SAW Components

SAW resonator
Short range devices

Series/type: R821
Ordering code: B39321R 821H210

Date: June 17, 2013
Version: 2.0
SAW Components
SAW resonator

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
- Electrostatic Sensitive Device (ESD)

Pin configuration
- 1: Input
- 3: Output, grounded in 1-port conf.
- 2,4: Ground (case)
SAW Components

SAW resonator 315.00 MHz

Data sheet

Characteristics

Reference temperature: \( T_A = 25 \, ^\circ C \)
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>Center frequency(^1)</td>
<td>( f_C )</td>
<td>314.925</td>
<td>315.000</td>
</tr>
<tr>
<td>Minimum insertion attenuation</td>
<td>( \alpha_{\text{min}} )</td>
<td>—</td>
<td>1.5</td>
</tr>
<tr>
<td>Unloaded quality factor</td>
<td>( Q_U )</td>
<td>9400</td>
<td>13000</td>
</tr>
<tr>
<td>Ageing of ( f_C )</td>
<td>—</td>
<td>—</td>
<td>—50/+50 ppm</td>
</tr>
</tbody>
</table>

Equivalent circuit elements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>( C_1 )</th>
<th>( 2.136 )</th>
<th>( \mu \text{F} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motional capacitance</td>
<td>( L_1 )</td>
<td>119.5</td>
<td>( \mu \text{H} )</td>
</tr>
<tr>
<td>Motional inductance</td>
<td>( R_1 )</td>
<td>18</td>
<td>25 ( \Omega )</td>
</tr>
<tr>
<td>Motional resistance</td>
<td>( C_0 )</td>
<td>2.8</td>
<td>— ( \text{pF} )</td>
</tr>
</tbody>
</table>

Temperature coefficient of frequency\(^3\)

| Parameter                  | \( TC_f \) | —       | —0.032 | — ppm/K\(^2\) |

Turnover temperature

| Parameter                  | \( T_0 \) | 20      | —      | 50 \( ^\circ C \) |

1) Center frequency is defined as maximum of the real part of the admittance.
2) If used in two port configuration (pin 2 - input, pin 5 - output) \( C_0 \) is reduced by approx. 0.3 pF.
3) Temperature dependence of \( f_C \): \( f_C(T_A) = f_C(T_0) \left(1 + TC_f(T_A - T_0)^2\right)\)

Maximum ratings

| Parameter                  | \( T \) | \( -45/+125 \) | \( T_{\text{stg}} \) | \( -45/+125 \) | \( V_{\text{DC}} \) | 12 | \( V \) | \( P_S \) | 0 | dBm |

Please read cautions and warnings and important notes at the end of this document.
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<tr>
<td><strong>Ordering code</strong></td>
<td>B39321R 821H210</td>
</tr>
<tr>
<td><strong>Marking and package</strong></td>
<td>C61157-A7-A86</td>
</tr>
<tr>
<td><strong>Packaging</strong></td>
<td>F61074-V8175-Z000</td>
</tr>
<tr>
<td><strong>Date codes</strong></td>
<td>L_1126</td>
</tr>
<tr>
<td><strong>Soldering profile</strong></td>
<td>S_6001</td>
</tr>
<tr>
<td><strong>RoHS compatible</strong></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>
<tr>
<td><strong>Coils</strong></td>
<td>See Inductor pdf-catalog <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> and Data Library for circuit simulation <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a></td>
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