

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.:	8.000MHz			
WTL P/N:	WTL9S45318LZ			
VERSION:	1			
DATE:	2020.11.17			
Customer	Customer P/N			
	/			
Customer Signature	WTL			
	Approved by: <i>Kavin Lin</i>			
	Checked by: <i>Shu Ping</i>			
	Issued by: <i>Shengbia</i>			
REVISION HISTORY				
Revised Page	Revision Content	Date	Ref. No.	Reviser



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Attachment(s):

- ☒ 1.Product Specification Sheet
- ☐ 2.Electrical Testing Report
- ☐ 3.Reliability Report
- ☐ 4.ICP Test Report (SGS)

FEATURE

- Standard height 3.5mm, the part is compact at about one-fourth of the HC-49/U package
- A resistance weld completely sealed type
- Good stability and high reliability
- Copes with high density mounting and is the optimum for mass production

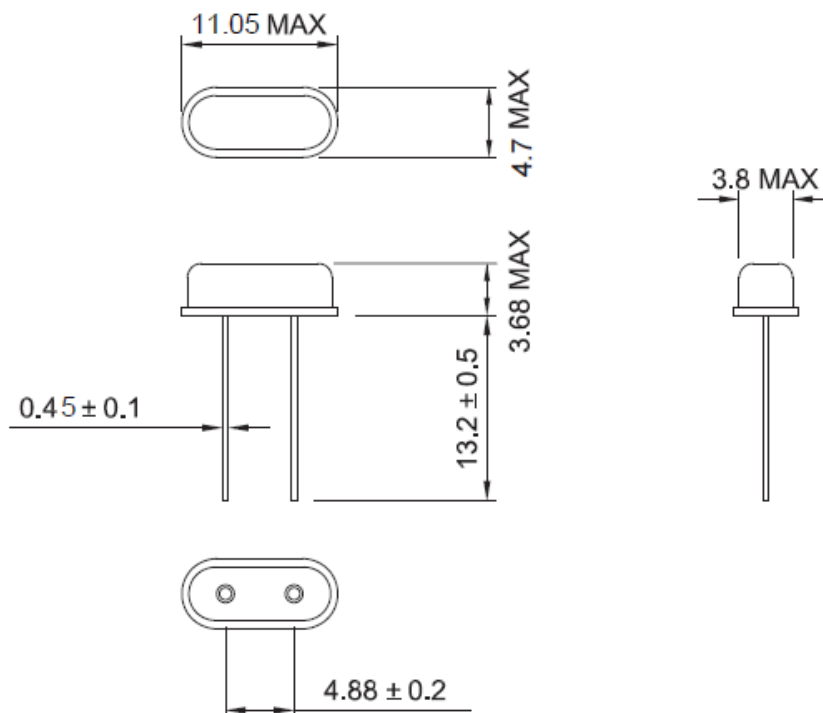


1、ELECTRICAL SPECIFICATIONS

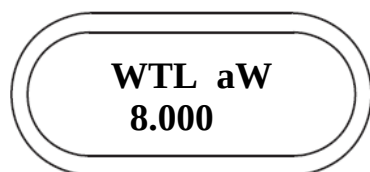
Hold Style	HC-49/S
Nominal Frequency	8.000MHz
Mode	Fundamental / AT
Frequency Tolerance (at 25°C)	±30ppm
Frequency Stability Over Operating Temperature Characteristics	±30ppm
Operating Temperature Range	-20°C ~ +70°C
Storage Temperature Range	-40°C ~ +85°C
Shunt Capacitance (C ₀)	7.0pF Max
Driver Level (Typical)	100μW
Load Capacitance(C _L)	20pF
ESR	50Ω Max
Insulation Resistance	More than 500Mohms at DC100V
Aging @25°C 1 st year (Max)	±5ppm/year

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

2、DIMENSIONS (Unit: mm)



3、MARKING

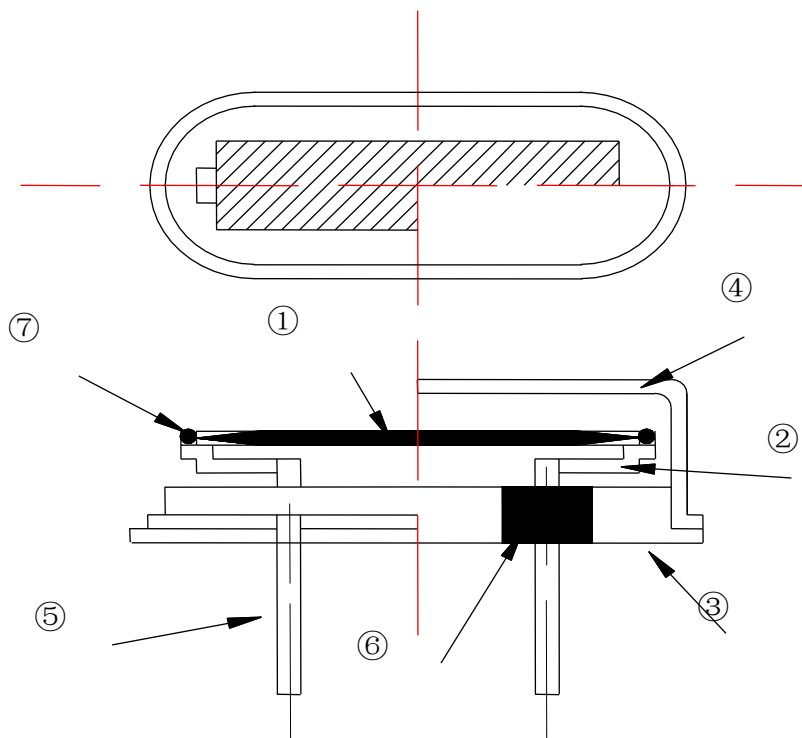


- WTL → Brand Logo
- 8.000 → Frequency (MHz)
- a → Week (a、b、c...z、A、B、C...Y、Z ,from 1 to 52week)
- W → YEAR (8=2018year, 9=2019year, W=2020year....)

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

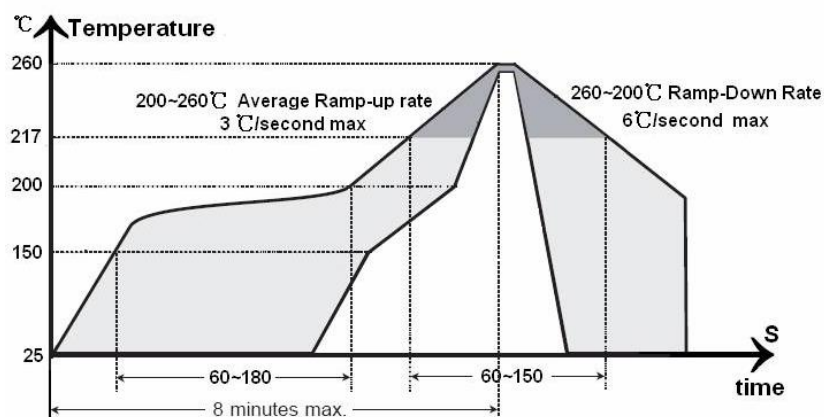


NO	COMPONENT	MATERIALS	QTY	SURFACE
①	CRYSTAL BLANK	SiO ₂	1	POLISH/ETCHED
②	SUPPORTER	COPPER	2	
③	BASE	Fe-NI	1	NI PLATED
④	CAN	NICKEL-COPPER	1	
⑤	LEAD	KOVAR	2	NI PLATED+SOLDER DIPPED
⑥	GLASS	KOVER-GLASS	2	
⑦	ADHESIVE GENT	Ag-URETHANE	2	

5、RELIABILITY SPECIFICATIONS

Item	Conditions	Result
Low Temp. Storage	Put the crystal into the $-40^{\circ}\text{C}\pm 2^{\circ}\text{C}$ constant temperature box for 500 ± 2 H , Measurement taken after 2 hour.	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ or 5 ohms
High Temp. Storage	Put the crystal into the $+100^{\circ}\text{C}\pm 2^{\circ}\text{C}$ constant temperature box for 500 ± 2 H, Measurement taken after 2 hour.	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ or 5 ohms
High Temp & Humidity	Put the crystal into the constant temperature & humid with the temperatures $85^{\circ}\text{C}\pm 3^{\circ}\text{C}$ and the humidity 98% for 500 ± 2 H. Measurement taken after 2 hour.	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ or 5 ohms
Thermal Shock	Put the crystal into the constant temperature $-55^{\circ}\text{C}\pm 2^{\circ}\text{C}$ for 30 ± 1 M, then change the temperature to $+85^{\circ}\text{C}\pm 2^{\circ}\text{C}$ for 30 ± 1 M, the total is 100times. Measurement taken after 2 hour.	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ or 5 ohms
Resistance To Soldering Heat	Passed through the re-flow oven under the following condition. Preheat to $150^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 60 to 120 sec, and peak $265^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for $10\text{s}\pm 3\text{sec}$. Measurement taken after DUT being left at room temperature for at 24 ± 2 hours	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ or 5 ohms
Drop Test	The crystal fall off the cement floor with the height $75\text{cm}\pm 5\text{cm}$ for 3 times . Measurement taken after 2 hour.	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ 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.	$\Delta F \leq \pm 5$ PPM $\Delta RR \leq \pm 15\%$ 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.	$1\times 10^{-2}\mu\text{Pa} \cdot \text{m}^3 / \text{s}$ Max or $IR \geq 500\text{M}\Omega$
Solder ability	In $245 \pm 5^{\circ}\text{C}$ solder bath for 2 ± 0.5 seconds. 8-12X magnifier.	Terminals shall be covered more than 95% with solder.

6、SUGGESTED REFLOW PROFILE



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

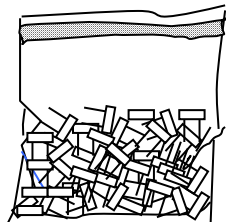
7、SUBSTANCES IN PRODUCT

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	adhesive	Sliver	7440-22-4	3	75.00%
			Xylene	1330-20-7	0.4	10.00%
			C6H12O3	111-15-9	0.152	3.80%
			Isophorone	78-59-1	0.448	11.20%

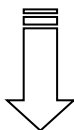
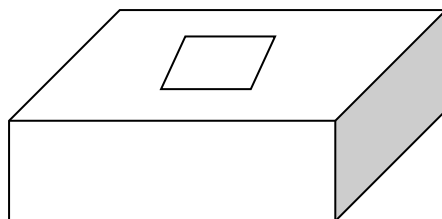
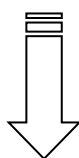
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

8、PACKING SPECIFICATIONS (Unit: mm)

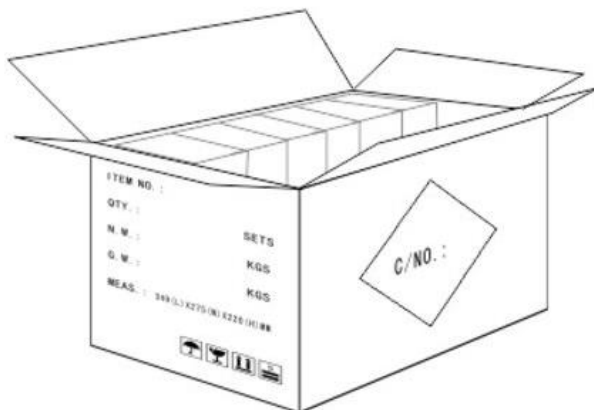
Bag packaging
Size: 150*120 mm
Quantity: 200pcs



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: WTL9S23226CH

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

WTL - 9S - 23226 - CH

WTL: Brand

9S : Package Code , please see Table 1

23226: Serial number , flow code , without any rules

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

Table1

Type	SMD Seam Crystal							
Series	TX1	TX2	TX3	TX4	TX5	TX6	TX7	TX8
Package Code	1M	2M	3M	4M	5M	6M	7M	8M
Size(mm)	2.0*1.6	2.5*2.0	3.2*2.5	4.0*2.5	5.0*3.2	6.0*3.5	7.0*5.0	1.6*1.2
	4PAD	4PAD	4PAD	4PAD	4PAD	4PAD	4PAD	4PAD
Type	DIP Crystal							
Series	WX6	WX7	WX5	WZ7	WM1	WM5	WA2	WA3
Package Code	9S	9M	9U	9L	1U	5U	2A	3A
Size(mm)	11.0*4.7	11.4*4.7	13.5*4.7	7.0*4.1	7.8*3.2	6.0*3.2	φ2*6	φ3*8
	2PIN	2PIN	2PIN	2PIN	2PIN	2PIN	2PIN	2PIN
Type	SMD Glass Crystal							
Series	TG3	TG5	TG6	TG8	TG9			
Package Code	3G	5G	6G	8G	5A			
Size(mm)	3.2*2.5	5.0*3.2	6.0*3.5	8.0*4.5	5.0*3.2			
	4PAD	2PAD	2PAD	2PAD	4PAD			

*The above are conventional products. If you have special specifications, please contact our sales for confirmation.