# HC/49US (AT49) MICROPROCESSOR CRYSTAL

**ABL Series**

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable

## FEATURES:
- High reliability & Low Cost
- Tight stability & extended temperature
- Proven resistance welded metal package

## APPLICATIONS:
- Home electronics
- Computers, modems, and communications
- High-precision TCXO and clock applications
- Microprocessors

## STANDARD SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>3.579545</td>
<td></td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.579545</td>
<td></td>
<td>33.999</td>
<td>MHz</td>
<td>Fundamental AT-cut (Standard)</td>
</tr>
<tr>
<td>Operation mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3rd OT AT-cut (Standard)</td>
</tr>
<tr>
<td></td>
<td>34.00</td>
<td></td>
<td>70.00</td>
<td>MHz</td>
<td>Fundamental AT-cut (See options)</td>
</tr>
<tr>
<td></td>
<td>24.01</td>
<td></td>
<td>50.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0</td>
<td>+70</td>
<td></td>
<td>°C</td>
<td>See options</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55</td>
<td>+125</td>
<td></td>
<td>°C</td>
<td>See options</td>
</tr>
<tr>
<td>Frequency Tolerance</td>
<td>-50</td>
<td>+50</td>
<td></td>
<td>ppm</td>
<td>See options</td>
</tr>
<tr>
<td>Frequency Stability over the Operating Temperature</td>
<td>-50</td>
<td>+50</td>
<td></td>
<td>ppm</td>
<td>See options</td>
</tr>
<tr>
<td>(ref. to +25°C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equivalent series resistance (R1)</td>
<td>See table 1 below</td>
<td></td>
<td></td>
<td>Ω</td>
<td></td>
</tr>
<tr>
<td>Shunt capacitance (C0)</td>
<td></td>
<td>7</td>
<td></td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Load capacitance (CL)</td>
<td>18</td>
<td></td>
<td></td>
<td>pF</td>
<td>See options</td>
</tr>
<tr>
<td>Drive Level</td>
<td>100</td>
<td>1000</td>
<td></td>
<td>µW</td>
<td></td>
</tr>
<tr>
<td>Aging @ 25°C per year</td>
<td>±5</td>
<td></td>
<td></td>
<td>ppm</td>
<td>@ 100Vdc ± 15V</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>500</td>
<td></td>
<td></td>
<td>MΩ</td>
<td></td>
</tr>
<tr>
<td>Drive Level Dependency (DLD, Minimum 7 points tested:</td>
<td></td>
<td>±10</td>
<td></td>
<td>ppm</td>
<td>Δfrequency (Max – Min)</td>
</tr>
<tr>
<td>from 1µW to 500µW)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25% of Max ESR</td>
</tr>
<tr>
<td>Max ESR in Table 1</td>
<td></td>
<td></td>
<td></td>
<td>Ω</td>
<td>ΔESR (Max – Min)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Max ESR over DLD range</td>
</tr>
</tbody>
</table>

### Table 1

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>ESR(Ω) max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.579 - 4.999 (Fund.)</td>
<td>180</td>
</tr>
<tr>
<td>5.000 - 5.999 (Fund.)</td>
<td>120</td>
</tr>
<tr>
<td>6.000 - 7.999 (Fund.)</td>
<td>100</td>
</tr>
<tr>
<td>8.000 - 8.999 (Fund.)</td>
<td>80</td>
</tr>
<tr>
<td>9.000 - 9.999 (Fund.)</td>
<td>60</td>
</tr>
<tr>
<td>10.000 - 15.999 (Fund.)</td>
<td>50</td>
</tr>
<tr>
<td>16.000 - 50.000 (Fund.)</td>
<td>40</td>
</tr>
<tr>
<td>34.000 - 70.00 (3rd O/T)</td>
<td>80</td>
</tr>
</tbody>
</table>

**REVISED: 03.27.2018**

5101 Hidden Creek Lane Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sale please visit: www.abracon.com

ABRACON IS
ISO9001-2008 CERTIFIED
HC/49US (AT49) MICROPROCESSOR CRYSTAL

ABL Series

OPTIONS AND PART IDENTIFICATION:
(Left blank if standard)

ABL - MHz - - - - - -  

Frequency in MHz
Please specify the frequency in xx.xxxxxMHz.
e.g. 14.3181MHz

Load Capacitance (pF)
Please specify CL
(Minimum 10pF) in pF or
S for series

Custom ESR if other than standard
☐: Specify a value in Ω
(e.g.: R40)

Packaging
Blank: Bulk
T: Tape & Reel
TRAY: Tray

Value Added
1 Insulator Tab
L2 Middle 3rd lead
QXX Trimmed leads
Q15 for 0.15” length

Oscillation Mode
F: Fund. AT>24MHz

Operating Temp.
A: -10°C ~ +60°C
B: -20°C ~ +70°C
C: -30°C ~ +70°C
N: -30°C ~ +85°C
D: -40°C ~ +85°C
J*: -40°C ~ +105°C
K*: -40°C ~ +125°C
L*: -55°C ~ +125°C

Freq. Tolerance
H5: ± 5 ppm
1: ± 10 ppm
7: ± 15 ppm
2: ± 20 ppm
3: ± 25 ppm
4: ± 30 ppm

Freq. Stability
U**: ± 10 ppm
G: ± 15 ppm
X: ± 20 ppm
W: ± 25 ppm
Y: ± 30 ppm
H: ± 35 ppm
Q: ± 100 ppm
R: ± 150 ppm

NOTE:
* Frequency stability ±50ppm, ±100ppm, ±150ppm only. Contact ABRACON for tighter frequency stability.
** Contact ABRACON for availability of ±10ppm with other operating temperature options.

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OUTLINE DRAWING:

<table>
<thead>
<tr>
<th>L</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5mm Min</td>
<td>Bulk</td>
</tr>
<tr>
<td>20.0 ± 0.5mm</td>
<td>Tape &amp; Reel</td>
</tr>
</tbody>
</table>

Dimensions: inch (mm)

TAPE & REEL:

T= Tape and reel (1,000pcs/reel)

Dimensions: mm

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