SAW Components

SAW filter
Short range devices

**Series/type:** B3722
**Ordering code:** B39321B3722U410

Date: December 10, 2012
Version: 2.6
SAW Components

SAW filter

Data sheet

Application

- Low-loss RF filter for remote control receivers
- No matching network required for operation at 50 Ω

Features

- Package size 3.0 x 3.0 x 1.1 mm³
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 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

- 2 Input
- 5 Output
- 1,3,4,6 Ground (case)
SAW Components

SAW filter 315.00 MHz

Data sheet

Characteristics

Temperature range for specification: $T = \text{–}40 \, ^\circ\text{C to} +105 \, ^\circ\text{C}$
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. @ 25 °C</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center frequency $f_C$</td>
<td>—</td>
<td>315.00</td>
<td>—</td>
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<tr>
<td>Maximum insertion attenuation $\alpha_{\text{max}}$</td>
<td>—</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Amplitude ripple (p-p) $\Delta \alpha$</td>
<td>—</td>
<td>0.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Input VSWR</td>
<td>—</td>
<td>1.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Output VSWR</td>
<td>—</td>
<td>1.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Attenuation $\alpha$</td>
<td>—</td>
<td>—</td>
<td>dB</td>
</tr>
<tr>
<td>270.00 ... 286.00 MHz</td>
<td>55</td>
<td>60</td>
<td>—</td>
</tr>
<tr>
<td>293.00 ... 293.90 MHz</td>
<td>53</td>
<td>58</td>
<td>—</td>
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<tr>
<td>304.00 ... 304.60 MHz</td>
<td>47</td>
<td>52</td>
<td>—</td>
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<tr>
<td>325.40 ... 326.00 MHz</td>
<td>26</td>
<td>31</td>
<td>—</td>
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<tr>
<td>336.10 ... 337.00 MHz</td>
<td>50</td>
<td>55</td>
<td>—</td>
</tr>
<tr>
<td>357.50 ... 358.70 MHz</td>
<td>55</td>
<td>60</td>
<td>—</td>
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### Maximum ratings

<table>
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<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
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<tr>
<td>Operable temperature range</td>
<td>$T$</td>
<td>$-45/125$</td>
<td>°C</td>
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<tr>
<td>Storage temperature range</td>
<td>$T_{stg}$</td>
<td>$-45/125$</td>
<td>°C</td>
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<tr>
<td>DC voltage</td>
<td>$V_{DC}$</td>
<td>6</td>
<td>V</td>
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<tr>
<td>Source power</td>
<td>$P_S$</td>
<td>13</td>
<td>dBm</td>
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</table>

Source impedance 50 Ω
SAW Components
B3722
SAW filter
315.00 MHz

Transfer function

Transfer function (wideband)
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.

Fig. 1 MLC varistor plus ESD matching

In cases where minor ESD occur, following simplified “ESD matching” topologies can be used alternatively.

Fig. 2 Suppressor diode plus ESD matching

Fig. 3 3rd order high-pass structure for basic ESD protection

In all three figures the shunt inductor Lp2 could be replaced by a shorted microstrip with proper length and width. If this configuration is possible depends on the operating frequency and available pcb space.

Effectiveness of the applied ESD protection has to be checked according to relevant industry standards or customer specific requirements

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”.

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

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<td>Ordering code</td>
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| S-parameters | B3722_NB.s2p, B3722_WB.s2p  
see file header for port/pin assignment table |
| Soldering profile | S_6001 |
| RoHS compatible | 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 ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases. |
| Matching 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/etycl/index.htm |

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