STARWAVE
B303-30 Tian an Cyber Park ,Huangge North Road ,Longgang District ,Shen Zhen , China
TEL :+86(0)755-83279247 Fax :+86(0)755-8327-9247 http://www.starwavecorp.com E-mail :info@starwavecorp.com

SPECIFICATION FOR APPROVAL

CUSTOMER	:	
PRODUCT TYPE	:	HC-49S
NOMINAL FREQ.	:	11.059200MHz
STARWAVE P/N	:	SWXSHACVF0-11.059200
REVISION	:	A1
CUSTOMER P/N	:	
PM / SALES	:	
DATE	:	

CUSTOMER SIGNATURE & Date

(1) STAR requires one copy returned with signature and title of authorized individual that signifies acceptance of the attached specifications.

(2) Orders received and accepted by STAR after return of signed copy of specification will be produced per these specifications.

(3) Any changes to these specifications must be agreed upon by both parties and new revision of the Product Specification Sheet will be issued.

(4) Any issuance of purchase order prior to consigning back the Approval page of "Specification Sheets" from customers will be regarded as the agreement on the contents of these specifications.

RoHS Compliant

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PRODUCT SPECIFICATION SHEET

PRODUCT TYPE	:	HC-49S
NOMINAL FREQ.	:	11.059200MHz
STARWAVE P/N	:	SWXSHACVF0-11.059200
REVISION	:	A1

PE/RD	QA	MFG
Scott.Chen	Randy Chong	
21-Jul-23	21-Jul-23	21-Jul-23

NOTE:

(1)Lead Free Products are "Directive 2002/95/EC of The European Parliament of 27 January 2003 on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment" Compliant (Attachment: SGS Test Report).
(2)Revision "Sx" is for engineering samples only. PE/RD's approval required.
(3)Revision "Ax" is production ready. PE, QA and MFG's approval required

RoHS Compliant

Rev	Revise page	Revise contents	Date	Ref.No.	Reviser
A1	N/A		21/07/2023	N/A	Shu-Chen Ko

CONTENT

ATTACHMENT(S) (optional)

TESTING DATA

- ELECTRICAL CHARACTERISTICS TEST — A ☐ YES ☑ NO
- TEMPERATURE CHARACTERISTICS TEST — B ☐ YES ☑ NO

ELECTRICAL SPECIFICATIONS

Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature : 25+/-5°C

Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature : 25+/-1°C

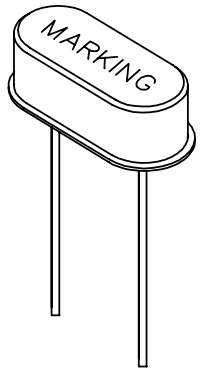
Relative humidity : 40%~70%

Measure equipment

SAUNDERS 250A/250B CRYSTAL IMPEDANCE METER.

Crystal cutting type

The crystal is using AT CUT (thickness shear mode).



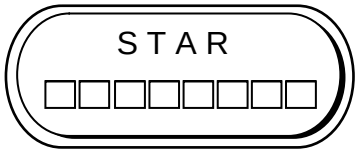
please refer to marking code page

1.	Nominal Frequency	11.059200 MHz
2.	Oscillation Mode	FUND
3.	Load Capacitance	20.0 pF
4.	Frequency Tolerance (25 °C)	+/- 10 ppm
5.	Effective Series Resistance	100 Ohms Max.
6.	Shunt Capacitance (C0)	7.0 pF Max.
7.	Motional Capacitance (C1)	1.9 fF Max.
8.	Drive Level	500 uW Typ.
9.	Operation Temperature Range	-40°C ~ +85°C
10.	Stability Over Temperature Range	+/- 30 ppm (related to 25 °C)
11.	Insulation Resistance	500 MOhms Min. at DC 100V
12.	Attenuation of Spurious Frequency Amplitude	N/A
13.	Ratio of Holder to Motional (C0/1)	N/A
14.	Storage Temperature	-40 °C ~ +85 °C
15.	Aging	+/- 3.0 ppm / year.
16.	RLD2(0.1~500uW)	80 Ohms Max.
17.	DLD2(0.1~500uW)	60 Ohms Max.
18.	Weight	0.52 g +/- 0.05g

DIMENSIONS

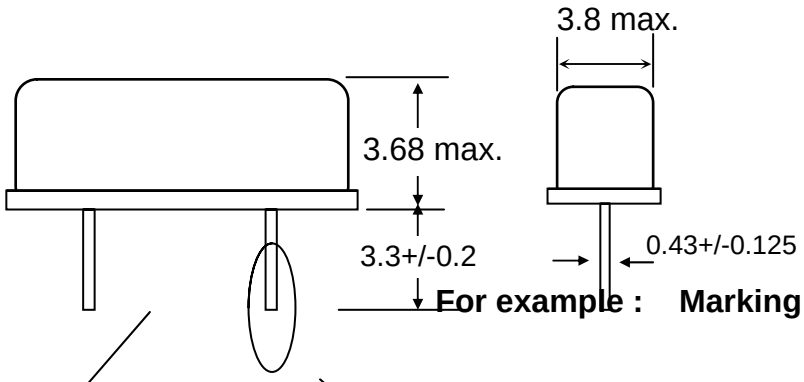
UNIT:mm

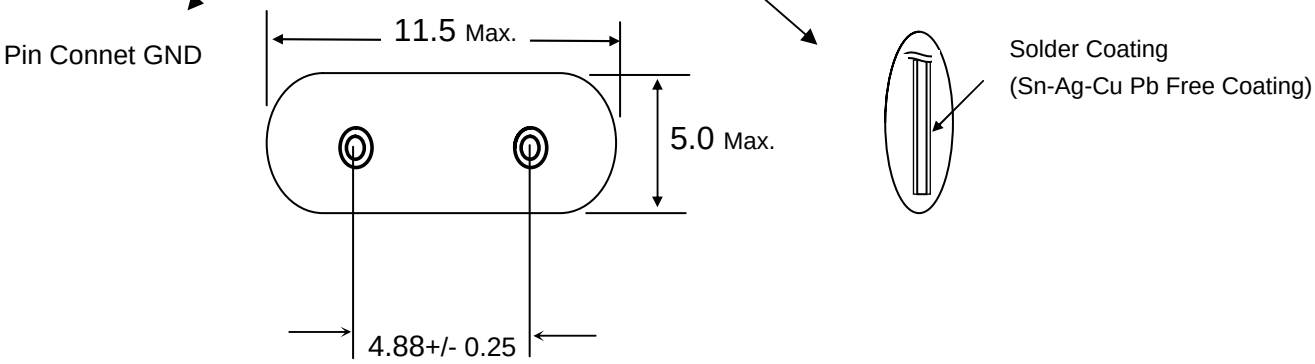
For example : Marking



Introduction

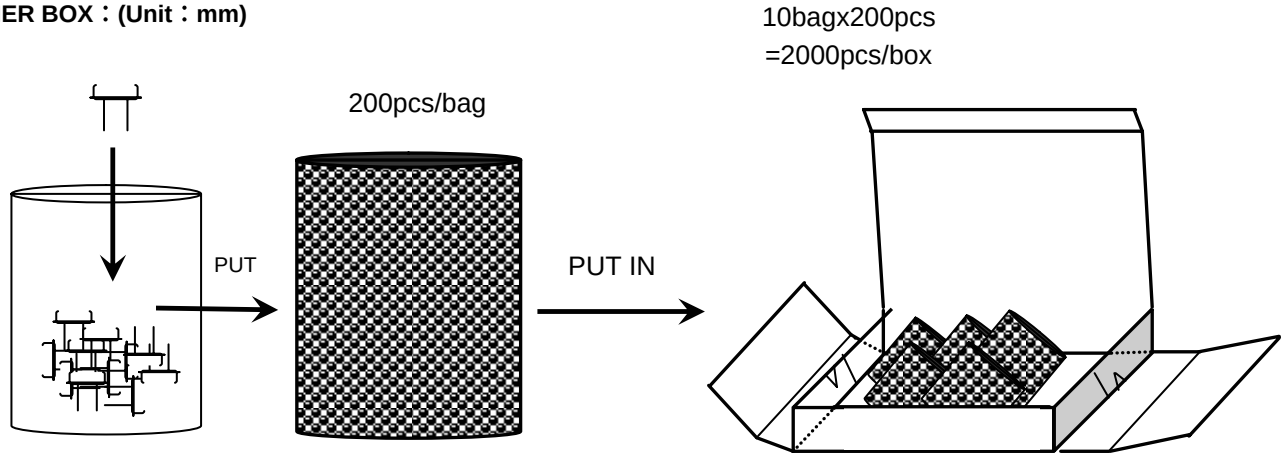
Pb Free Product
49S 8.000 MHz



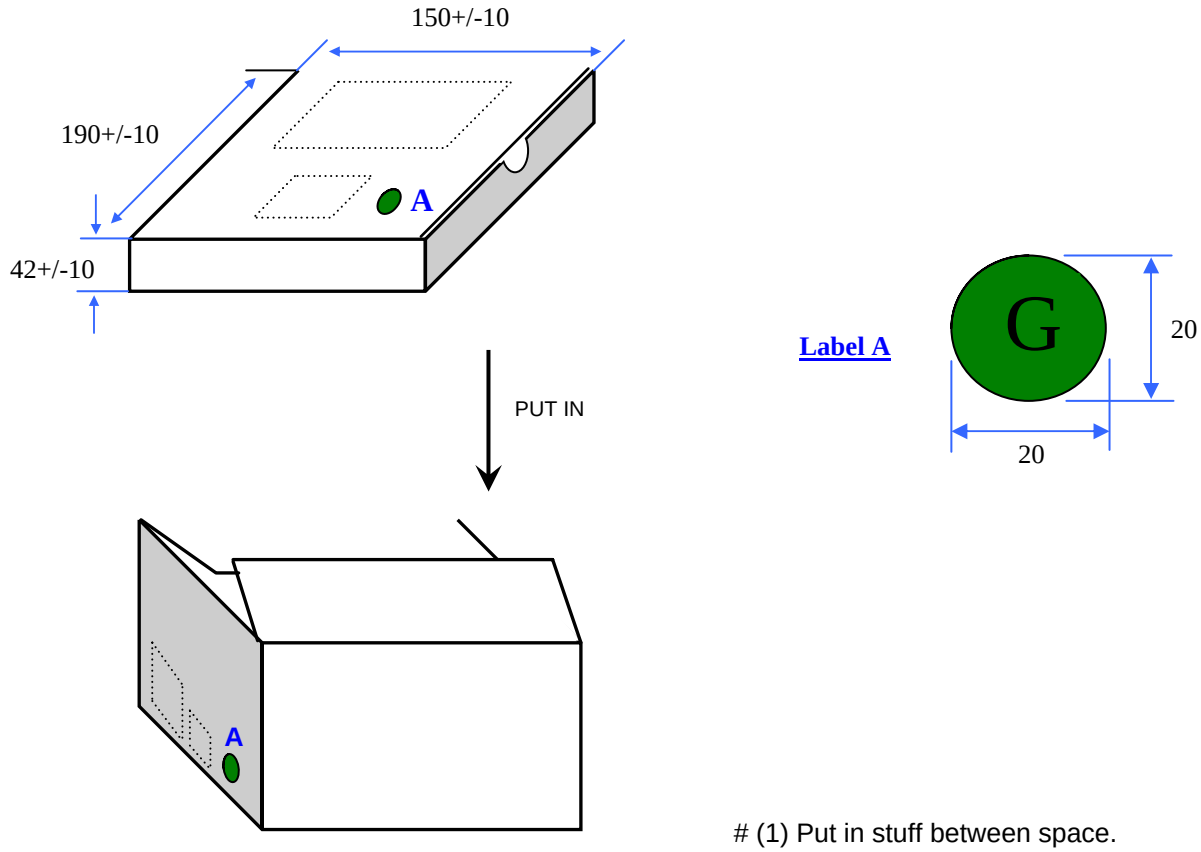


Packing For Pb Free Parts ：

1.INNER BOX：(Unit：mm)

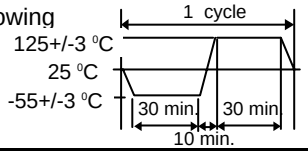


2.LOGO STICKER(CARTON and INNER BOX)：(Unit：mm)



(1) Put in stuff between space.
(2) Tie Up the Carton with 4 Packthreads.
(3) "G" ： Pb-Free Product

RELIABILITY SPECIFICATIONS

No.	TEST ITEM	TEST METHODS	TEST CRITERIA	REF. DOC
1	Drop Test	50 cm Height, Fall freely onto firm wood for 3 Times.	dF/F<+/-5ppm dRs<+/-10%	JIS C6701
2	Fine Leak	Helium Bombing 5Kgf / cm^2 for 2 Hours .	Leak Rate Less Than $2x10^{-8}$ atm.cc/sec	MIL-STD-883E Method 1014.10
3	Gross Leak	125°C FC#40 ,120 Seconds.	No Continuous Bubble .	MIL-STD-883E Method 1014.10
4	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times.	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-883E Method 2002.4
5	Vibration	Frequency range 10 ~ 55 Hz Amplitude 10G Sweep Time 1 minute Test Time X,Y,Z Plan,each 2 hrs.	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-883E Method 2007.3
6	Solderability	Temperature 235 °C +/- 5 °C Immersing depth 0.5 mm minimum Immersion time 5 +/- 0.5 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	Check by Microscope At Least 95% Coated	MIL-STD-883E Method 2003.7
7	Resistance To Soldering Heat	Test Temperature 260 °C +/- 5 °C Test Time 10 +/- 1 sec.	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-202F Method 210D
8	Terminal Strength	2.5mm From terminal , bend 90°,3 times.	Lead without crack or broken.	MIL-STD-202F Method 208F
9	Thermal Shock	Total 5 cycles of the following temperature cycle 	dF/F<+/-5ppm dRs<+/-10%	MIL-STD-883E Method 1011.8

Measure in room temperature after each tests.