

## HC49 SERIES CRYSTALS

### DESCRIPTION

HC49 crystals are a long-established industry-standard part. Basic specification HC49 crystals provide the lowest cost crystal available but these crystals can also be manufactured to very close tolerances and low ESR values. Holder variants are HC49/T (truncated), providing a lower height version, 3-wire versions where the crystal base and body can be earthed by a centre earth wire and HC50 which has larger diameter leads specifically for socket mounting.

### FEATURES

- Very low cost crystal
- Available with close tolerances
- Fully customisable specification
- Comprehensive Euroquartz stockholding
- Industry-standard package with options
- Very wide frequency range

### GENERAL SPECIFICATION

|                                |   |
|--------------------------------|---|
| Frequency Range:               | 1.0MHz to 250.0MHz  |
| Calibration Tolerance at 25°C: | from $\pm 3$ ppm to $\pm 50$ ppm                            |
| Frequency stability over temp: | from $\pm 3$ ppm to $\pm 100$ ppm                           |
| Load Capacitance:              | 8pF to 50pF, or Series                                      |
| Ageing:                        | $\pm 3$ ppm max 1st year,<br>$\pm 1$ ppm max per year after |
| Drive level:                   | 1mW max   |
| Static capacitance (C0):       | 7pF max   |
| Holder:                        | Resistance-weld, hermetic seal                              |

#### Part Numbers for Holder Variants \*

| Holder Type                  | Holder Designation      |
|------------------------------|-------------------------|
| Standard 2 lead:             | HC49                    |
| Low height versions:         | HC49/T (from 4.0MHz)    |
| Centre Earth Lead:           | HC49/3W                 |
| Centre Earth Lead (Low):     | HC49/T/3W (from 4.0MHz) |
| 'Plug-in' for use in socket: | HC-50                   |

\* HC49 crystals are also available for surface-mount applications with formed leads and fitted with a clip. See '49MJ' in the surface-mount crystal section on Euroquartz website; [www.euroquartz.co.uk](http://www.euroquartz.co.uk)

### OSCILLATION MODE & ESR

| Frequency (MHz) | Crystal Cut/Oscillation Mode | ESR (max) (Ohms) |
|-----------------|------------------------------|------------------|
| 1.0 ~ 1.3       | SL Fund.                     | 5000             |
| 2.01 ~ 3.0      | AT Fund.                     | 400              |
| 3.01 ~ 3.2      | AT Fund.                     | 200              |
| 3.21 ~ 3.5      | AT Fund.                     | 150              |
| 3.51 ~ 3.9      | AT Fund.                     | 120              |
| 3.91 ~ 5.0      | AT Fund.                     | 100              |
| 5.01 ~ 7.0      | AT Fund.                     | 50               |
| 7.01 ~ 10.0     | AT Fund.                     | 35               |
| 10.0 ~ 30.0     | AT Fund.                     | 25               |
| 30.1 ~ 45       | AT Fund.                     | 20               |
| 24.0 ~ 100      | AT 3 <sup>rd</sup> OT        | 40               |
| 80.0 ~ 160      | AT 5th OT                    | 70               |
| 110 ~ 250       | AT 7th OT                    | 120              |

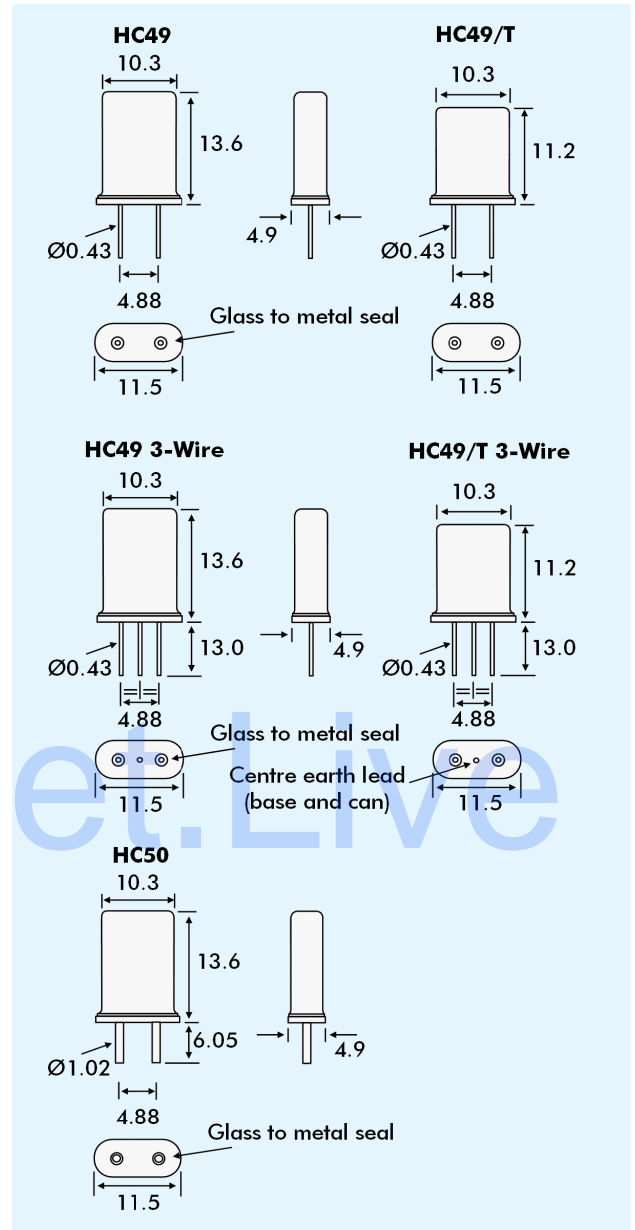
### PART NUMBER GENERATION

HC49 crystal part numbers are derived as follows:

Example: **16.000MHz HC49/30/50/10/30pF/ATF**

Frequency/Holder/Calibration/Temp. Stability/ Temp. Range/Circuit

### OUTLINES & DIMENSIONS



### FREQUENCY STABILITY OVER TEMPERATURE

| Operating Temp. °C | Temperature Stability (ppm) |         |           |          |          |          |          |
|--------------------|-----------------------------|---------|-----------|----------|----------|----------|----------|
|                    | $\pm 3$                     | $\pm 5$ | $\pm 7.5$ | $\pm 10$ | $\pm 15$ | $\pm 20$ | $\pm 30$ |
| 0° to +50°         | ü                           | ü       | ü         | ü        | ü        | ü        | ü        |
| -10° to +60°       | ü                           | ü       | ü         | ü        | ü        | ü        | ü        |
| -20° to +70°       | X                           | ü       | ü         | ü        | ü        | ü        | ü        |
| -30° to +80°       | X                           | X       | X         | ü        | ü        | ü        | ü        |
| -40° to +90°       | X                           | X       | X         | X        | ü        | ü        | ü        |
| -55° to +105°      | X                           | X       | X         | X        | X        | ü        | ü        |

ü Indicates this stability is available over the stated operating temp. range