HC/49US (AT49) SMD LOW PROFILE CRYSTAL

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

**FEATURES:**
- Suitable for RoHS reflow
- Available for tight stability & extended temperature range

**APPLICATIONS:**
- Computers, Modems, Microprocessors
- Wireless Applications

**STANDARD SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>ABRACON P/N</th>
<th>ABLS Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>3.579545 MHz to 75 MHz</td>
<td></td>
</tr>
<tr>
<td>Operation Mode</td>
<td>AT cut (Fundamental or 3rd OT) or BT cut (See options) 3.579545MHz - 24.00MHz (Fundamental: Standard) 24.01MHz - 75.00MHz (3rd- Overtone: Standard) 24.01MHz - 50.00MHz (Fund. AT or BT: See options)</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to + 70°C (see options)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>- 55°C to + 125° C</td>
<td></td>
</tr>
<tr>
<td>Frequency Stability over the Operating Temp. (Ref to +25°C)</td>
<td>± 50 ppm max. (see options)</td>
<td></td>
</tr>
<tr>
<td>Frequency Tolerance at +25°C</td>
<td>± 5ppm ±50 ppm max. (see options)</td>
<td></td>
</tr>
<tr>
<td>Equivalent Series Resistance</td>
<td>See Table 1</td>
<td></td>
</tr>
<tr>
<td>Shunt Capacitance C₀</td>
<td>7pF max.</td>
<td></td>
</tr>
<tr>
<td>Load Capacitance C L</td>
<td>18pF (see options )</td>
<td></td>
</tr>
<tr>
<td>Drive Level</td>
<td>1 mW max., 100 μW typical</td>
<td></td>
</tr>
<tr>
<td>Aging at 25°C (first year)</td>
<td>± 5ppm max .</td>
<td></td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>500 MΩ min at 100Vdc ± 15V</td>
<td></td>
</tr>
<tr>
<td>Spurious Responses</td>
<td>-3dB max.</td>
<td></td>
</tr>
<tr>
<td>Drive level dependency (DLD )</td>
<td>from 1 μW to 500 μW (minimum 7 points tested)</td>
<td></td>
</tr>
</tbody>
</table>

**OPTIONS & PART IDENTIFICATION:**

(Left blank if standard)

- ABLS - [ ] MHz - [ ] - R [ ] [ ] - [ ] - [ ] - [ ] - [ ]

**ESR if other than STD**
- Specify a value in Ω

**Load Capacitance**
- Please specify CL (8 to 35pF) in pF or S for Series
- Please contact ABRACON for other values

**TABLE 1: STANDARD ESR**

<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>24.01 - 31.999 (3rd O/T)</td>
<td>100</td>
</tr>
<tr>
<td>32.000 - 75.000 (3rd O/T)</td>
<td>80</td>
</tr>
</tbody>
</table>

**Packaging**
- Blank Bulk
- Tape & Reel (116)

**Mode**
- F: Fund.AT for >24MHz
- FB: Fund.BT for >24MHz

**FREQ. TOLERANCE**
- HS: ± 5 ppm
- ± 10 ppm
- ± 15 ppm
- ± 20 ppm
- ± 25 ppm
- ± 30 ppm

**Freq. Stability**
- U: ± 10 ppm (*)
- ± 15 ppm (**) 
- ± 20 ppm (***)
- ± 30 ppm (****)
- ± 50 ppm (*****)
- ± 100 ppm (******)
- ± 150 ppm (*******)

**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
- JT**: -40°C to +105°C
- KT**: -40°C to +125°C
- LT**: -55°C to +125°C

**- 10 to +60° C only.**
- **Option A, B, and 0 to +70° C only.**
- **Frequency stability ±50ppm, ±100ppm, or ±150ppm only.**
- Contact ABRACON for tighter frequency stability.
- **** For Fundamental BT, frequency stability ±100ppm max. at -10°C to +60°C only.

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**ABLS**

**OUTLINE DRAWING:**

- **Dimensions:** Inches (mm)
  - Length: 0.500±0.024 (12.7±0.6)
  - Width: 0.45±0.006 (11.4±0.15)
  - Height: 0.19±0.006 (4.7±0.15)

- **Recommended land pattern**
  - Length: 0.22 (5.6)
  - Width: 0.374 (9.5)
  - Thickness: 0.083 (2.1)

**TAPE & REEL:**

- Feeding (Pull) Direction
  - Width: 0.3±0.005
  - Length: 1.75±0.1
  - Diameter: 1.5
  - Height: 0.5±0.1

- **Dimensions:** mm

**REFLOW PROFILE:**

- Temperature (°C)
  - Pre-Heat: 25°C
  - Reflow: 260°C
  - Cool

- Time (seconds)
  - 10s max. 1 time at +260°C±5°C
  - 60-120s
  - 60-90s

**ATTENTION:** Abracon Corporation’s products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon’s products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon Corporation is required. Please contact Abracon Corporation for more information.

**Need a test socket for the ABLS series?** To view compatible PRECISION TEST & BURN-IN SOCKETS for these parts, click hereP/N: AXS-1147-02-02