Miniature Ceramic Resonator

**AWSCR-CRLB**

4.5 x 2.0 x 1.0 mm
RoHS/RoHS II Compliant
Pb in ceramic, exemption (7c-I)
This product is not Moisture Sensitive - MSL = 1

**Features**

- Industry standard footprint
- Low resonance impedance
- Built-in capacitance options
- Wide operating temperatures in extended industry range

**Applications**

- Metering systems
- Remote control
- Microprocessor
- Industrial control
- Electric appliances

**Electrical Specifications**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Min</th>
<th>Typ.</th>
<th>Max</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillating Frequency (Fosc)</td>
<td>4.000</td>
<td>12.000</td>
<td>MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Tolerance</td>
<td>-0.5</td>
<td>0.5</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resonant Impedance (Ro)</td>
<td></td>
<td></td>
<td>40</td>
<td>Ω</td>
<td></td>
</tr>
<tr>
<td>Standard Built-in Capacitance (C1=C2)</td>
<td>15</td>
<td></td>
<td>pF</td>
<td></td>
<td>04.00 – 12.00 MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Tol 1pF ± 20%)</td>
</tr>
<tr>
<td>Temperature Coefficient of Oscillation Frequency (%) max.</td>
<td>-0.4</td>
<td>0.4</td>
<td>%</td>
<td></td>
<td>(4.00 - 8.00 MHz) Oscillator Frequency drift</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-40 °C to +125 °C)</td>
</tr>
<tr>
<td></td>
<td>-0.2</td>
<td>0.2</td>
<td>%</td>
<td></td>
<td>(8.01 - 12.00 MHz) Oscillator Frequency drift</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-40 °C to +125 °C)</td>
</tr>
<tr>
<td>Withstanding Voltage</td>
<td>50</td>
<td></td>
<td>V</td>
<td>DC, 1 min max.</td>
<td></td>
</tr>
<tr>
<td>Voltage Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) D.C. Voltage</td>
<td>6</td>
<td></td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) A.C. Voltage</td>
<td>15</td>
<td></td>
<td>Vp-p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation Resistance (Ri)</td>
<td>500</td>
<td></td>
<td>MΩ</td>
<td>10V, 1 min.</td>
<td></td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>-40</td>
<td>+125</td>
<td>°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55</td>
<td>+125</td>
<td>°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aging Rate max (Fosc) * For 10 years</td>
<td>-0.2</td>
<td>0.2</td>
<td>%</td>
<td>From Initial value</td>
<td></td>
</tr>
</tbody>
</table>

* Components shall be left in a chamber of +85 °C ± 2 °C for 1000 hours, then measured after leaving in natural condition for 1 hour.
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**Options and Part Identification**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Size (mm)</th>
<th>Frequency Band</th>
<th>Operating Temperature</th>
<th>Built-in Cap</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.000 - 12.000</td>
<td>CR = 4.5 x 2.0</td>
<td>L = Lower Band</td>
<td>B = -40 °C to 125 °C</td>
<td>15 pF (Standard)</td>
<td>T3 = 3000 pcs/reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10, 22, 30, 33, 39, 47 pF (Other)</td>
<td></td>
</tr>
</tbody>
</table>

**Test Circuit and Conditions**

Parts shall be tested under the condition (Temp: 20 °C ± 15 °C, Humidity: 65 ± 20 % R.H.) unless the standard condition (Temp: 25 °C ± 3 °C, Humidity: 65 ± 10 % R.H.) is regulated to measure.

IC: 1/6TC4069UBP×2
X: Ceramic resonator
C1, C2: 15 (1 ± 20%) PF
other (10/22/30/33/39/47pF)
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Outline Dimensions

Unit: mm

①INPUT ②GROUND ③OUTPUT
*: EIAJ MONTHLY CODE
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**Recommended Land Pattern**

![Recommended Land Pattern Diagram]

Unit: mm

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**Recommended Reflow Profile**

![Recommended Reflow Profile Diagram]

Peak: 260°C max  
250°C  
10s max

Pre-heating  
100°C  
30s min  
within 80-120s.

230°C  
150°C

2.6±0.2

0.8  0.8  0.8

1.5  1.5

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Packaging

T3: 3000 pcs/reel

Reel Dimension

<table>
<thead>
<tr>
<th>φA</th>
<th>φB</th>
<th>W</th>
<th>T</th>
<th>Pieces per reel</th>
<th>Carrier tape size</th>
</tr>
</thead>
<tbody>
<tr>
<td>180 ± 3</td>
<td>60 min</td>
<td>12.4 min</td>
<td>19.4 max</td>
<td>3000 typ.</td>
<td>12</td>
</tr>
</tbody>
</table>

Packaging Sketch

Blank Pocket 10 Pitches
Loaded Pocket
Blank Pocket 10 Pitches
Leader 200mm Max
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Packaging

Test Condition for Peel-Off Strength

Caution

1. Do not apply excess mechanical stress to the component and terminals during soldering. Do not use this product if it is bent or damaged.

2. Do not clean or wash the component for it is not hermetically sealed.

3. Do not use a strong acidity flux with more than 0.2 wt% chlorine content during soldering.

4. Do not place or use the item close to fire.

5. Please ensure the component is thoroughly evaluated in your application circuit as the specification mentions the quality of the component as a single unit.

6. Expiry date (Shelf life) of the products is 12 months after the date of delivery under the conditions of a sealed and an unopened package. Please use the products within 12 months after delivery. If the item is stored for more than 12 months, use caution before use as the item may be degraded in the solderability or develop rust. Please confirm solderability and characteristics for the products regularly.

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