



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



HC49U Series

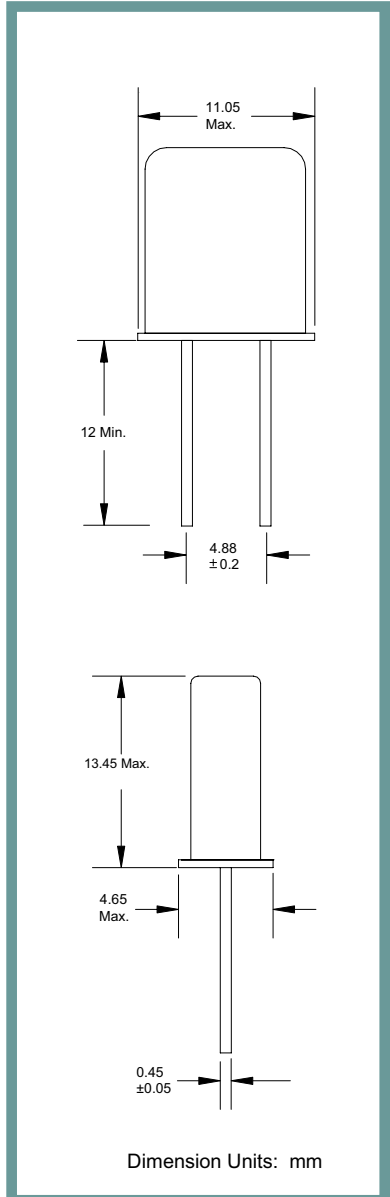
**Product Features:**

- Low Cost
- RoHS Compliant
- Compatible with Leadfree Processing

**Applications:**

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

<b>Frequency</b>	1.3 MHz to 160.000 MHz
<b>ESR (Equivalent Series Resistance)</b>	
1.3 MHz – 1.9 MHz	800 Ω Max.
2.0 MHz – 2.9 MHz	500 Ω Max.
3.0 MHz – 3.2 MHz	200 Ω Max.
3.3 MHz – 3.9 MHz	150 Ω Max.
4.0 MHz – 4.4 MHz	100 Ω Max.
4.5 MHz – 4.9 MHz	80 Ω Max.
5.0 MHz – 5.9 MHz	70 Ω Max.
6.0 MHz – 6.9 MHz	50 Ω Max.
7.0 MHz – 7.9 MHz	40 Ω Max.
8.0 MHz – 9.9 MHz	30 Ω Max.
10.0 MHz – 35.9 MHz	25 Ω Max.
25 MHz – 100 MHz (3 <sup>rd</sup> O.T.)	50 Ω Max.
70 MHz – 160 MHz (5 <sup>TH</sup> O.T.)	40 Ω Max.
<b>Shunt Capacitance (C0)</b>	7 pF Max.
<b>Frequency Tolerance @ 25° C</b>	±30 ppm Standard (see Part Number Guide for more options)
<b>Frequency Stability over Temperature</b>	±50 ppm Standard (see Part Number Guide for more options)
<b>Crystal Cut</b>	AT Cut Standard
<b>Load Capacitance</b>	18 pF Standard (see Part Number Guide for more options)
<b>Drive Level</b>	1 mW Max.
<b>Aging</b>	±5 ppm Max. / Year Standard
<b>Temperature</b>	
<b>Operating</b>	0° C to +70° C Standard (see Part Number Guide for more options)
<b>Storage</b>	-40° C to +85° C Standard



Part Number Guide		Sample Part Number:		HC49U - FB1F18 - 20.000		
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 Standard Or Specify	- 20.000 MHz
	F = ±30 ppm	F = ±30 ppm	1 = 0°C to +70°C	3 = 3 <sup>rd</sup> overtone		
	G = ±25 ppm	G = ±25 ppm	2 = -10°C to +60°C	5 = 5 <sup>th</sup> 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.



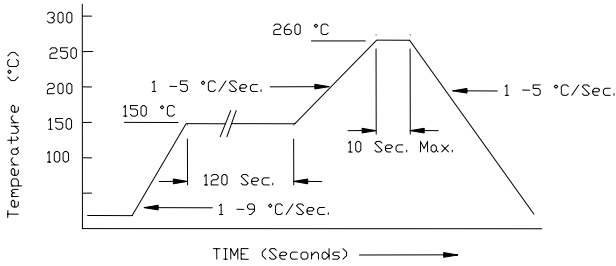
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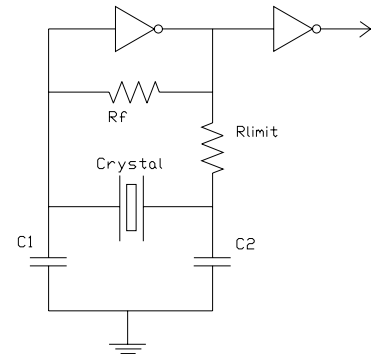
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**Pb Free Solder Reflow Profile:**

**Typical Circuit:**



\*Units are backward compatible with 240C 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 / Green Compliant
Solderability	JESD22-B102-D 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 A2, R1=2x10 <sup>-8</sup> atm cc/s
Solvent Resistance	MIL-STD-202, Method 215

**Marking**

Line 1: ILSI, Frequency, Date Code (yww)