AXTAL ADVANCED XTAL PRODUCTS

| Specification | AXX48 | Rev.: 2 | Date: 2014-05-09 |
|---|---|---|---|

**Type:** **Quartz Crystal Unit in package HC-48/U (with plugs)**

| Parameter | min. | typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|
| **Frequency range** | 1.0 | | 5.0 | MHz | Fundamental |
| **Crystal cut** | AT | | | | |
| **Load capacitance $C_L$** | Series or 5 pF to 50 pF | | | | |
| **Adjustment tolerance** @25°C | ± 5 to ± 50 | | | ppm | See ordering code |
| **Frequency stability** | | | | | |
| Frequency stability over temperature | ± 3 to ± 50 | | | ppm | See table 1 and ordering code |
| Operating temperature range | 0°/50° to -55°/+105° | | | °C | |
| Long term (aging) per year | | ±2 | ±3 | ppm | @ 40°C |
| **Series resonance resistance $R_1$** | | | | Ω | See chart |
| **Motional capacitance $C_1$** | | | | fF | Note 3 |
| **Static capacitance $C_0$** | | | 7 | pF | |
| **Nominal drive level** | | 100 | | µW | |
| **Drive level dependence (DLD)** | According to | | | | IEC 60444-6 |
| **Unwanted responses SF = Rspur/R1** | | | | | Note 3 |
| **Insulation resistance** | 100 | | | MΩ | 100 V DC |
| **Storage temperature range** | -55 | | +105 | °C | |
| **Enclosure (see drawing)** | HC-48/U | | | | IEC 60122-3 |
| **Pin diameter D** | 1.32 max. | | | mm | |
| **Pin length W** | 6.3 max. | | | mm | |
| **Packing** | bulk | | | | |
| **RoHS compliant** | YES | | | | |

**Notes:**

1. Terminology and test conditions are according to IEC standard IEC60122-1 or MIL-C3098
2. Measurement technique according to IEC 60444-5 or equivalent
3. On request. Please consult factory

**Table 1: Frequency stability over temperature***

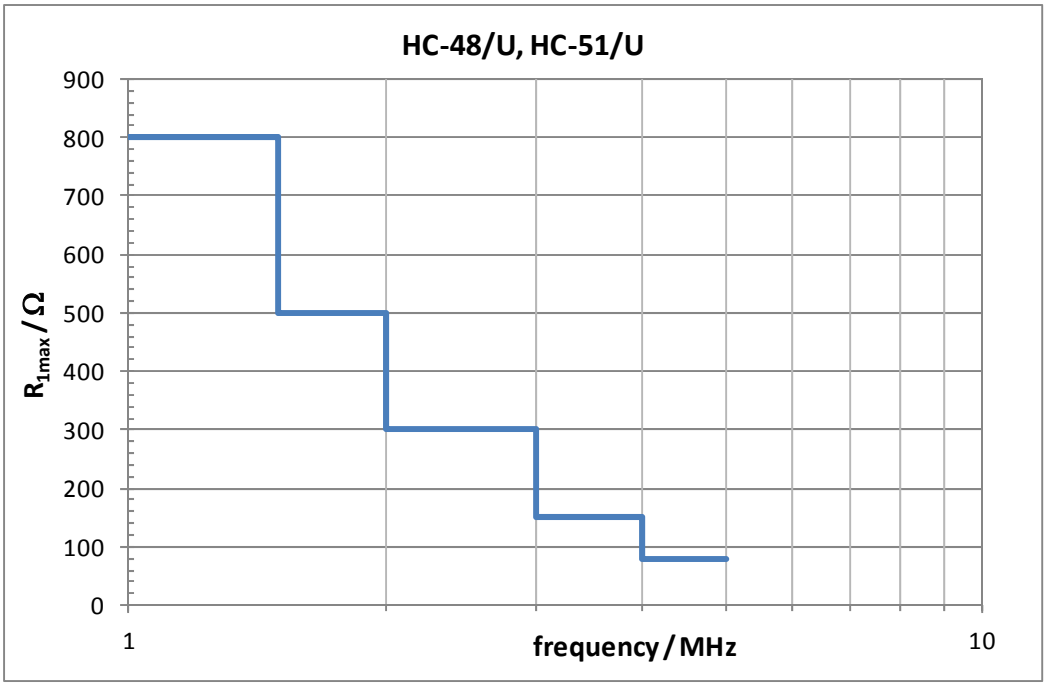
| Temperature Range [°C]* | ppm Code | ±3 03 | ±4 04 | ±5 05 | ±7 07 | ±10 10 | ±15 15 | ±20 20 | ±25 25 | ±30 30 | ±40 40 | ±50 50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 … +50 | 0A | - | - | X | X | X | X | X | X | X | X | X |
| -10 … +60 | 1B | - | - | - | - | X | X | X | X | X | X | X |
| -20 … +70 | 2C | - | - | - | - | - | X | X | X | X | X | X |
| -30 … +80 | 3E | - | - | - | - | - | - | - | X | X | X | X |
| -40 … +85 | 4F | - | - | - | - | - | - | - | - | X | X | X |
| -55 … +105 | 5G | - | - | - | - | - | - | - | - | - | O | X |

**X** = available*, **O** = available on request, **-** not available

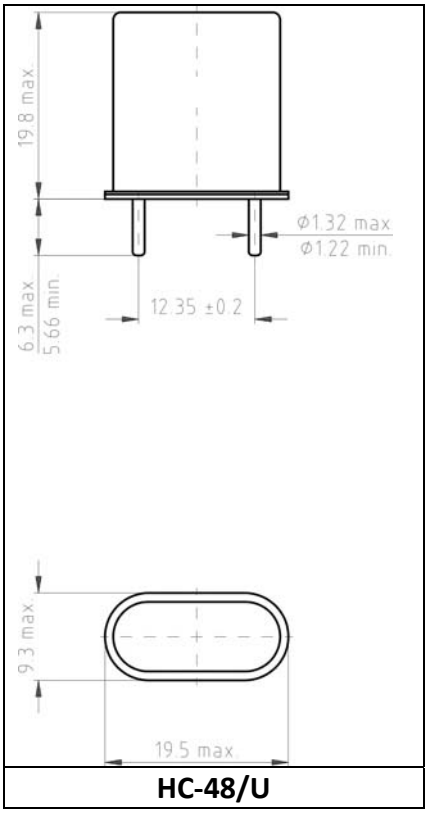
*Other temperature ranges on request

*Not all combinations may be available at all frequencies

## Maximum series resonance resistance $R_{1\,max}$ [Ω]




## Enclosure drawings




HC-48/U

## Ordering Code

| Model | Frequency | Load Cap | Mode | Adjustment | Stability | |
|---|---|---|---|---|---|---|
| AXX48 | [MHz] | [pF] or S= Series | 1 = Fund 3,5,…OT | [ppm] | [ppm] | [Code] |
| AXX48 | 1.000 | 18 | 1 | 05 | 10 | 1B |

**Example: AXX48-1.000-18-1-05-10-1B**

## Environmental conditions

| Test | IEC 60068-2 Part … | IEC 60122-1 Clause … | Test conditions |
|---|---|---|---|
| Sealing tests | 2-17 | 4.8.2 | Gross leak: Test Qc,<br>Fine leak: Test Qk |
| Solderability<br>Resistance to soldering heat | 2-20 | 4.8.3 | Test Ta (235 ± 5)°C Method 1<br>Test Tb Method 1A, 5s |
| Shock | 2-27 | 4.8.8 | Test Ea, 3 x per axes 100g, 6 ms half-sine pulse |
| Free fall | 2-32 | 4.8.9 | Test Ed procedure 1,<br>2 drops from 1m height |
| Vibration, sinusoidal | 2-6 | 4.8.7 | Test Fc, 30 min per axes,<br>10 Hz - 55 Hz 0,75mm; 55 Hz - 1 kHz, 10g |
| Endurance tests<br>- ageing<br>- extended aging | | <br>4.9.1<br>4.9.2 | <br>30 days @ 85°C<br>1000h, 2000h, 8000h @85°C |

## Revision History

| Rev. | Date [dd.mm.yyyy] | Remarks | Author | Checked |
|---|---|---|---|---|
| 1 | 15.01.2005 | First issue | BN | BN |
| 2 | 09.05.2014 | Major editorial changes, order code changed | BN | BN |