



**Data Sheet**



Product Category: Quartz Crystals

| Series Number | Package         | Description      | Last Modified  |
|---------------|-----------------|------------------|----------------|
| 141 ~ 142     | HC-49U / HC-49T | Weld Type Quartz | April. 17 2008 |

**Quartz Crystal FEATURES**

- Industry Standard Package
- Wide Frequency range
- Tight Tolerances
- Excellent reliability/Aging
- "AT" cut crystals
- Cost effective
- RoHs / Lead Free compliant



**OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS**

| PARAMETERS            | CONDITIONS  | CHARACTERISTICS                      | UNITS |
|-----------------------|-------------|--------------------------------------|-------|
| Frequency Range       | $f_O$       | 1.800 ~ 100.00                       | MHz   |
| Frequency Tolerance   | Ref @ +25°C | ±30 std. (±5 ~ ±100 avail.)          | PPM   |
| Temperature Tolerance | $T_L$       | ±50 std. (See Table 2)               | PPM   |
| Operating Temperature | $T_{OPR}$   | -20 ~ +70 std. (See Table 2)         | °C    |
| Storage Temperature   | $T_{STG}$   | -55 ~ +125                           | °C    |
| Shunt Capacitance     | $C_O$       | 7.0 max.                             | pF    |
| Load Capacitance      | $C_L$       | 20.0 std. (8 ~ 50 and Series avail.) | pF    |
| Drive Level           | $D_L$       | 0.05 ~ 1.0                           | mW    |
| Aging (First Year)    | @ +25°C     | ±5.0 max.                            | PPM/Y |
| Insulation Resistance | $I_R$       | 500 (DC100 ±10V) min.                | Mohm  |

**TABLE 1 - MODE OF OSCILLATION AND EQUIVALENT SERIES RESISTANCE**

| FREQUENCY RANGE (MHz) | MODE               | HC-49T (ohm max.) | HC-49U (ohm max.) |
|-----------------------|--------------------|-------------------|-------------------|
| 1.800 ~ 2.000         | Fundamental        | -                 | 600               |
| 2.000~ 2.400          | Fundamental        | -                 | 450               |
| 2.400 ~ 3.000         | Fundamental        | -                 | 350               |
| 3.000 ~ 3.500         | Fundamental        | -                 | 150               |
| 3.500 ~ 4.000         | Fundamental        | 150               | 90                |
| 4.000 ~ 7.000         | Fundamental        | 90                | 70                |
| 7.000 ~ 10.000        | Fundamental        | 50                | 50                |
| 10.000 ~ 15.000       | Fundamental        | 45                | 35                |
| 15.000 ~ 20.000       | Fundamental        | 25                | 25                |
| 20.000 ~ 25.000       | Fund. / 3rd OT     | 25 / 60           | 25 / 50           |
| 25.000 ~ 30.000       | Fund. / 3rd OT     | 25 / 40           | 25 / 40           |
| 30.000 ~ 75.000       | 3rd Overtone       | 40                | 40                |
| 75.000 ~ 100.000      | 3rd / 5th Overtone | - / 60            | - / 60            |
| 27.000 ~ 35.000       | BT Fund.           | 40                | 40                |

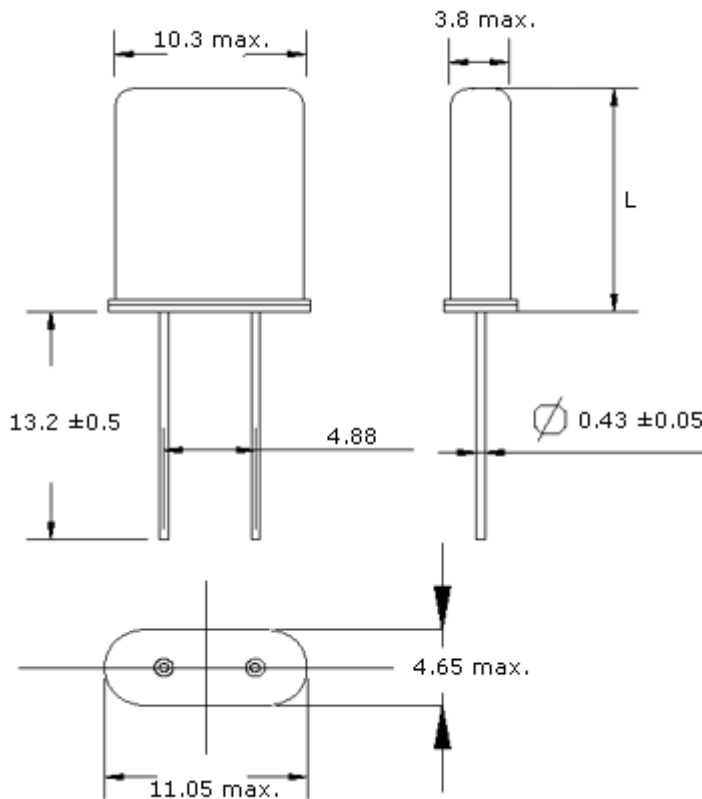
**TABLE 2 - FREQUENCY - TEMPERATURE TOLERANCE**

|  | Tolerance (PPM) |
|--|-----------------|
|--|-----------------|

| Cutting | Temperature Range                | ±5.00 | ±10.0 | ±15.0 | ±20.0 | ±30.0 | ±50.0 |
|---------|----------------------------------|-------|-------|-------|-------|-------|-------|
| AT      | 0 ~ +50°C                        | x     | x     | x     | x     | x     | x     |
|         | -10 ~ +60°C                      |       | x     | x     | x     | x     | x     |
|         | -20 ~ +70°C                      |       |       | x     | x     | O     | x     |
|         | -30 ~ +80°C                      |       |       |       | x     | x     | O     |
|         | -40 ~ +85°C                      |       |       |       |       |       | x     |
| BT      | Within a range of ±80 ~ ±120 PPM |       |       |       |       |       |       |

|   |             |
|---|-------------|
| x | available   |
| O | recommended |

**PACKAGE DIMENSIONS (mm)**



| Dim. L              |        |
|---------------------|--------|
| HC-49U (141 Series) | 13.2mm |
| HC-49T (142 Series) | 11.2mm |

**PART NUMBER GUIDE**

| Series Number                | Frequency  | Load Capacitance   | Tolerance @ +25C  | Tolerance Over Temp ( oC )   | Operating Temp ( oC )   | Value Added  |
|------------------------------|--|--|---|--|---|--|
| 141                          | - 12.0M  | -20  | - 05  | K  | S   | - VS   |
| 141 = HC-49U<br>142 = HC-49T | See table below for standard freq. and enter here e.g. 2.048M = 2.048 MHz OR enter any desire frequency. | Enter desired capacitance here. See table below for standard load capacitance Enter SR for Series. | Blank *= ±30PPM or Fill in E.G<br>05 = ±5 PPM<br>25 = ±25 PPM<br>Avail. = ±5 ~ ±100 | Blank* = ±50 PPM<br>G = ±30 PPM<br>H = ±20 PPM<br>K = ±15 PPM<br>L = ±10 PPM<br>M = ±5 PPM<br>N = ±100 PPM | P = 0~+50<br>R = -10~+60<br>S = -20~+70<br>T = -30~+80<br>W = -40~+85 | Blank * = Standard<br>IT = Insulator Tab<br>TL = Third Lead<br>L2 = Alt. Third Lead<br>VS = Vinyl Sleeving |

**NOTE:** Deviations on all parameters available. Please consult Oscilent for details.

**DEFINITIONS:** Click on the characteristic name above for definitions of that particular characteristic.

**\*STANDARDS:** "Blank" part number selections indicate standard variables for that particular characteristic.

**PACKAGING:** Add -TR for Tape/Reel. Click [here](#) for tape/reel specifications

**STANDARD FREQUENCIES / LOAD CAPACITANCE - FOR GUIDE ONLY/ OTHER FREQ./LOADS AVAILABLE**



|   |                  |           |           |           |           |           |           |           |
|---|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 11.520  | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 11.98135  | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 12.000  | Std.             | -         | -         | -         | -         | -         | Std.      | Std.      |
| 12.000393   | -                | -         | -         | -         | -         | Std.      | -         | -         |
| 12.096  | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 12.288  | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 13.5168   | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 14.31818  | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 14.690  | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 14.7456   | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 15.000  | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 16.000  | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 16.000312   | -                | -         | -         | -         | -         | Std.      | -         | -         |
| 18.000  | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 18.432  | Std.             | -         | -         | -         | -         | Std.      | Std.      | -         |
| 19.6608   | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 20.000  | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 22.1184   | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 24.000(F)   | Std.             | -         | -         | -         | -         | -         | Std.      | -         |
| 24.00014 (F)  | -                | -         | -         | -         | -         | Std.      | -         | -         |
| 35.2512 (OT)  | -                | -         | -         | -         | -         | Std.      | -         | -         |
| 38.00053 (OT)   | -                | -         | -         | -         | -         | Std.      | -         | -         |
| 40.32 (OT)  | -                | -         | -         | -         | -         | Std.      | -         | -         |
| 48.00 (OT)  | Std.             | -         | -         | -         | -         | -         | -         | -         |
| 49.86 (OT)  | -                | -         | -         | -         | -         | -         | Std.      | -         |
| <b>FREQUENCY<br/>(MHz)</b>  | <b>Series</b>    | <b>12</b> | <b>13</b> | <b>16</b> | <b>17</b> | <b>18</b> | <b>20</b> | <b>32</b> |
|   | <b>LOAD (pF)</b> |           |           |           |           |           |           |           |
| <b>F = Fundamental   OT = 3RD Overtone</b>  |                  |           |           |           |           |           |           |           |
| <b>NOTE:</b> Other frequencies and load capacitance available. PEASE SPECIFY IN PART NUMBER GUIDE |                  |           |           |           |           |           |           |           |

Oscilent Corporation - CALL 949.252.0522

Series No.: 141 to 142

18195 East McDermott Street , Building D , Irvine , CA 92614 , USA  
 Fax: 949.252.0599 , E-Mail: Sales@Oscilent.com