深圳市维拓精电科技有限公司
WTL International Limited

APPROVAL SHEET

DESCRIPTION :	HC-49/S Crystal
NOMINAL FREQ.:	14.7456MHz
WTL P/N:	WTL9S21000
VERSION:	1
DATE:	2023.04.03
Customer	Customer P/N
Micros	/
Customer Signature	**WTL**
	Approved by: Kavin Liu
	Checked by: Shu Ping
	Issued by: colin zhan

REVISION HISTORY

Revised Page	Revision Content	Date	Ref. No.	Reviser

CONTENT CATALOG

Attachment(s):

- ■ 1.Product Specification Sheet
- ☐ 2.Electrical Testing Report
- ☐ 3.Reliability Report
- ☐ 4.ICP Test Report

FEATURE

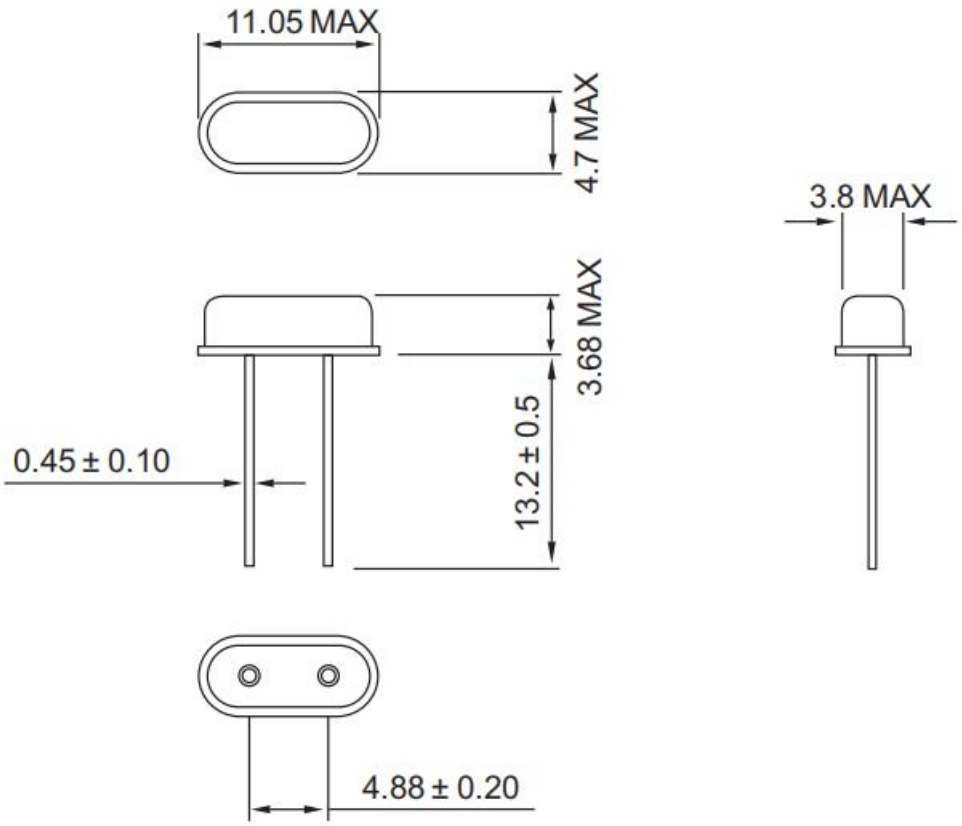
- Resistance welded type crystal units
- A great number of standard frequencies
- Higher frequency avail able and lower equivalent series resistance
- Lower cost and highly mass production capability
- RoHS Compliant / Pb Free

1、ELECTRICAL SPECIFICATIONS

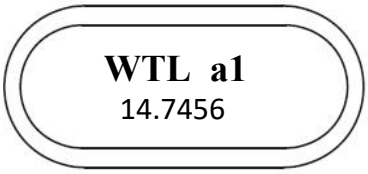
Hold Style	HC-49/S
Nominal Frequency	14.7456MHz
Mode	Fundamental / AT
Frequency Tolerance (at 25°C)	±20ppm
Frequency Stability Over Operating Temperature Characteristics	±30ppm
Operating Temperature Range	-20℃ ~ +70℃
Storage Temperature Range	-40℃ ~ +85℃
Shunt Capacitance (C_0)	7.0pF Max
Driver Level (Typical)	100μW
Load Capacitance(C_L)	18pF
ESR	50Ω Max
Insulation Resistance	More than 500Mohms at DC100V
Aging @25°C 1st year (Max)	±3ppm/year

REMARK: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE CONFIRM WITH OUR SALES ENGINEER.

2、DIMENSIONS (Unit: mm)



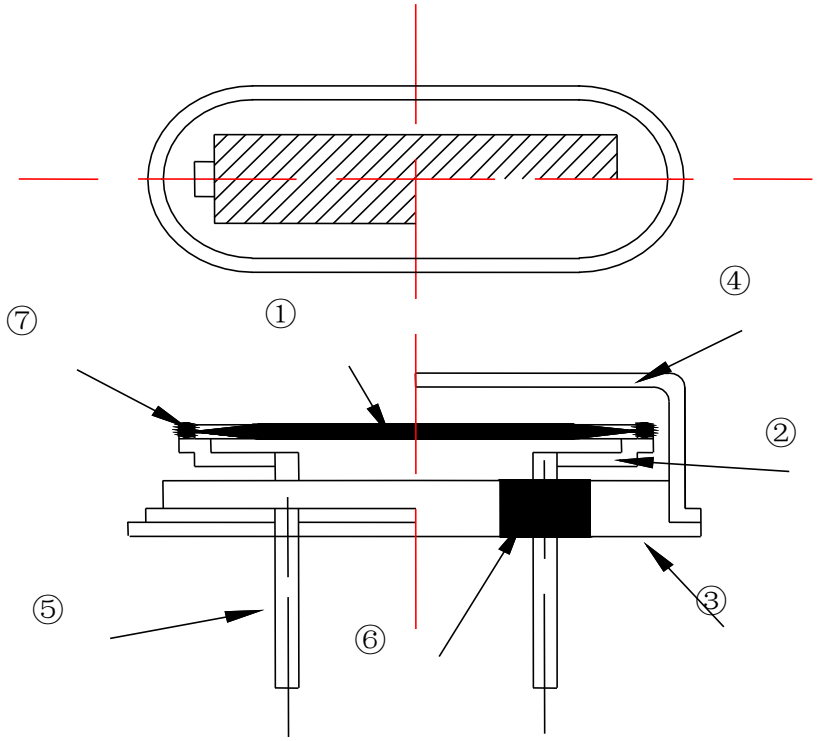
3、MARKING



WTL ⟶ Brand Logo
14.7456 ⟶ Frequency (MHz)
a ⟶ Week (a、b、c...z、A、B、C...Y、Z ,from 1 to 52week)
1 ⟶ YEAR (1=2021year, 2=2022year, 9=2029year....)

Marking Instruction:
The date code was marked on the crystal body, which will be easily traced back in case of quality issue.

4、STRUCTURE ILLUSTRATION

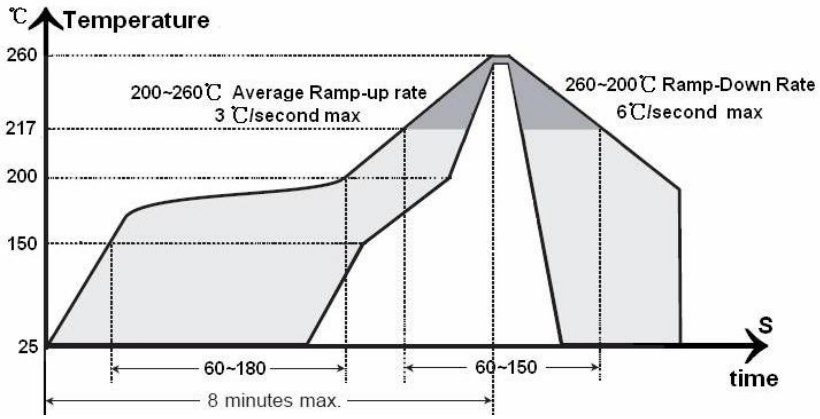


NO	COMPONENT	MATERIALS	OTY	SURFACE
①	CRYSTAL BLANK	SiO2	1	POLISH/ETCHED
②	SUPPORTER	COPPER	2	
③	BASE	Fe-NI	1	NI PLATED
④	CAN	NICKEL-COPPER	1	
⑤	LEAD	KOVAR	2	NI PLATED+SOLDER DIPPED
⑥	GLASS	KOVER-GLASS	2	
⑦	ADHESIVE GENT	Ag-URETHANE	2	

5、RELIABILITY SPECIFICATIONS

Item	Conditions	Result
Low Temp. Storage	Put the crystal into the -40℃±2℃ constant temperature box for 500±2 H , Measurement taken after 2 hour.	△F≦±5 PPM △RR≦±15% or 5 ohms
High Temp. Storage	Put the crystal into the +100℃±2℃ constant temperature box for 500±2 H, Measurement taken after 2 hour.	△F≦±5 PPM △RR≦±15% or 5 ohms
High Temp & Humidity	Put the crystal into the constant temperature & humid with the temperatures 85 ℃ ±3 ℃ and the humidity 98% for 500±2 H. Measurement taken after 2 hour.	△F≦±5 PPM △RR≦±15% or 5 ohms
Thermal Shock	Put the crystal into the constant temperature-55 ℃ ±2 ℃ for 30±1M, then change the temperature to +85℃±2℃ for 30±1M, the total is 100times. Measurement taken after 2 hour.	△F≦±5 PPM △RR≦±15% or 5 ohms
Resistance To Soldering Heat	Passed through the re-flow oven under the following condition. Preheat to 150°C±5°C for 60 to 120 sec ,and peak 265°C±5°C for 10s±3sec. Measurement taken after DUT being left at room temperature for at 24±2 hours	△F≦±5 PPM △RR≦±15% or 5 ohms
Drop Test	The crystal fall off the cement floor with the height 75cm±5cm for 3 time . Measurement taken after 2 hour.	△F≦±5 PPM △RR≦±15% or 5 ohms
Vibration Test	Apply 0.75mm vibration at sweep frequency 10～500 Hz, for 2h. 10 cycles in each direction of 3 axis. Measurement taken after 2 hour.	△F≦±5 PPM △RR≦±15% or 5 ohms
Tensile strength of terminal	Apply a 1.5Kg tensile load to each terminal and sustain it for 30±5 seconds.	No visible damage, Leak OK
Bending strength of terminal	Apply a 0.5 Kg load to one of the terminals, and after tilting the main unit for 90°, restore to its original attitude. Then, tilt it in an opposite direction for 90°, and restore to its original attitude.	No visible damage, Leak OK
Fine Leak	Take measurements with a helium leakage detector, or measure insulation resistance under pressure.	1×10-2μPa . m3 /s Max or IR≥500MΩ
Solder ability	In 245 ± 5℃ solder bath for 2 ± 0.5 seconds. 8-12X magnifier.	Terminals shall be covered more then 95% with solder.

6、SUGGESTED REFLOW PROFILE



Peak temperature. 260°C ± 5 °C (10sec. max.)

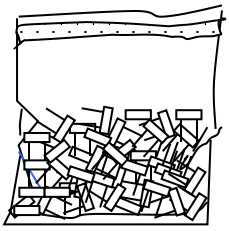
7、SUBSTANCES IN PRODUCT

Drawing number	component description	Homogeneous Material Name.	Substance Name	CAS No.	Substance Mass. (mg)	Content Rate(%)per
HC-49/S	BASE	Fe and its compounds	Fe	7439-89-6	290.9292	99.76%
			C	7440-44-0	0.1458	0.05%
			Mn	7439-96-5	0.4958	0.17%
			P	7723-14-0	0.035	0.01%
			Si	7440-21-3	0.0292	0.01%
	WIRE	Kovar ring	Fe	7439-89-6	12.9626	37.38%
			Cobal	7440-48-4	5.5091	15.89%
			Nickel	7440-02-0	4.5369	13.08%
			Copper	7440-50-8	10.3701	29.91%
			Sn	7440-31-5	0.6481	1.87%
			Ag	7440-22-4	0.6481	1.87%
	GLASS	GLASS	SiO2	15468-32-3	27.083	70.00%
			Al2O3	1344-28-1	3.4821	9.00%
			B2O3	1303-86-2	3.0952	8.00%
			Li2O	12057-24-8	0.4643	1.20%
			Na2O	1313-59-3	3.869	10.00%
			K2O	12136-45-7	0.5804	1.50%
	CAN	Kovar	Copper	7440-50-8	97.8194	64.26%
			Zn	7440-66-6	28.3137	18.60%
			Nickel	7440-02-0	25.9543	17.05%
			Fe	7439-89-6	0.137	0.09%
	Crystal Blank	Quartz	SiO2	14464-46-1	4.3658	100.00%
	Electrode	Ag	Ag	7440-22-4	0.3122	100.00%
	Sliver adhesive	Sliver	Ag	7440-22-4	3	75.00%
		adhesive	Xylene	1330-20-7	0.4	10.00%
			C6H12O3	111-15-9	0.152	3.80%
			Isophorone	78-59-1	0.448	11.20%

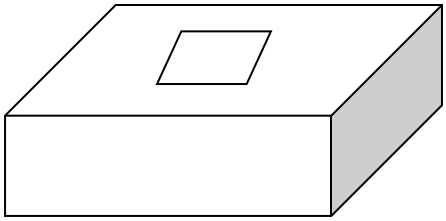
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

8、PACKING SPECIFICATIONS (Unit: mm)

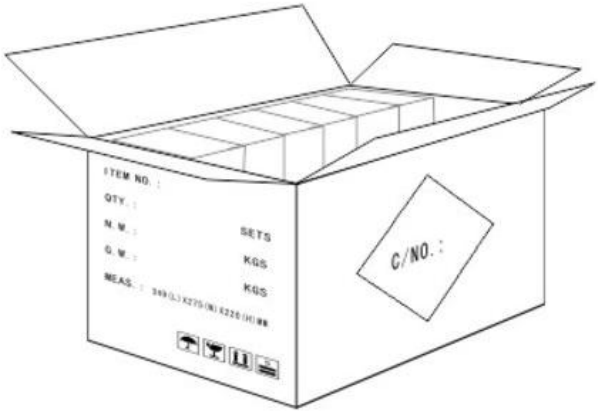
Bag packaging
Size: 150*120 mm
Quantity:200pcs



Packing inner box
Size: 170*120*75 mm
Quantity: 2,000pcs



Packing box
Size: 360*320*170 mm
10 boxes in each outer carton, Q＇TY: 20,000pcs



9、WTL PART NUMBER SYSTEM ：

For example: WTL9S23226PZ

[Instructions: for project management, WTL will trace back the part number to developer wherever it goes]

WTL - 9S - 23226 - PZ

WTL： Brand

9S ： Package Code

23226: Serial number, flow code, without any rules

PZ: WTL Developer Code, for example: VH,CH,PZ,RZ,ML