SAW Components

SAW resonator

Short range devices

Series/type: R860
Ordering code: B39431R 860H210
Date: January 31, 2013
Version: 2.2
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SAW resonator

R860

433.92 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 1.5 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.
SAW Components

SAW resonator

Data sheet

**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>
<th>MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center frequency(^1)</td>
<td>( f_C )</td>
<td>433.870</td>
<td>433.920</td>
<td>433.970</td>
</tr>
<tr>
<td>Minimum insertion attenuation</td>
<td>( \alpha_{\text{min}} )</td>
<td>—</td>
<td>1.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Unloaded quality factor</td>
<td>( Q_U )</td>
<td>7500</td>
<td>11500</td>
<td>—</td>
</tr>
<tr>
<td>Ageing of ( f_C )</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>–50/+50</td>
</tr>
<tr>
<td>Equivalent circuit elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motional capacitance</td>
<td>( C_1 )</td>
<td>—</td>
<td>2.13</td>
<td>—</td>
</tr>
<tr>
<td>Motional inductance</td>
<td>( L_1 )</td>
<td>—</td>
<td>63.2</td>
<td>—</td>
</tr>
<tr>
<td>Motional resistance</td>
<td>( R_1 )</td>
<td>—</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>Parallel capacitance(^2)</td>
<td>( C_0 )</td>
<td>—</td>
<td>2.5</td>
<td>—</td>
</tr>
<tr>
<td>Temperature coefficient of frequency(^3)</td>
<td>( T_{Cf} )</td>
<td>—</td>
<td>–0.032</td>
<td>—</td>
</tr>
<tr>
<td>Turnover temperature</td>
<td>( T_0 )</td>
<td>5</td>
<td>—</td>
<td>25</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 \( f_C \): \( f_C(T_A) = f_C(T_0) \left(1 + T_{Cf}(T_A - T_0)^2\right)\)

**Maximum ratings**

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

<table>
<thead>
<tr>
<th>Type</th>
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<td>Ordering code</td>
<td>B39431R 860H210</td>
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<td>Marking and package</td>
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<td>Date codes</td>
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<td>Soldering profile</td>
<td>S_6001</td>
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