SAW Components

SAW resonator
Short range devices

Series/type: R822
Ordering code: B39321R 822H210
Date: July 09, 2013
Version: 2.0
SAW Components

SAW resonator 319.508 MHz

Data sheet

Application

- 1-port resonator
- Provides reliable, fundamental mode, quartz frequency stabilization i.e. in transmitters or local oscillators

Features

- Package size 5.0 x 3.5 x 1.45 mm³
- Package code QCC4A
- RoHS compatible
- Approximate weight 0.1 g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Passivation layer Elpas
- AEC-Q200 qualified component family
- Electrostactic Sensitive Device (ESD)

Pin configuration

- 1  Input
- 3  Output, grounded in 1-port conf.
- 2,4 Ground (case)

Please read cautions and warnings and important notes at the end of this document.
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Characteristics
Reference temperature: \( T_A = 25 \, ^\circ\text{C} \)
Terminating source impedance: \( Z_S = 50 \, \Omega \)
Terminating load impedance: \( Z_L = 50 \, \Omega \)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>min.</th>
<th>typ.</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Center frequency</strong>(^1)</td>
<td>( f_C )</td>
<td>319.433</td>
<td>319.508</td>
</tr>
<tr>
<td><strong>Minimum insertion attenuation</strong>(^)</td>
<td>( \alpha_{\text{min}} )</td>
<td>—</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Unloading quality factor</strong></td>
<td>( Q_U )</td>
<td>8500</td>
<td>11000</td>
</tr>
<tr>
<td><strong>Ageing of ( f_C )</strong></td>
<td>—</td>
<td>—</td>
<td>—50/+50 ppm</td>
</tr>
</tbody>
</table>

Equivalent circuit elements

<table>
<thead>
<tr>
<th>Circuit element</th>
<th>—</th>
<th>2.145</th>
<th>—</th>
<th>fF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motional capacitance ( C_1 )</td>
<td>—</td>
<td>115.70</td>
<td>—</td>
<td>( \mu)H</td>
</tr>
<tr>
<td>Motional inductance ( L_1 )</td>
<td>—</td>
<td>19</td>
<td>25</td>
<td>( \Omega )</td>
</tr>
<tr>
<td>Motional resistance ( R_1 )</td>
<td>—</td>
<td>2.70</td>
<td>—</td>
<td>pF</td>
</tr>
</tbody>
</table>

Temperature coefficient of frequency\(^3\)

| Temperature coefficient of frequency \( T_{Cf} \) | — | —0.032 | — | ppm/K\(^2\) |

Maximum ratings

<table>
<thead>
<tr>
<th>Maximum ratings</th>
<th>—45/+125</th>
<th>—45/+125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operable temperature range ( T )</td>
<td>( ^\circ\text{C} )</td>
<td>( ^\circ\text{C} )</td>
</tr>
<tr>
<td>Storage temperature range ( T_{\text{stg}} )</td>
<td>—45/+125</td>
<td>—45/+125</td>
</tr>
<tr>
<td>DC voltage ( V_{\text{DC}} )</td>
<td>12</td>
<td>V</td>
</tr>
<tr>
<td>Source power ( P_S )</td>
<td>0</td>
<td>dBm</td>
</tr>
</tbody>
</table>

1) Center frequency is defined as maximum of the real part of the admittance.
2) If used in two port configuration (pin 1 - input, pin 3 - output) \( C_0 \) is reduced by approx. 0.3 pF.
3) Temperature dependence of \( f_C \): \( f_C(T_A) = f_C(T_0) (1 + T_{Cf}(T_A - T_0)^2) \)

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<tbody>
<tr>
<td>Ordering code</td>
<td>B39321R 822H210</td>
</tr>
<tr>
<td>Marking and package</td>
<td>C61157-A7-A86</td>
</tr>
<tr>
<td>Packaging</td>
<td>F61074-V8175-Z000</td>
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<tr>
<td>Date codes</td>
<td>L_1126</td>
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<tr>
<td>Soldering profile</td>
<td>S_6001</td>
</tr>
<tr>
<td>RoHS compatible</td>
<td>RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8th, 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment (&quot;Directive&quot;) with due regard to the application of exemptions as per Annex III of the Directive in certain cases.</td>
</tr>
</tbody>
</table>

Coils

See Inductor pdf-catalog
http://www.tdk.co.jp/tefe02/coil.htm#aname1
and Data Library for circuit simulation
http://www.tdk.co.jp/etvcl/index.htm

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