

## HC49 CRYSTALS

ISSUE 15; 1 NOVEMBER 2010 - RoHS 2002/95/EC

### Description

- Industry standard leaded package
- Resistance welded, hermetically sealed in an inert atmosphere, glass to metal seals on leads
- Variants available include but are not limited to:-
  - 3L = a centre mounted third leg grounds the can
  - T = a truncated height of 11.1mm
  - Gull-Wing = SMD version see outline drawing
- Please contact our sales offices for more options
- Stock parts listed at the beginning of this chapter

### General Specifications

- Load Capacitance (CL): 10pF to 75pF or Series
- Drive Level: 1mW max
- Ageing:  $\pm 3$ ppm typ per year at 25°C
- Shunt Capacitance (C<sub>0</sub>): 7pF max

### Standard Frequency Tolerances and Stabilities

- $\pm 5$ ppm,  $\pm 10$ ppm,  $\pm 15$ ppm,  $\pm 20$ ppm,  $\pm 30$ ppm,  $\pm 50$ ppm,  $\pm 100$ ppm

### Operating Temperature Ranges

- 0 to 50°C
- 10 to 60°C
- 20 to 70°C
- 30 to 80°C
- 40 to 85°C
- 55 to 105°C
- 55 to 125°C

### Storage Temperature Range

- 55 to 125°C

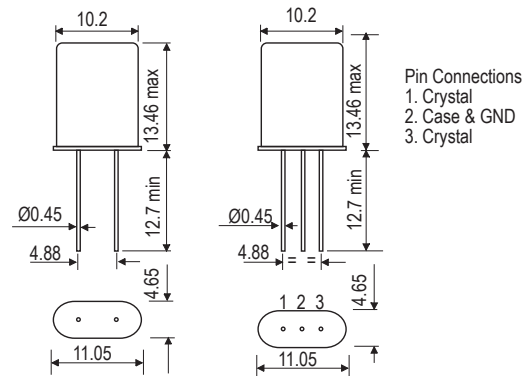
### Environmental

- Shock: 981m/s<sup>2</sup>, 6ms, 3 times in each of 3 mutually perpendicular planes
- Vibration: 10Hz-60Hz, 0.75mm amplitude, 60Hz-500Hz, 98.1m/s<sup>2</sup>, 30mins in 3 mutually perpendicular planes

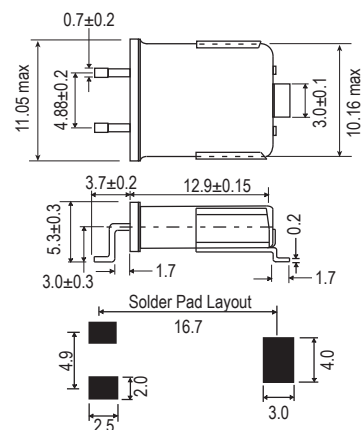
### Packaging

- Loose in bulk pack, 100pcs per bag
- Tape and reel in accordance with EIA-468-C, 1kpcs per reel (please see pages 372 & 373)
- Gull-Wing Surface Mount - Tape and reel in accordance with EIA-481-D, 1kpcs per reel (please see pages 372 & 373)

### Outline (mm) - HC49 & HC49-3L



### Outline (mm) - HC49 Gull-Wing



### Ordering Information (\*minimum required)

- Frequency\*
- Model\*
- Frequency Tolerance (@25°C)\*
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Load Capacitance\*
- Overtone\*

### Example

- 10.0MHz HC49  
50/50/-40 to 85C/10 FUND



**Electrical Specifications - maximum limiting values**

Frequency Range	Frequency Tolerance @25°C ±2°C	Operating Temperature Range	Frequency Stability Available Over Operating Temperature Range		ESR Max	Vibration Mode
			Minimum	Maximum		
1.84320 to <2.0MHz	±5ppm to ±100ppm	0 to 50°C	±15ppm	±200ppm	800Ω	Fundamental AT cut
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			
2.0 to <3.0MHz		0 to 50°C	±15ppm		600Ω	
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			
3.0 to <4.0MHz		0 to 50°C	±15ppm		150Ω	
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			
4.0 to <7.0MHz		0 to 50°C	±15ppm	±100ppm	100Ω	
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			
7.0 to <10.0MHz		0 to 50°C	±15ppm		50Ω	
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			

Note: For other frequency / specification combinations, please contact our sales offices





**IQD Frequency Products**

Frequency Range	Frequency Tolerance @25°C ±2°C	Operating Temperature Range	Frequency Stability Available Over Operating Temperature Range		ESR Max	Vibration Mode
			Minimum	Maximum		
10.0 to 36.0MHz	±5ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	35Ω	Fundamental AT cut
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			
20.0 to 45.0MHz	Inclusive with Frequency Stability	0 to 50°C	±50ppm	±100ppm	35Ω	Fundamental BT cut
		-10 to 60°C				
		-20 to 70°C				
		-30 to 80°C				
21.0 to 90.0MHz	±5ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	40Ω	3rd Overtone AT cut
		-10 to 60°C	±20ppm			
		-20 to 70°C				
		-30 to 80°C	±25ppm			
		-40 to 85°C	±30ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C	±100ppm			
45.0 to 135.0MHz	Inclusive with Frequency Stability	0 to 50°C	±50ppm	±100ppm	35Ω	3rd Overtone BT cut
		-10 to 60°C				
		-20 to 70°C				
		-30 to 80°C				
60.0 to 150.0MHz	±5ppm to ±100ppm	0 to 50°C	±10ppm	±100ppm	70Ω	5th Overtone AT cut
		-10 to 60°C	±15ppm			
		-20 to 70°C				
		-30 to 80°C	±20ppm			
		-40 to 85°C	±25ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C				
90.0 to 225.0MHz	Inclusive with Frequency Stability	0 to 50°C	±50ppm	±100ppm		5th Overtone BT cut
		-10 to 60°C				
		-20 to 70°C				
		-30 to 80°C				

Note: For other frequency / specification combinations, please contact our sales offices





**IQD Frequency Products**

Frequency Range	Frequency Tolerance @25°C ±2°C	Operating Temperature Range	Frequency Stability Available Over Operating Temperature Range		ESR Max	Vibration Mode
			Minimum	Maximum		
85.0 to 210.0MHz	±5ppm to ±100ppm	0 to 50°C	±5ppm	±100ppm	100Ω	7th Overtone AT cut
		-10 to 60°C				
		-20 to 70°C	±10ppm			
		-30 to 80°C	±20ppm			
		-40 to 85°C	±25ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C				
125.0 to 300.0MHz	Inclusive with Frequency Stability	0 to 50°C	±50ppm	150Ω	7th Overtone BT cut	
		-10 to 60°C	±100ppm			
		-20 to 70°C				
		-30 to 80°C				
110.0 to 270.0MHz	±5ppm to ±100ppm	0 to 50°C	±5ppm	150Ω	9th Overtone AT cut	
		-10 to 60°C	±10ppm			
		-20 to 70°C				
		-30 to 80°C	±20ppm			
		-40 to 85°C	±25ppm			
		-55 to 105°C	±50ppm			
		-55 to 125°C				

Note: For other frequency / specification combinations, please contact our sales offices

