

### Features

- Low profile resistance weld type Thru Hole quartz crystal
- High reliability & Low cost
- Tight stability & extended temperature
- Pb-free and RoHS/Green compliant

### Applications

- Consumer Electronics
- Home Devices
- Communication, Test equipment
- Portable Devices



### Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	3.200		48.000	MHz	
Oscillation Mode		Fundamental (AT-cut)				
Frequency Tolerance	$\Delta f/f$			$\pm 10$	ppm	at 25°C $\pm 2^\circ\text{C}$
Operating Temperature	T <sub>use</sub>	-20		70	°C	
		-40		85	°C	
Storage Temperature Range	T <sub>sta</sub>	-55		125	°C	
Shunt Capacitance	C0			7	pF	
Drive Level	DL		100	500	$\mu\text{W}$	
Load Capacitance	CL	8		20	pF	
Insulation Resistance	IR			500	M $\Omega$	at DC 100V
Aging	f <sub>age</sub>			3	ppm	1st. Year at 25°C

### Frequency Stability & Operating Temperature Range

Temp. \ FT	$\pm 10\text{ppm}$	$\pm 15\text{ppm}$	$\pm 20\text{ppm}$	$\pm 30\text{ppm}$
-20°C to +70°C	$\Delta$	★	★	★
-40°C to +85°C		$\Delta$	★	★

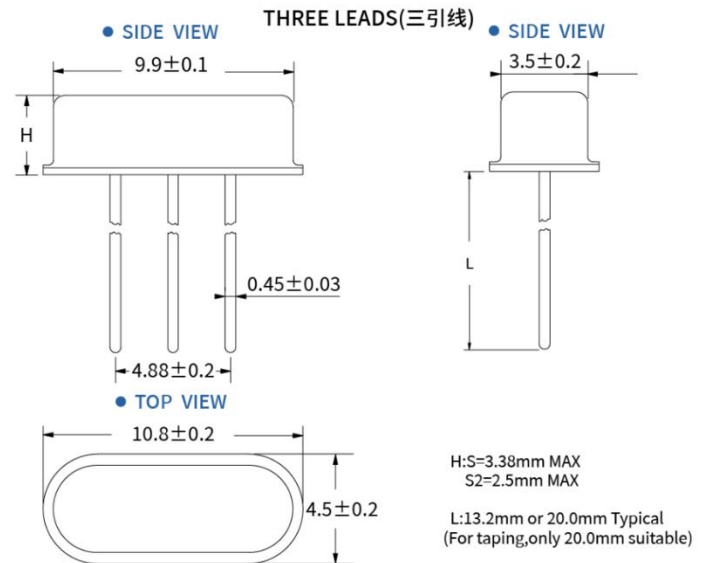
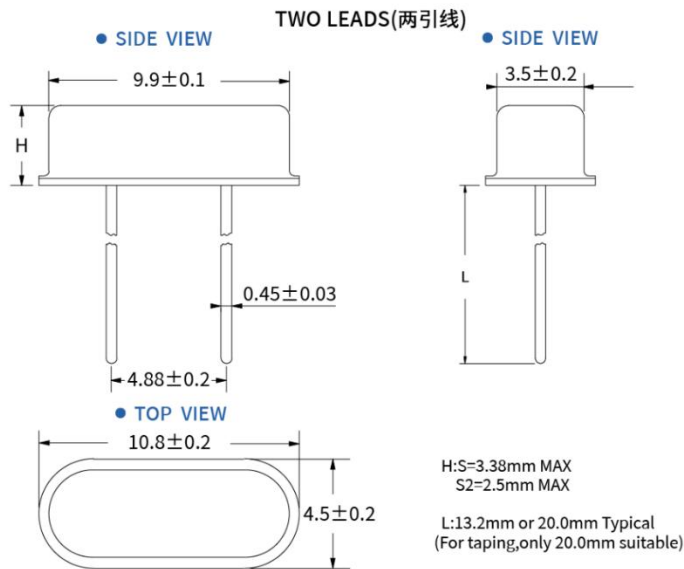
★: Available     $\Delta$ : Conditional



**Equivalent Series Resistance**

Frequency Range	ESR(Max.)
3.2MHz ≤ Freq. < 3.579MHz	150 Ω
3.579 MHz ≤ Freq. < 4MHz	120 Ω
4MHz ≤ Freq. < 5MHz	100 Ω
5MHz ≤ Freq. < 6MHz	80 Ω
6MHz ≤ Freq. < 10MHz	60 Ω
10MHz ≤ Freq. < 14MHz	35 Ω
14MHz ≤ Freq. < 20MHz	30 Ω
20MHz ≤ Freq. ≤ 48MHz	25 Ω

**Dimensions (mm)**

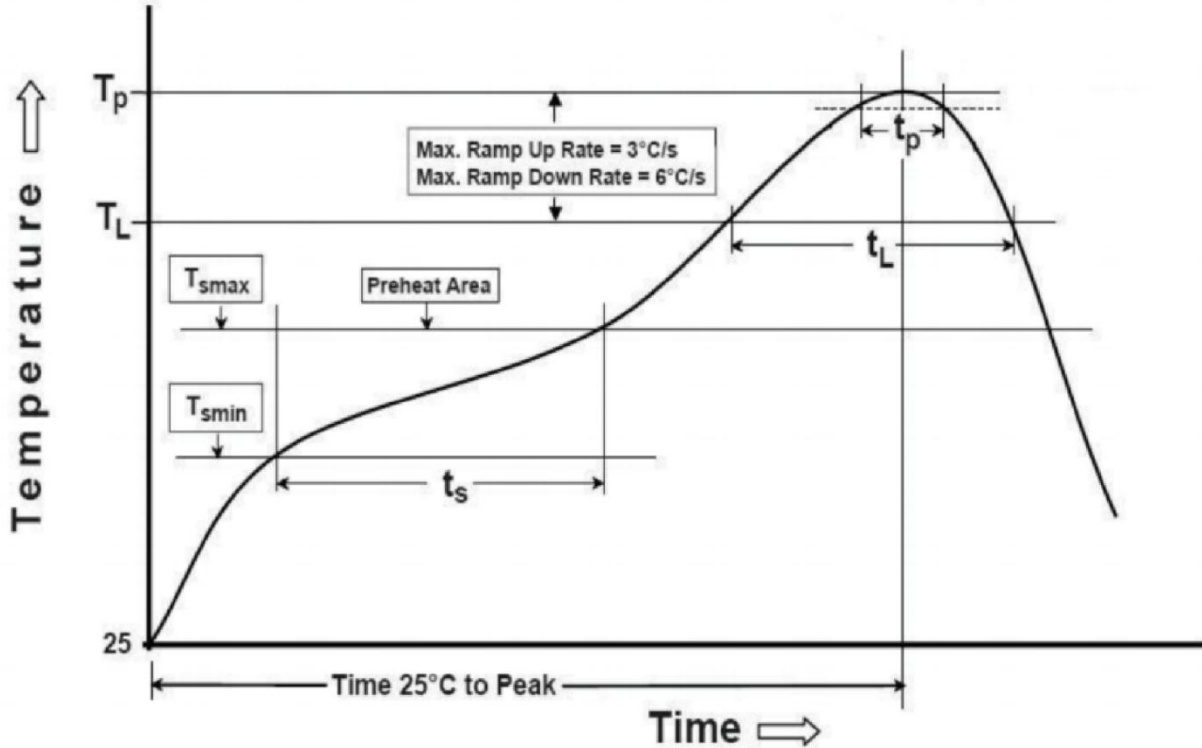


**Product Structure**

- Can
- Quartz Blank, Coated Electrode
- Base
- Lead



**Suggested Reflow Profile**

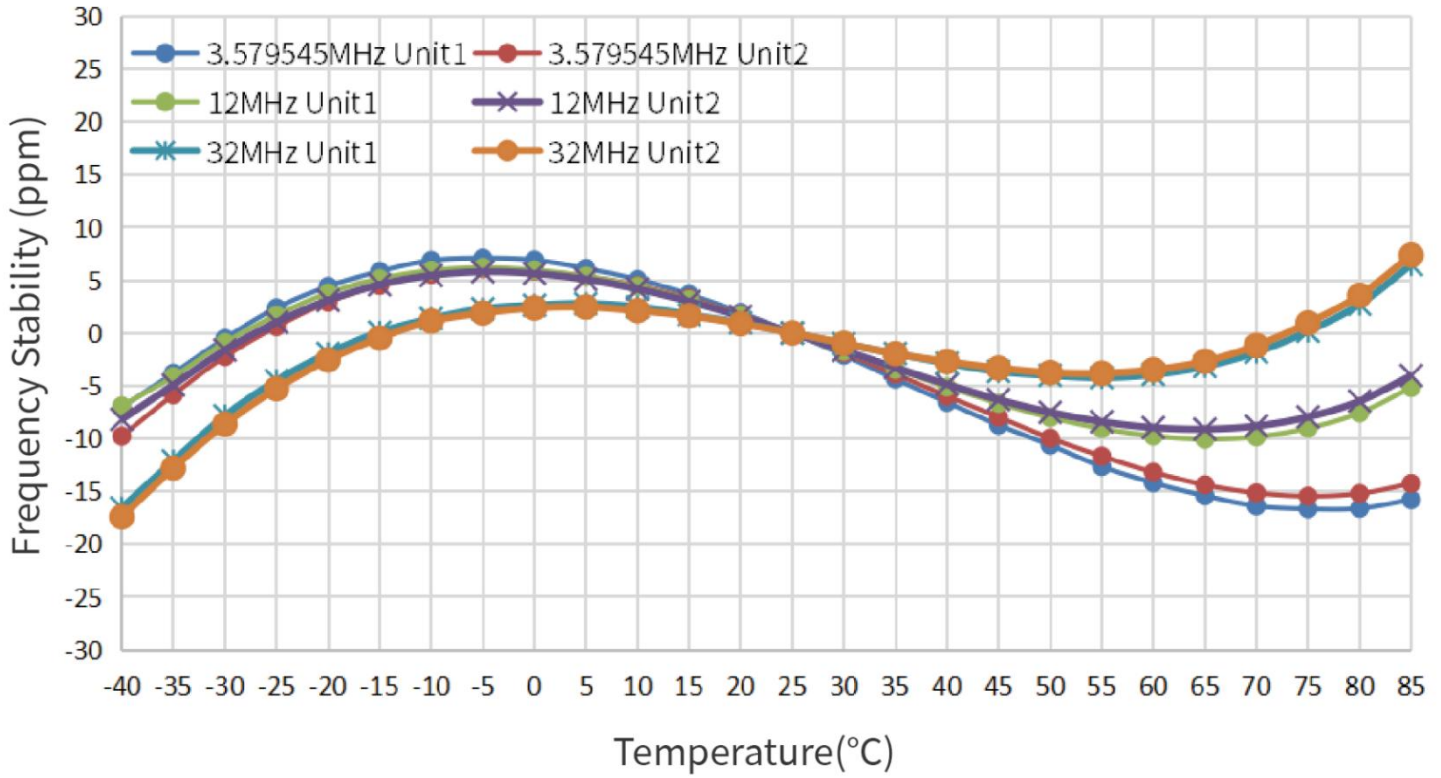


Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min ( Ts min ) ● Temperature Max ( Ts max ) ● Time ( Ts min to Ts max )	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate ( TL to Tp )	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature ( TL ) ● Time ( tL ) maintained above TL	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature ( Tp )	235°C	260°C
Time within 5° C of the specified classification temperature ( Tp )	20 seconds	30 seconds
Ramp - down rate ( Tp to TL )	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
<b>Suggest reflow times</b>	<b>2 Times max.</b>	



**Frequency Temperature Characteristics**

Frequency Stability vs. Temperature (HC- 49S Package)



**PN Structure:**

WQC-HC49S3.579545F2020F30TR

WQC-HC49S 3.579545MHz 20pF±20ppm -40+85C ±30ppm Tape Reel RoHS

WQC-	HC49S	3.579545	F	20	20	F	30	T	R
Series	Frequency Code(MHz)	AT-Fundamental	Load Capacitance	Frequency Tolerance	Operating Temperature	Frequency Drift	Tape Reel	RoHS	
	1	2	3	4	5	6	7	8	



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**1. Frequency Code(MHz)**

3.579545	3.6864	4.000	4.096	4.194304
4.897	4.9152	5.000	5.5296	6.000
6.144	6.7458	7.3728	7.680	8.000
8.192	9.81563	9.8304	9.84375	10.000
11.0592	11.2896	12.000	12.288	13.000
13.1072	13.225625	13.52127	13.52313	13.560
13.598	13.824	14.31818	14.7456	15.000
16.000	16.384	16.9344	17.734475	18.432
19.200	19.6608	20.000	22.1184	22.5792
24.000	24.576	25.000	26.000	27.000
27.120	27.1412	28.63636	29.4912	30.000
32.000	36.000	40.000		

**3. Capacitance**

08	8pF
12	12pF
20	20pF

**4. Frequency Tolerance**

10	±10ppm
20	±20ppm

**5. Operating Temperature**

E	-20+70C
F	-40+85C

**6. Frequency Drift**

15	±15ppm
20	±20ppm
30	±30ppm

**7. Packing**

T	Tape Reel
B	Bulk

**8. RoHS**

R	RoHS
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