



ISSUE 15; February 2012 - RoHS 2011/65/EU

### 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 = an additional centre mounted leg grounds the can  
TW = an additional top mounted leg grounds the can  
T = a truncated height of 11.1mm
- Please see our HC49 Gull-Wing for a SMD alternative
- Please contact our sales offices for more options

### Frequency Range

- Frequency 1.8432 to 270.0Mhz
- Frequency Tolerance  $\pm 5\text{ppm}$  to  $\pm 100\text{ppm}$

### General Specification

- Load Capacitance (CL) 10.0pF to 75.0pF or Series
- Drive Level 1mW max
- Ageing  $\pm 3\text{ppm}$  typical per year
- Shunt Capacitance (C0) 7pF max

### Operating Temperature Ranges

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

### Environmental Parameters

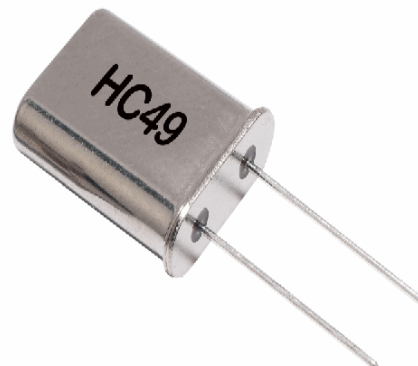
- Shock: 981m/s<sup>2</sup>, 6ms, 3 times in each of 3 mutually perpendicular planes
- Vibration: 10Hz-60Hz, 0.75mm amplitude, 60Hz-500Hz, 98.1m/s<sup>2</sup>, 30mins in 3 mutually perpendicular planes
- Storage Temperature Range: -55 to 125°C

### Ordering Information

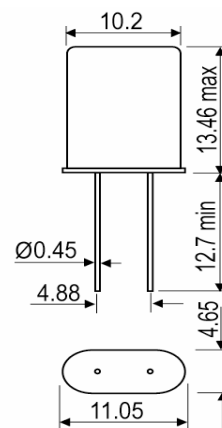
- Frequency\*
- Model\*
- Frequency Tolerance (@25°C)\*
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Load Capacitance\*
- Overtone\*
- Example:  
10.0MHz HC49  
50/50/-40 to 85C/10 FUND

### Packing Details

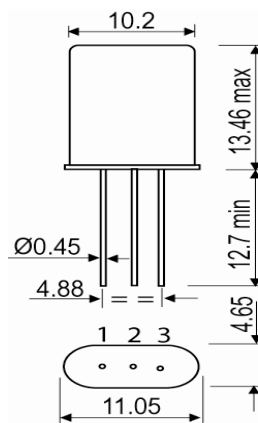
- Pack Style: **Bulk** Loose in bulk pack  
Pack Size 100
- Pack Style: **Reel** Tape and reel in accordance with EIA-468-C  
Pack Size 1,000
- Alternative packing options available



### Outline (mm)



### -3L = 3 Lead



Pin Connections  
1. Crystal  
2. Case & GND  
3. Crystal

### Sales Office Contact Details:

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**Electrical Specification - maximum limiting values**

| Frequency Range    | Frequency Tolerance | Stability                                                           |         | Temperature Range                                                                                     | ESR Max | Vibration Mode |
|--------------------|---------------------|---------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------|---------|----------------|
|                    |                     | Min                                                                 | Max     |                                                                                                       |         |                |
| 1.84320 to <2.0MHz | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 800Ω    | Fundamental    |
| 2.0 to <3.0MHz     | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 600Ω    | Fundamental    |
| 3.0 to <4.0MHz     | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 150Ω    | Fundamental    |
| 4.0 to <7.0MHz     | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 100Ω    | Fundamental    |
| 7.0 to <10.0MHz    | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 50Ω     | Fundamental    |
| 10.0 to <36.0MHz   | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 35Ω     | Fundamental    |
| 21.0 to <90.0MHz   | ±5ppm to ±100ppm    | ±15ppm<br>±20ppm<br>±20ppm<br>±25ppm<br>±30ppm<br>±50ppm<br>±100ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 40Ω     | 3RD Overtone   |

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**Electrical Specification - maximum limiting values**

| Frequency Range    | Frequency Tolerance | Stability                                                          |         | Temperature Range                                                                                     | ESR Max | Vibration Mode |
|--------------------|---------------------|--------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------|---------|----------------|
|                    |                     | Min                                                                | Max     |                                                                                                       |         |                |
| 60.0 to <150.0MHz  | ±5ppm to ±100ppm    | ±10ppm<br>±15ppm<br>±15ppm<br>±20ppm<br>±25ppm<br>±50ppm<br>±50ppm | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 70Ω     | 5TH Overtone   |
| 85.0 to <210.0MHz  | ±5ppm to ±100ppm    | ±5ppm<br>±5ppm<br>±10ppm<br>±20ppm<br>±25ppm<br>±50ppm<br>±50ppm   | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 100Ω    | 7TH Overtone   |
| 110.0 to <270.0MHz | ±5ppm to ±100ppm    | ±5ppm<br>±5ppm<br>±10ppm<br>±20ppm<br>±25ppm<br>±50ppm<br>±50ppm   | ±200ppm | 0 to 50°C<br>-10 to 60°C<br>-20 to 70°C<br>-30 to 80°C<br>-40 to 85°C<br>-55 to 105°C<br>-55 to 125°C | 150Ω    | 9TH Overtone   |

*This document was correct at the time of printing; please contact your local sales office for the latest version*

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