

## Quartz Crystal Through Hole HC-49/S SMD Package



### Features

- Excellent clock signal generator for CPU's
- Available in extended temperature range
- Low profile surface mount



### Electrical Specifications

Frequency Range		3.200 to 70.000	
Mode of Oscillation	Fundamental	3.200 to 32.768	MHz
	Third Overtone	24.576 to 70.000	
Frequency Tolerance at 25°C	Standard	±30	PPM Max
	Optional	± 25 to ±10	
Frequency Stability over Temperature Range	Standard	±50	°C
	Optional	±30 to ±10	
Operating Temperature Range	Standard	-20 to +70	°C
	Extended	-40 to +85	
Storage Temperature Range		-55 to +125	
Aging		±5 first year ±3 thereafter	PPM Max/Year
Load Capacitance		10 to 32 or Series Resonance	pF
Shunt Capacitance		7.0	pF Max
Equivalent Ser Resistance (ESR)		See ESR Table	Ohms
Drive Level		1.0	mW Max
Insulation Resistance		500 at 100Vdc (±15Vdc)	M Ohm

### Frequency Range vs. ESR Values

Frequency Range in MHz	ESR Ohms Max	Frequency Range in MHz	ESR Ohms Max
3.200 to 3.500	300	8.000 to 9.999	60
3.510 to 3.999	200	10.000 to 15.999	50
4.000 to 5.999	120	16.000 to 32.768	40
6.000 to 7.999	80	24.576 to 70.000	80 (Fund - Third Overtone)

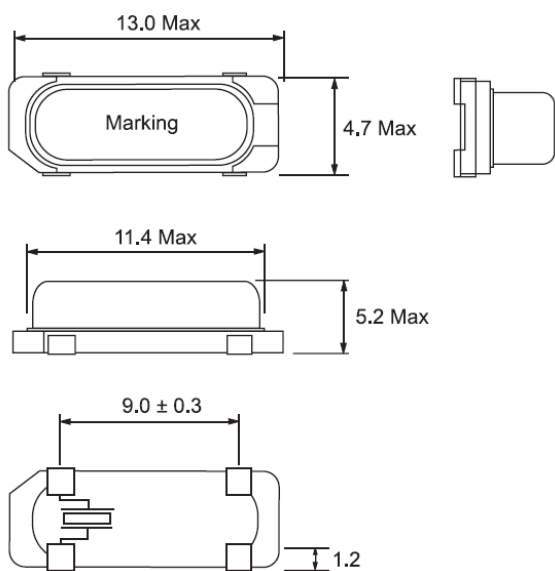
### Part Numbering System

Type	-	Frequency	-	Load Capacitance	-	Mode(*1)	-
WAS (HC49/S)	-	in MHz	-	10 to 32 for Parallel or S for Series	-	3OT – Third Overtone	-

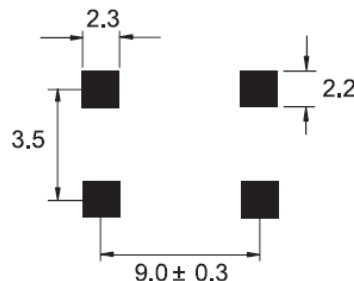
Tolerance/ Stability(*1)	-	Extended Temperature(*1)	-	Mechanical	-	Tape & Reel
(PPM/PPM) e.g. 1020, 1010	-	EXT	-	4PD	-	TR

Examples : WAS-24.576-18-4PD-TR or WAS-54.000-S-3OT-1010-EXT-4PD-TR

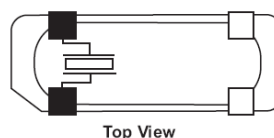
### Mechanical Outline



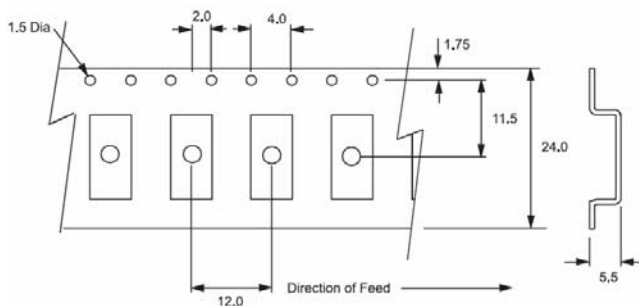
### PCB Solder Pad Layout



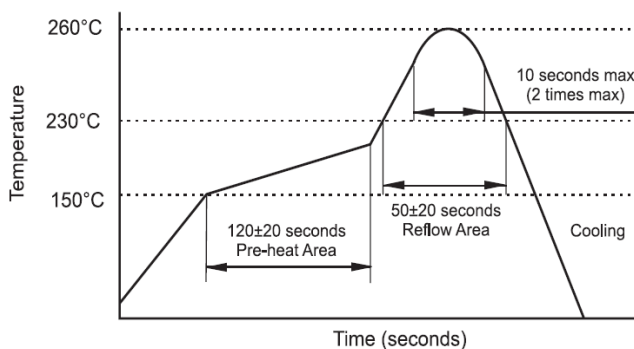
### Pad Connection



### Carrier Tape Dimensions



### Solder Reflow Characteristics



#### Notes:

- 1 - Fundamental Mode, Standard Tolerance/Stability, Standard Temperature Range, do not need to be included in Part Number description.
- 2 - Product is shipped in Tape & Reel configuration. Each reel contains 1000 pieces.
- 3 - Specification subject to change without notice.