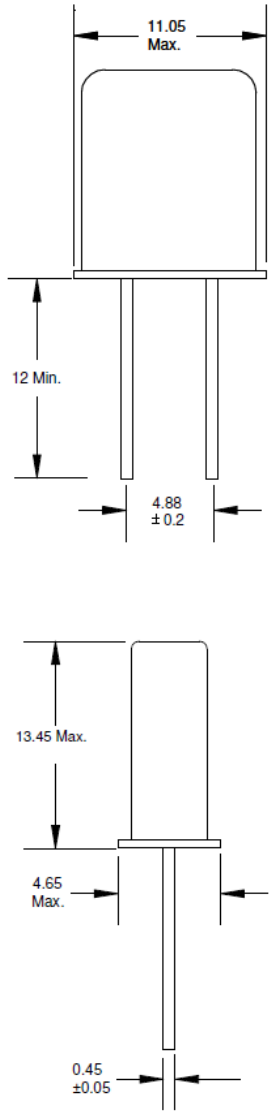
2 Lead Metal Package Quartz Crystal, 4.7mm x 11mm

HC49U Series

Product Features:
Low Cost
RoHS Compliant
Compatible with Leadfree Processing

Applications:
Fibre Channel
Server & Storage
Sonet /SDH
802.11 / Wifi
T1/E1, T3/E3
System Clock

Frequency	1.300MHz to 160.000MHz
ESR (Equivalent Series Resistance)	
1.300MHz – 1.999MHz	800 Ohms Maximum
2.000MHz – 2.999MHz	500 Ohms Maximum
3.000MHz – 3.299MHz	200 Ohms Maximum
3.300MHz – 3.999MHz	150 Ohms Maximum
4.000MHz – 4.499MHz	100 Ohms Maximum
4.500MHz – 4.999MHz	80 Ohms Maximum
5.000MHz – 5.999MHz	70 Ohms Maximum
6.000MHz – 6.999MHz	50 Ohms Maximum
7.000MHz – 7.999MHz	40 Ohms Maximum
8.000MHz – 9.999MHz	30 Ohms Maximum
10.000MHz – 35.999MHz	25 Ohms Maximum
25.000MHz – 100.000MHz (3rd OT)	50 Ohms Maximum
70.000MHz – 160.000MHz (5th OT)	40 Ohms Maximum
Shunt Capacitance	7pF Maximum
Frequency Tolerance @ +25° C	See Part Number Guide
Frequency Stability over Temperature	See Part Number Guide
Crystal Cut	AT Cut
Load Capacitance	See Part Number Guide
Drive Level	1mWatts Maximum
Aging	±5ppm/Year Maximum
Operating Temperature Range	See Part Number Guide
Storage Temperature Range	-40°C to +85°C



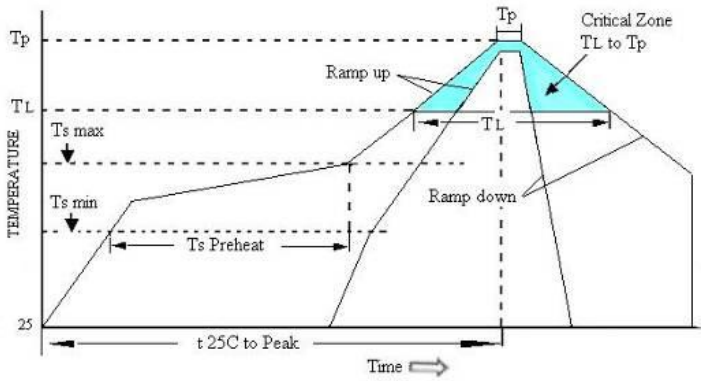
Dimension Units: mm

Part Number Guide **Sample Part Number: HC49U - FB1F18 - 20.000 MHz**

Package	Tolerance (ppm) at Room Temperature	Stability (ppm) over Operating Temperature	Operating Temperature Range	Mode (overtone)	Load Capacitance (pF)	Frequency
HC49U - (13.46 mm H)	B = ±50 ppm	B = ±50 ppm	0 = 0°C to +50°C	F = Fundamental	18 pF or Specify	- 20.000 MHz
	F = ±30 ppm	F = ±30 ppm	1 = 0°C to +70°C	3 = 3rd overtone		
	G = ±25 ppm	G = ±25 ppm	2 = -10°C to +60°C	5 = 5th overtone		
	H = ±20 ppm	H = ±20 ppm	3 = -20°C to +70°C			
	I = ±15 ppm	I = ±15 ppm**	5 = -40°C to +85°C			
	J = ±10 ppm*	J = ±10 ppm**	9 = -10°C to +50°C			

* Not available at all frequencies. ** Not available for all temperature ranges.

Pb Free Solder Reflow Profile:



Ts max to T_L (Ramp-up Rate)	3ºC / second max
Preheat Temperature min (Ts min) Temperature typ (Ts typ) Temperature max (Ts max) Time (Ts)	 150ºC 175ºC 200ºC 60 to180 seconds
Ramp-up Tate (T_L to Tp	3ºC / second max
Time Maintained Above Temperature (T_L) Time (T_L)	 217ºC 60 to 150 seconds
Peak Temperature (Tp)	260ºC max for 10 seconds
Time within 5ºC to Peak Temperature (Tp)	20 to 40 seconds
Ramp-down Rate	6ºC / second max
Tune 25ºC to Peak Temperature	8 minutes max

Units are backward compatible with +240°C reflow processes

Package Information:

MSL = 1
Termination = e1 (Sn / Cu / Ag over Ni over Kovar base metal).

Environmental Specifications

Thermal Shock	MIL-STD-883, Method 1011, Condition A
Moisture Resistance	MIL-STD-883, Method 1004
``Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Mechanical Vibration	MIL-STD-883, Method 2007, Condition A
Resistance to Soldering Heat	J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max)
Hazardous Substance	Pb-Free / RoHS Compliant
Solderability	JESD22-B102 Method 2 (Preconditioning E)
Terminal Strength	MIL-STD-883, Method 2004, Test Condition D
Gross Leak	MIL-STD-883, Method 1014, Condition C
Fine Leak	MIL-STD-883, Method 1014, Condition A1
Solvent Resistance	MIL-STD-202, Method 215

Marking

Line 1: ILSI
Line 2: Frequency
Line 3: Date Code (YWW)