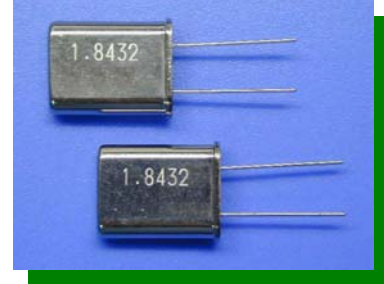


Quartz Crystal Through Hole HC-49/U Leaded Package



Features

- Metal welded package
- High shock resistance
- Excellent frequency aging stability
- High heat resistance
- Rohs Compliant



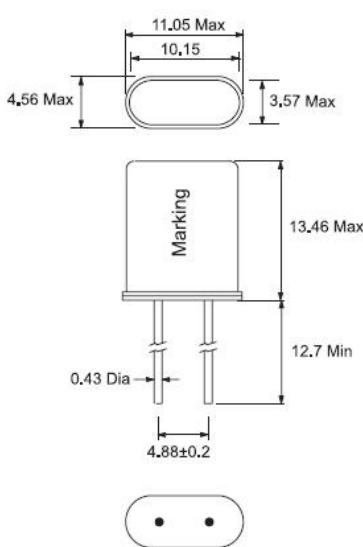
Electrical Specifications

Frequency Range		1.000 to 180.000	
Mode of Oscillation	Fundamental	1.000 to 50.000	MHz
	Third Overtone	23.000 to 75.000	
	Fifth Overtone	60.000 to 110.000	
	Seventh Overtone	110.000 to 180.000	
Frequency Tolerance at 25°C	Standard	± 30	PPM Max
	Optional	± 25 to ±10	
Frequency Stability over Temperature Range	Standard	±50	
	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

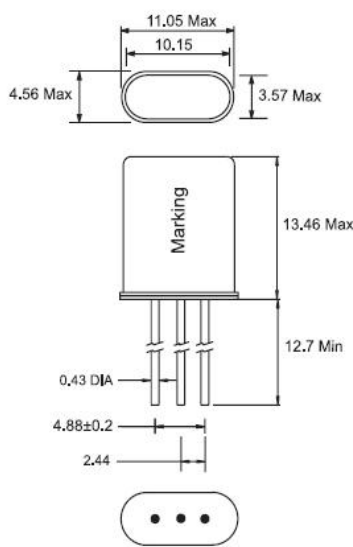
Frequency Range vs. ESR Values

Frequency Range in MHz	ESR Ohms Max	Mode of Operation	Frequency Range in MHz	ESR Ohms Max	Mode of Operation
1.000 to 2.000	750	Fundamental	6.100 to 8.000	40	Fundamental
2.100 to 2.400	550	Fundamental	8.100 to 10.000	35	Fundamental
2.410 to 3.000	350	Fundamental	10.100 to 12.500	30	Fundamental
3.100 to 3.700	200	Fundamental	12.510 to 50.000	25	Fundamental / Third Overtone
3.710 to 4.200	100	Fundamental	23.000 to 75.000	40	Fundamental / Third Overtone
4.210 to 4.900	70	Fundamental	60.000 to 110.000	80	Third / Fifth Overtone
4.910 to 6.000	50	Fundamental	110.100 to 180.000	120	Seventh Overtone

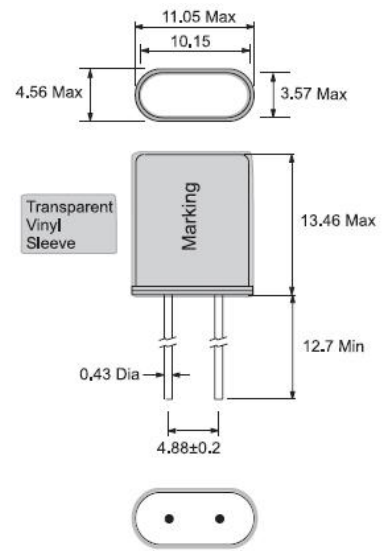
Mechanical Outline



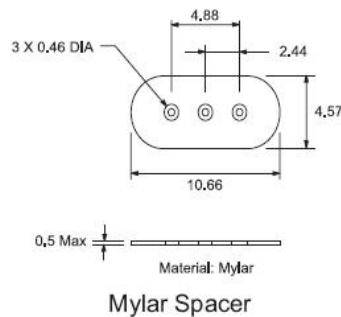
Standard Type: HC-49/U



3 Lead Base: HC-49/U with 3 lead base (header)



Sleeve Type: HC-49/U with vinyl sleeve



Mylar Spacer

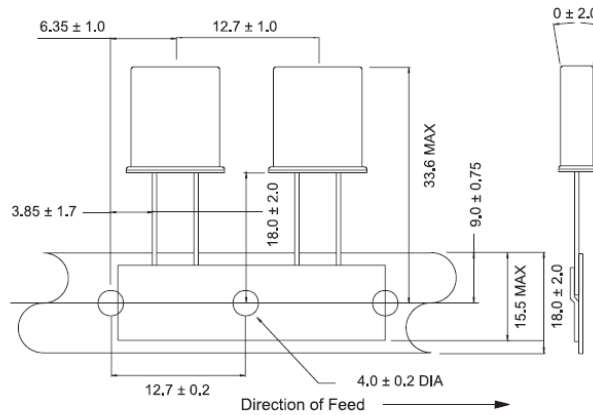
Part Numbering System

Type	-	Frequency	-	Load Capacitance	-	Mode(*1)	-
WA (HC49/U)		in MHz		10 to 32 for Parallel or S for Series		3OT – Third Overtone 5OT – Fifth Overtone 3OT – Seventh Overtone	

Tolerance/ Stability(*1)	-	Extended Temperature(*1)	-	Package Options(*1)	-	Packaging (*1)
(PPM/PPM) e.g. 2030		EXT		Cx – x mm ±10% L – 3 lead header P – Mylar Spacer S – Vinyl Sleeve		TR – Tape & Reel

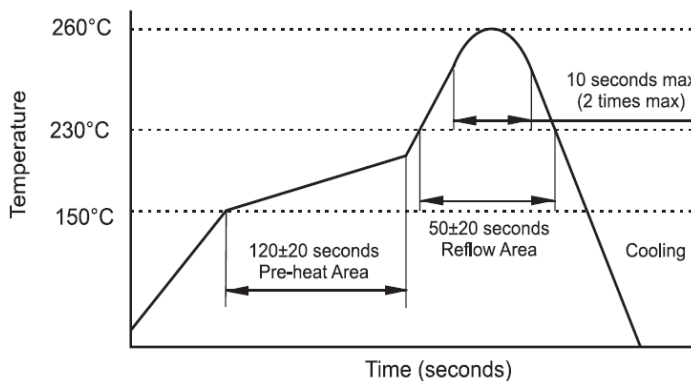
Examples : WA-24.576-18 or WA-54.000-S-3OT-2050-EXT-P or WA-18.000-20-C10

Carrier Tape Dimensions :



Dimensions are millimeters.

Solder Reflow Characteristics :



Notes:

- 1 - Fundamental Mode, Standard Tolerance/Stability, Standard Temperature Range, Package Options and Packing (Bulk), do not need to be included in Part Number description.
2. Lead Length (pre-cut) package option is available from 3to10mm. Bulk package only.
- 3 - Product is shipped in Bulk. 1000 pieces per box, 10 plastic bags containing 100 pieces
- 4 – Tape & Reel packaging is available for 1000pieces minimum
- 5 - Specification subject to change without notice.