE IN HIGH TEMPRATURE

Electrical characteristics shall be satisfied after letting it alone at $85\pm2^{\circ}\text{C}$ for 250 hours.

④.TEMPERATURE CYCLE

Electrical characteristics shall be satisfied after supplying the following temperature cycle(3cycle).Temperature shift from low to high, high to low shall be done in $1^{\circ}\text{C}/\text{sec}$.
(refer to Fig-3)



(Fig-3)

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QUARTZ CRYSTAL UNITS

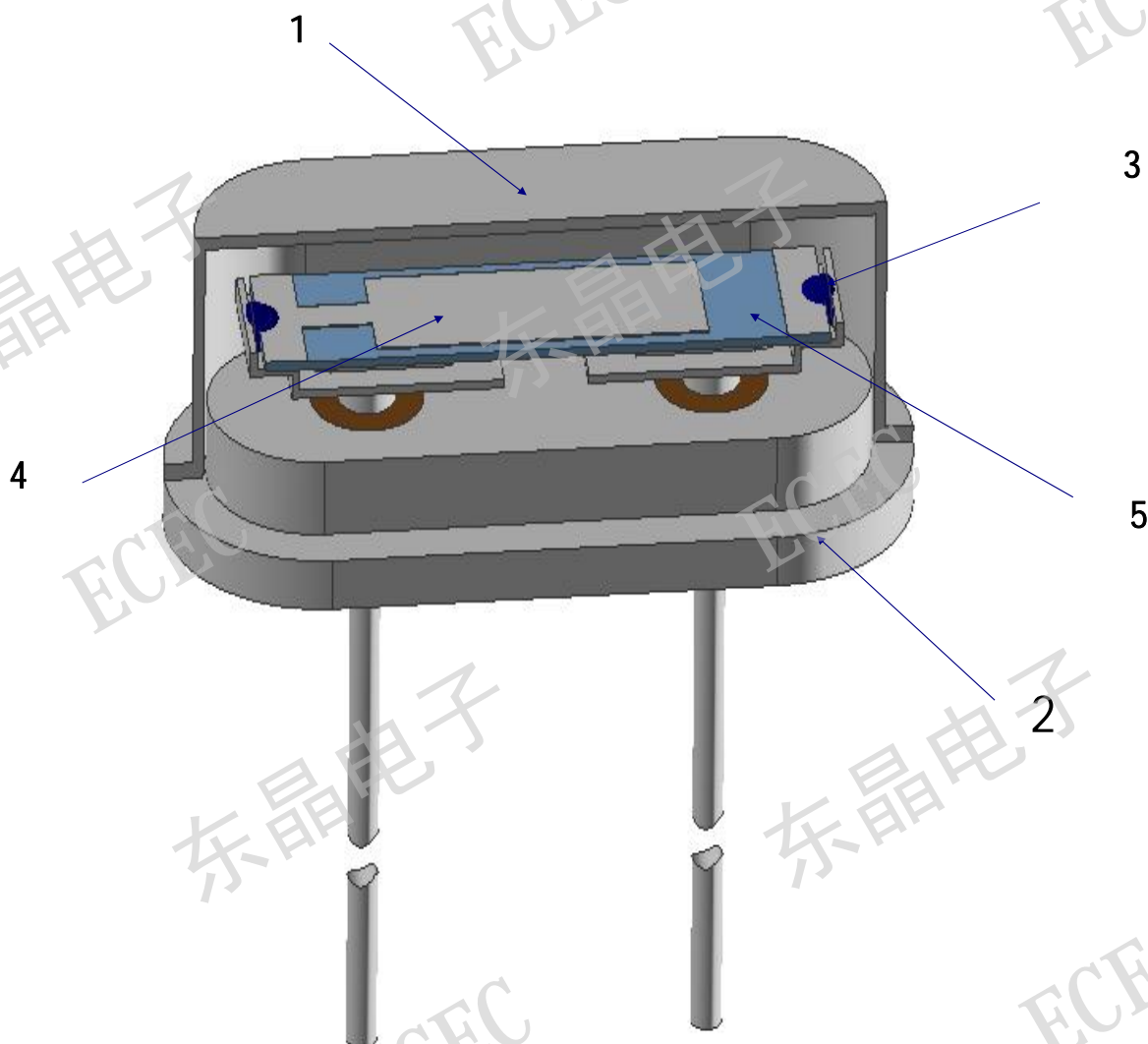
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6. Structure Illustration



(BOTTOM VIEW)

No.	Items	Materials	Manufacture's name
1	Metal Can(Cap)	Ni Alloy	TOGAWA SEIKO CHINA
2	Substrate(Base)	Kovar (Pb free)	XURI ELEC. CHINA
3	Conductive Adhesive	Ag+Epoxy Resin	Shanghai TOP Sunshine
4	Internal Electrode	Ag	SOLAR CHINA
5	Element(Blank)	SiO ₂	ECEC CHINA

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