SAW Components

SAW Tx Filter
Automotive Telematics

Series/type: B4332
Ordering code: B39252B4332P810
Date: January 28, 2015
Version: 2.2
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SAW Components B4332

SAW Tx Filter 2535.00 MHz

Design goal

Application

- Low-loss RF filter for WCDMA/LTE band VII systems, transmit path (TX)
- No matching network required for operation at 50 Ω
- Usable passband 70 MHz

Features

- Package size 1.4 x 1.1 x 0.4 mm³
- Package code QCS5P
- RoHS compatible
- Approximate weight 0.003 g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- AEC-Q200 qualified component family (operable temperature range -40°C to +85°C)
- Electrostatic Sensitive Device (ESD)

Pin configuration

- 1 Input
- 4 Output
- 2,3,5 To be grounded

Please read cautions and warnings and important notes at the end of this document.
**SAW Components**

**SAW Tx Filter**

**B4332**

**2535.00 MHz**

**Design goal**

**Characteristics**

Temperature range for specification: \( T = -30 \, ^\circ C \) to \( +85 \, ^\circ C \)

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. @ 25 °C</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal frequency</strong> ( f_c )</td>
<td>—</td>
<td>2535.00</td>
<td>—</td>
</tr>
<tr>
<td><strong>Maximum insertion attenuation</strong> ( \alpha_{\text{max}} )</td>
<td>—</td>
<td>1.5</td>
<td>2.4</td>
</tr>
<tr>
<td>2500.0 ... 2570.0 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Amplitude ripple</strong> ( \Delta \alpha )</td>
<td>—</td>
<td>0.7</td>
<td>1.4</td>
</tr>
<tr>
<td>2500.0 ... 2570.0 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VSWR</strong></td>
<td>—</td>
<td>1.8</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Attenuation</strong> ( \alpha )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1565.0 ... 1607.0 MHz</td>
<td>26</td>
<td>29</td>
<td>—</td>
</tr>
<tr>
<td>2400.0 ... 2450.0 MHz</td>
<td>21</td>
<td>26</td>
<td>—</td>
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<tr>
<td>2620.0 ... 2690.0 MHz</td>
<td>30</td>
<td>39</td>
<td>—</td>
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<tr>
<td>5000.0 ... 5140.0 MHz</td>
<td>44</td>
<td>53</td>
<td>—</td>
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<tr>
<td>7500.0 ... 7710.0 MHz</td>
<td>16</td>
<td>26</td>
<td>—</td>
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SAW Components | B4332
---|---
**SAW Tx Filter** | **2535.00 MHz**

### Design goal

### Maximum ratings

<table>
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<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
<th>Value</th>
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<tr>
<td>Operable temperature range</td>
<td>( T )</td>
<td>°C</td>
<td>-40/+85</td>
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<tr>
<td>Storage temperature range</td>
<td>( T_{stg} )</td>
<td>°C</td>
<td>-40/+85</td>
</tr>
<tr>
<td>DC voltage</td>
<td>( V_{DC} )</td>
<td>V</td>
<td>0</td>
</tr>
<tr>
<td>Input power at continuous wave</td>
<td>( P_{IN} )</td>
<td>dBm</td>
<td>15</td>
</tr>
</tbody>
</table>

Please read cautions and warnings and important notes at the end of this document.
Design goal

**Frequency response** (narrowband)

![Narrowband Frequency Response](chart1.png)

**Frequency response** (wideband)

![Wideband Frequency Response](chart2.png)
ESD protection of SAW filters

SAW filters are Electro Static Discharge sensitive devices. To reduce the probability of damages caused by ESD, special matching topologies have to be applied.

In general, “ESD matching” has to be ensured at that filter port, where electrostatic discharge is expected.

Electrostatic discharges predominantly appear at the antenna input of RF receivers. Therefore only the input matching of the SAW filter has to be designed to short circuit or to block the ESD pulse.

Below three figures show recommended “ESD matching” topologies.

For wideband filters the high-pass ESD matching structure needs to be at least of 3rd order to ensure a proper matching for any impedance value of antenna and SAW filter input. The required component values have to be determined from case to case.

For further information, please refer to EPCOS Application report: “ESD protection for SAW filters”.
This report can be found under www.epcos.com/rke. Click on “Applications Notes”.
## References

<table>
<thead>
<tr>
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<td>Soldering profile</td>
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<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>
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<td>Moldability</td>
<td>Before using in overmolding environment, please contact your EPCOS sales office.</td>
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<td>Matching coils</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> for a large variety of matching coils.</td>
</tr>
</tbody>
</table>

For further information please contact your local EPCOS sales office or visit our webpage at [www.epcos.com](http://www.epcos.com).

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