

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
张伟宾	张伟宾	许加伟	王振东

BOOK OF MODIFICATION

No.	DATE	CONTENT OF MODIFICATION	REASON OF MODIFICATION	PAGE	ITEM	APPROVE
0	2023/6/25	INTIAL RELEASED				
1						
2						
3						
4						
5						
6						
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9						
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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 _o)	-20°C ~ +70°C
2-4 STORAGE TEMPERATURE RANGE (Ts)	-50°C/+125°C
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

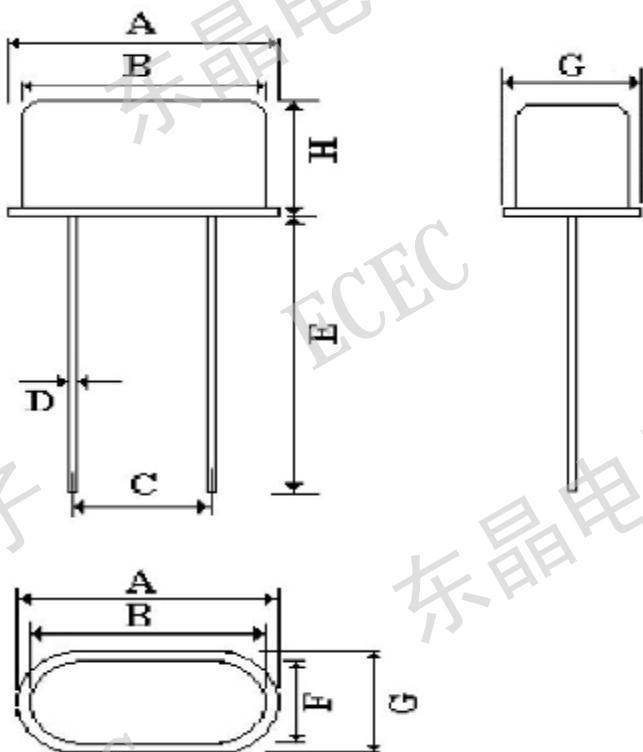
(This test shall be performed under the condition of temperature at 25±3°C.)

3-1 FREQUENCY TOLERANCE (△f)	±10 ppmMAX
3-2 EQUIVALENT RESISTANCE (Rr)	30ΩMax/Series
3-3 TEMPERATURE DRIFT (Tc)	±20ppm/MAX -20°C+70°C
3-4 SHUNT CAPACITANCE (C ₀)	<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



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郑紫薇	王晓东

QUARTZ CRYSTAL UNITS

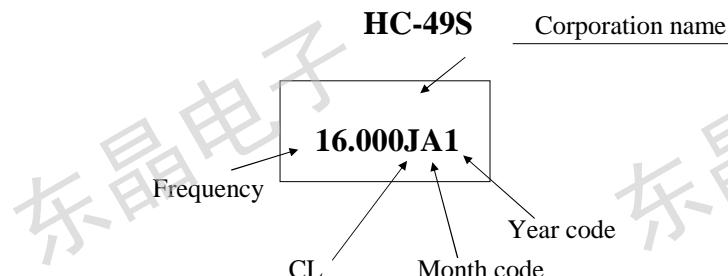
No:	ECAB2306090
Date:	2023/6/25

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



Frequency: as shown in the table
EX)

Frequency	4.000MHz	16.934MHz	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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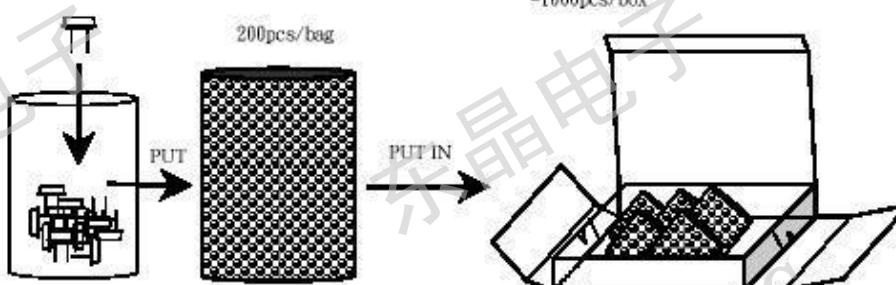
QUARTZ CRYSTAL UNITS

No:	ECAB2306090
Date:	2023/6/25

4-4 PACKING

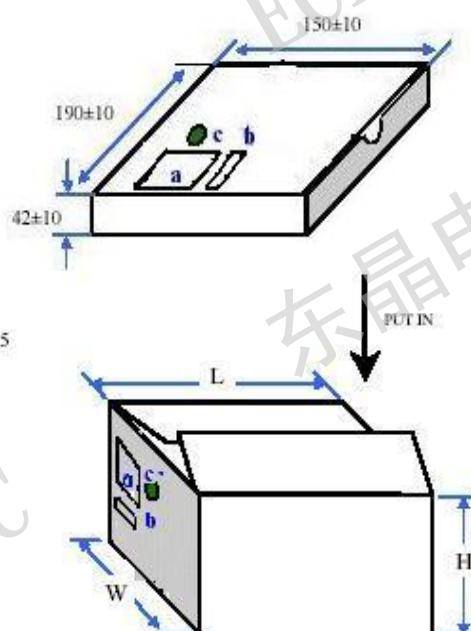
Put 200pcs crystals into a plastic bags with bubbly sheet surrounded into inner-box, put 20 inner-boxes with foam sheet surrounded into a paper case, then write HOLD.FREQ.QTY in inner-box and paper case.

1. INNER BOX : (Unit : mm)



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

CRYSTAL UNITS	
CUST P/N	
ECEC P/N	
P/O	
FREQUNCY	
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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	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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No:	ECAB2306090
Date:	2023/6/25

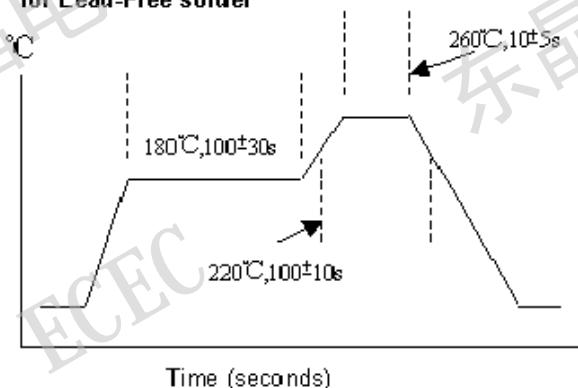
5-5.SOLDERING HEAT RESISTANCE

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± 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°C±5°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 center 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 electrical 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.

① HUMIDITY

Electrical characteristics shall be satisfied after letting it alone at $65 \pm 2^\circ\text{C}$ in humidity of 90~95% for 250 hours.

② STORAGE IN LOW TEMPRATURE

Electrical characteristics shall be satisfied after letting it alone at $-45 \pm 2^\circ\text{C}$ for 250 hours.

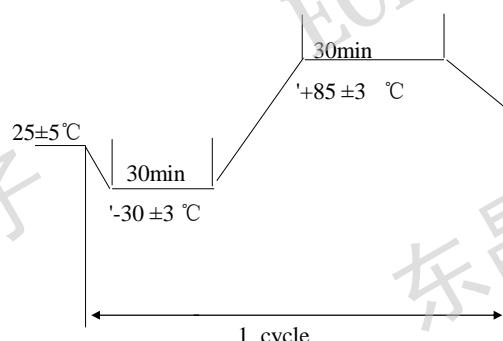
③ STORAGE IN HIGH TEMPRATURE

Electrical characteristics shall be satisfied after letting it alone at $85 \pm 2^\circ\text{C}$ 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°C/sec .

(refer to Fig-3)



(Fig-3)

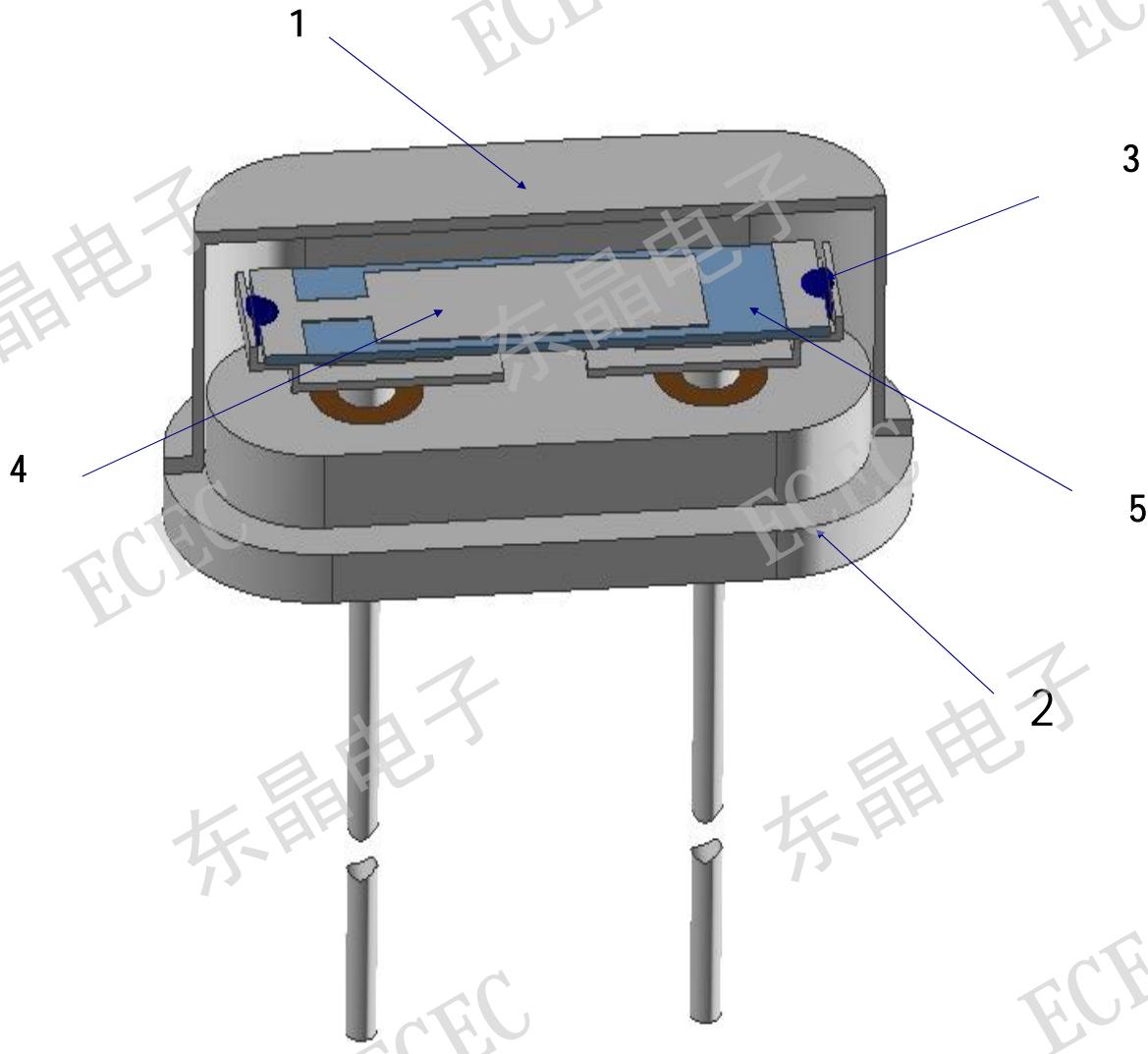
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6. Structure Illustration



(BOTTOM VIEW)

No.	Items	Materials	Manufacturer'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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