

Feature

- Hermetically sealed quartz crystal in resistance-welded SMD and through hole packages.
- 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	$\Delta f/f$			± 10	ppm	at 25°C $\pm 2^\circ\text{C}$
Operating Temperature	T_use	-20		70	°C	
		-40		85	°C	
Storage Temperature Range	T_sta	-55		125	°C	
Shunt Capacitance	C0			7	pF	
Drive Level	DL		100	500	μW	
Load Capacitance	CL	8		20	pF	
Insulation Resistance	IR			500	M Ω	at DC 100V
Aging	f_age			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	Δ	★	★	★
-40°C to +85°C		Δ	★	★	★

★: Available Δ : Conditional

Equivalent Series Resistance

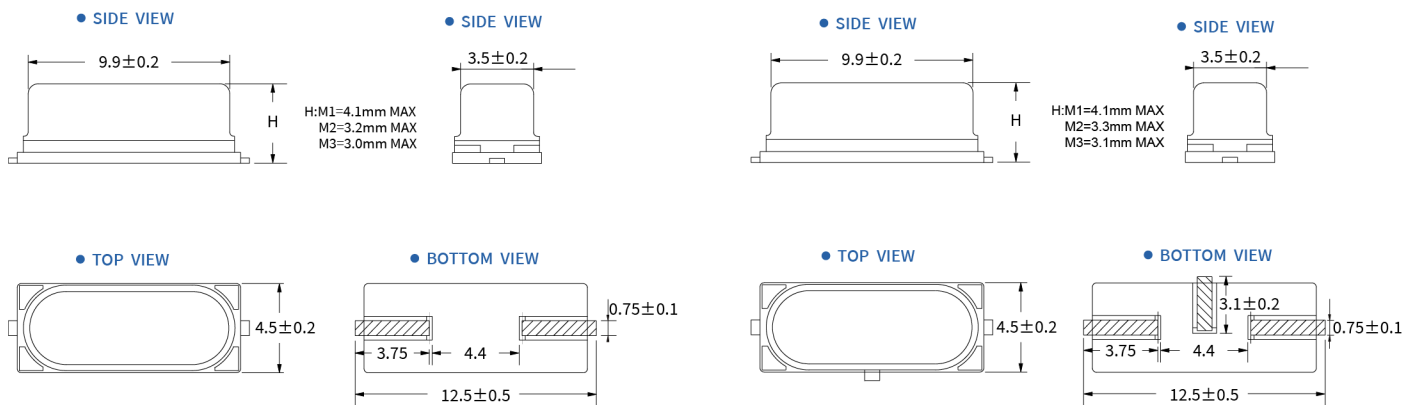
Frequency Range	ESR(Max.)
3.2MHz \leq Freq. < 3.579MHz	150 Ω
3.579 MHz \leq Freq. < 4MHz	120 Ω
4MHz \leq Freq. < 5MHz	100 Ω
5MHz \leq Freq. < 6MHz	80 Ω
6MHz \leq Freq. < 10MHz	60 Ω
10MHz \leq Freq. < 14MHz	35 Ω
14MHz \leq Freq. < 20MHz	30 Ω
20MHz \leq Freq. \leq 48MHz	25 Ω

SM Series 12.5 x 4.5 mm Crystal

Dimensions (UNIT:mm)

TWO PADS(两焊盘)

THREE PADS(三焊盘)

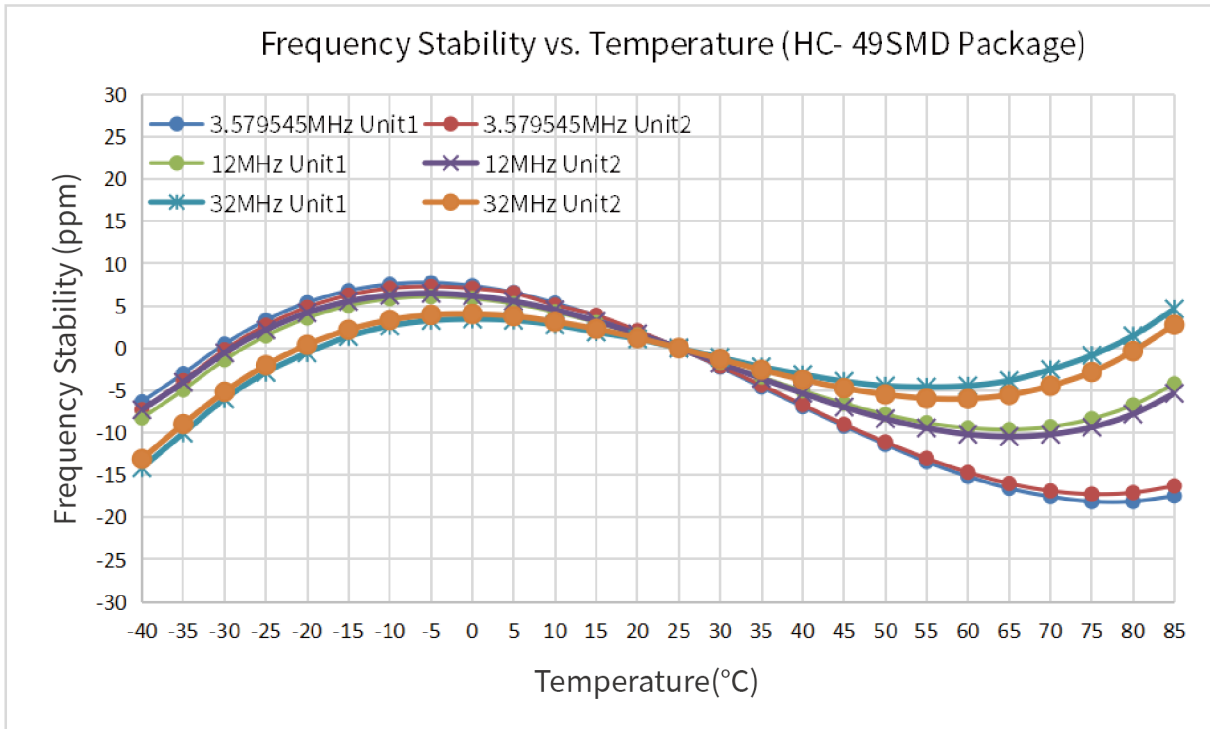


Options and Part Identification : Example SXMH3.579545F2020F30

Company	Ceramic Package	Frequency Code [MHz]	Vibration Mode	Load Capacitance	Frequency Tolerance	Operating Temperature	Frequency Drift	
SX	MH	X.XXX	F	20	20	F	30	
Code	Company	Frequency	Code	Vibration Mode	Code	Frequency Tolerance	Code	Frequency Drift
SX	SCTF	3.579545	F	AT - Fundamental	10	$\pm 10\text{ppm}$	15	$\pm 15\text{ppm}$
					20	$\pm 20\text{ppm}$	20	$\pm 20\text{ppm}$
							30	$\pm 30\text{ppm}$
	Code	Ceramic Package		Code	Load Capacitance		Code	Operating Temperature
	SA	10.8 x 4.5 x 3.38mm[HC-49S]		S	Please specify CL in pF or S for series		E	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
	MH	12.5 x 4.5 x 4.1mm[HC-49SMD]		08	8pF		F	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
				10	10pF			
				12	12pF			
				20	20pF			

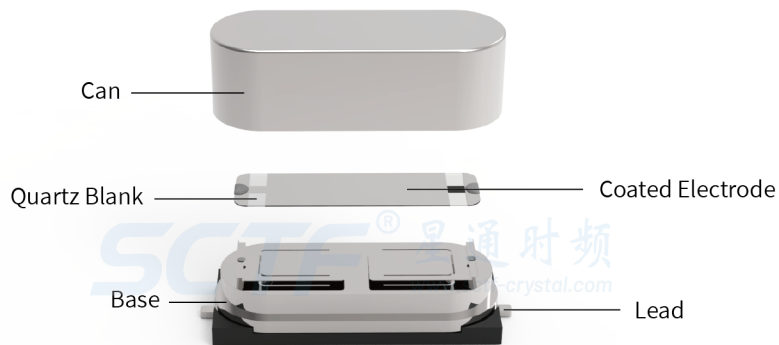
If you have other parameter requirements, you can contact **SCTF** at any time.

Frequency Temperature Characteristics



Product Structure & Marking Information

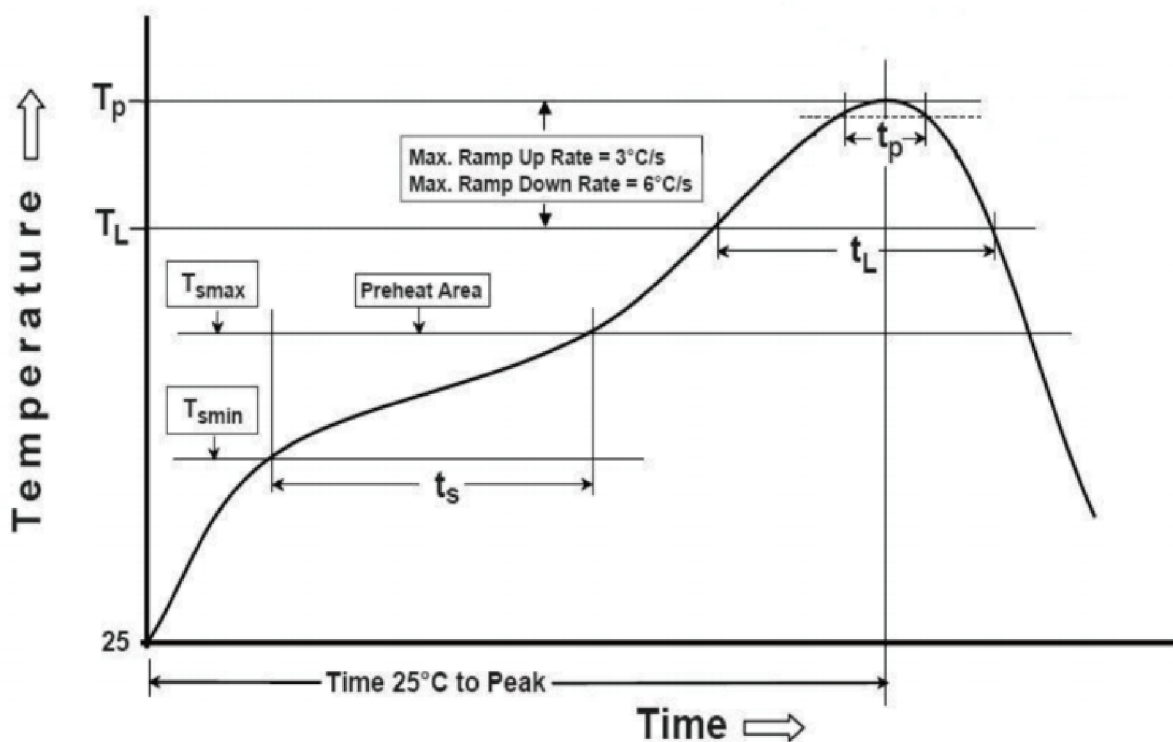
Product Structure



Marking Information



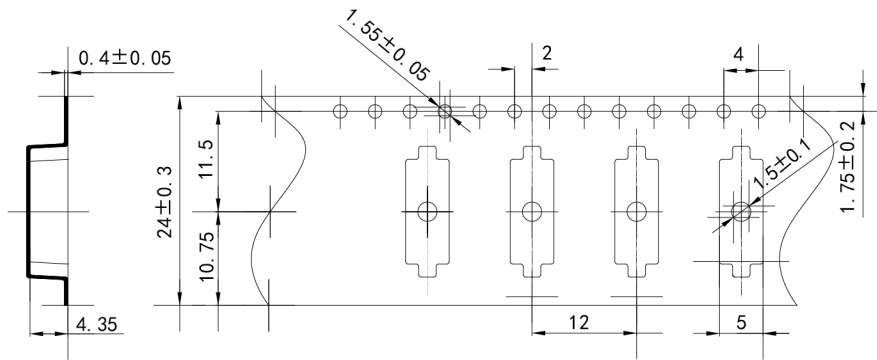
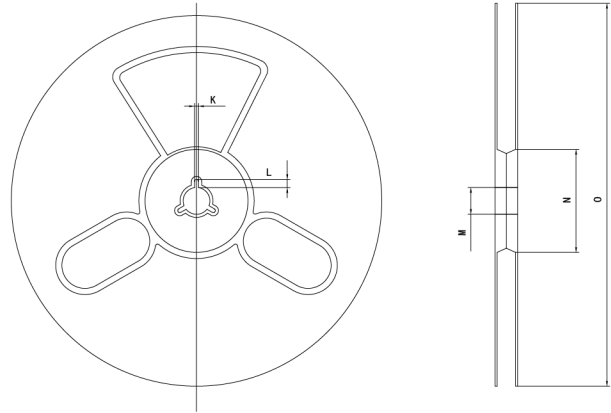
Suggested Reflow Profile



Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak <ul style="list-style-type: none"> ● Temperature Min (T_s min) ● Temperature Max (T_s max) ● Time (T_s min to T_s max) 	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (T _L to T _p)	3°C/ second max.	3°C/ second max.
Time maintained above <ul style="list-style-type: none"> ● Liquidous temperature (T_L) ● Time (t_L) maintained above T_L 	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature (T _p)	235°C	260°C
Time within 5° C of the specified classification temperature (T _p)	20 seconds	30 seconds
Ramp - down rate (T _p to T _L)	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
Suggest reflow times	2 Times max.	

Packaging Information

T=Tape and reel (1,000pcs/reel)



Pocket Tape Dimensions(mm)

HC-49SMD	0.4±0.05	14.9±0.1	4.35±0.1	24±0.3	11.5±0.1	5.0±0.1	12±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ100±1	φ330±1
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Common Frequencies – MHz

SM Series				
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		