



## SAW Components

### SAW filter

Base-station RF

|                       |                        |
|-----------------------|------------------------|
| <b>Series/type:</b>   | <b>B5109</b>           |
| <b>Ordering code:</b> | <b>B39172B5109U410</b> |
| <b>Date:</b>          | December 23, 2008      |
| <b>Version:</b>       | 2.0                    |



## SAW Components

B5109

### SAW filter

1732.50 MHz

#### Data sheet



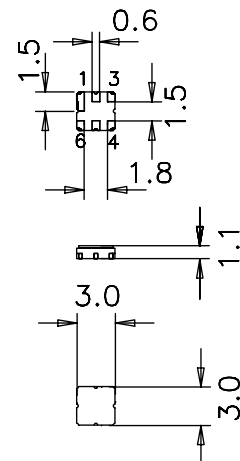
#### Application

- Low-loss base-station RF filter
- Low amplitude ripple
- No matching required for operation at 50Ω
- Usable passband 45 MHz



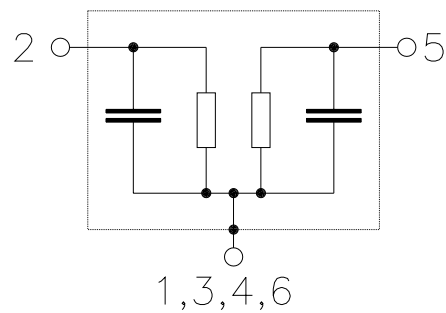
#### Features

- Package size 3.0 x 3.0 x 1.1 mm<sup>3</sup>
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**



#### Pin configuration

- 2 Input unbalanced
- 5 Output unbalanced
- 1,3,4,6 To be grounded





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#### Characteristics

Temperature range for specification:  $T = -40\text{ °C to }+85\text{ °C}$   
Terminating source impedance:  $Z_S = 50\ \Omega$   
Terminating load impedance:  $Z_L = 50\ \Omega$

|                                                                      |                                                             | min. | typ.<br>@ 25 °C | max.  |     |
|----------------------------------------------------------------------|-------------------------------------------------------------|------|-----------------|-------|-----|
| <b>Center frequency</b>                                              | $f_C$                                                       | —    | 1732.50         | —     | MHz |
| <b>Minimum insertion attenuation</b>                                 | $\alpha_{\min}$                                             |      |                 |       |     |
|                                                                      | $f_C \pm 22.5\text{ MHz}$                                   | —    | 1.7             | 2.5   | dB  |
| <b>Maximum insertion attenuation</b>                                 | $\alpha_{\max}$                                             |      |                 |       |     |
|                                                                      | $f_C \pm 22.5\text{ MHz}$                                   | —    | 2.2             | 3.5   | dB  |
| <b>Passband width</b>                                                |                                                             |      |                 |       |     |
|                                                                      | $\alpha_{\text{rel}} \leq 1.8\text{ dB}$ $B_{1.8\text{dB}}$ | 45   | 62              | —     | MHz |
| <b>Amplitude ripple (p-p)</b>                                        | $\Delta\alpha$                                              |      |                 |       |     |
|                                                                      | $f_C \pm 22.5\text{ MHz}$                                   | —    | 0.5             | 1.8   | dB  |
| <b>VSWR</b>                                                          |                                                             |      |                 |       |     |
| Input                                                                | $f_C \pm 22.5\text{ MHz}$                                   | —    | 1.7:1           | 2.0:1 |     |
| Output                                                               | $f_C \pm 22.5\text{ MHz}$                                   | —    | 1.5:1           | 2.0:1 |     |
| <b>Relative attenuation (relative to <math>\alpha_{\min}</math>)</b> | $\alpha_{\text{rel}}$                                       |      |                 |       |     |
| 10 ... 1680 MHz                                                      |                                                             | 20   | 23              | —     | dB  |
| 1680 ... 1690 MHz                                                    |                                                             | 4    | 10              | —     | dB  |
| 1690 ... 1694 MHz                                                    |                                                             | 1.5  | 6.0             | —     | dB  |
| 1771 ... 1778 MHz                                                    |                                                             | 1.5  | 9.5             | —     | dB  |
| 1778 ... 1785 MHz                                                    |                                                             | 5    | 22              | —     | dB  |
| 1785 ... 1805 MHz                                                    |                                                             | 10   | 28              | —     | dB  |
| 1805 ... 1850 MHz                                                    |                                                             | 25   | 28              | —     | dB  |
| 1850 ... 1880 MHz                                                    |                                                             | 30   | 33              | —     | dB  |
| 1880 ... 3200 MHz                                                    |                                                             | 20   | 27              | —     | dB  |
| 3200 ... 5200 MHz                                                    |                                                             | 4    | 7               | —     | dB  |

**SAW Components****B5109****SAW filter****1732.50 MHz****Data sheet****Maximum ratings**

|                            |                  |                   |     |                           |
|----------------------------|------------------|-------------------|-----|---------------------------|
| Operable temperature range | T                | −40/+85           | °C  |                           |
| Storage temperature range  | T <sub>stg</sub> | −40/+85           | °C  |                           |
| DC voltage                 | V <sub>DC</sub>  | 0                 | V   |                           |
| ESD voltage                | V <sub>ESD</sub> | 50 <sup>1)</sup>  | V   | machine model, 1 pulse    |
|                            | V <sub>ESD</sub> | 225 <sup>2)</sup> | V   | human body model, 1 pulse |
| Input power                |                  |                   |     |                           |
| 1710 ... 1755 MHz          | P <sub>IN</sub>  | 10                | dBm | CW                        |

<sup>1)</sup> acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulse.

<sup>2)</sup> acc. to JESD22-A114B (human body model), 1 negative & 1 positive pulse.



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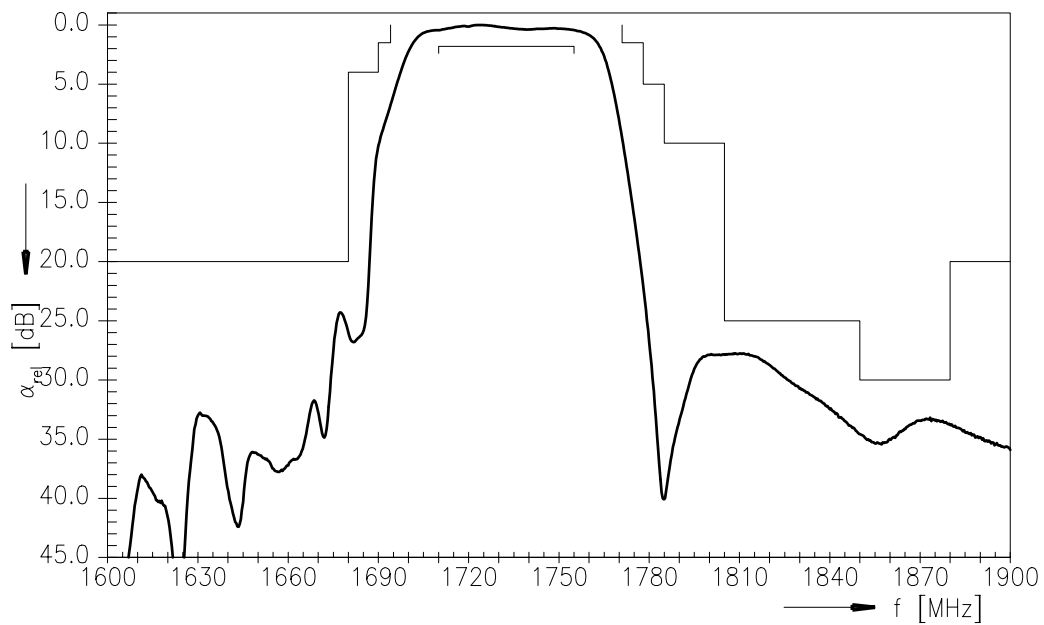
SAW filter

1732.50 MHz

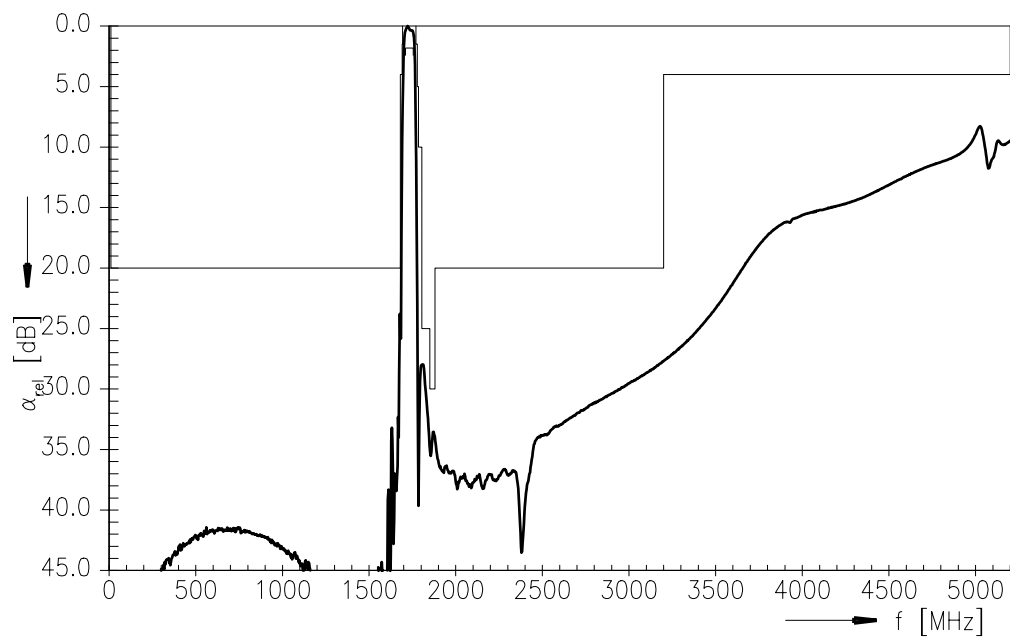
Data sheet



### Transfer function



### Transfer function (wideband)



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



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## SAW filter

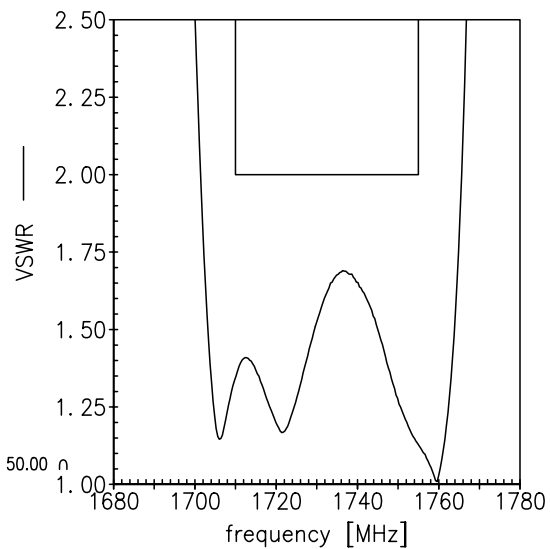
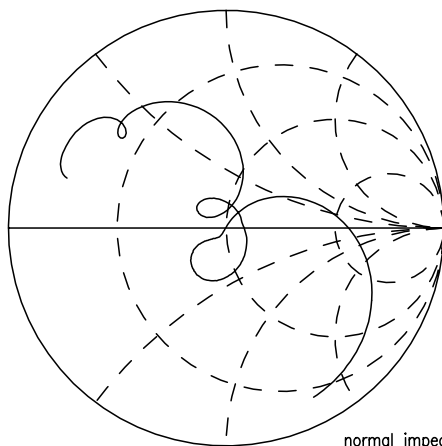
1732.50 MHz

Data sheet

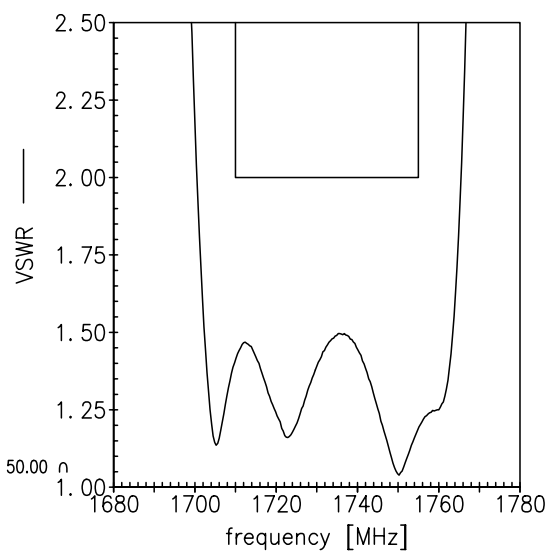
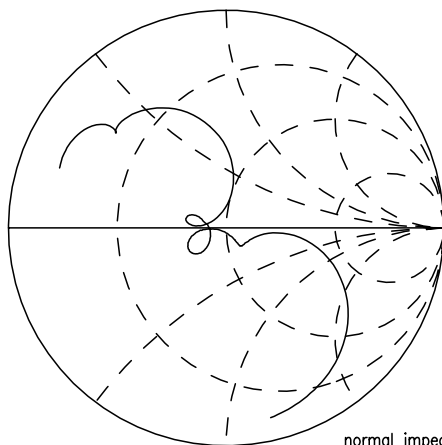


Smith charts

$S_{11}$  function



$S_{22}$  function



**SAW Components****B5109****SAW filter****1732.50 MHz**

Data sheet

**References**

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>                | B5109                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Ordering code</b>       | B39172B5109U410                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Marking and package</b> | C61157-A7-A67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Packaging</b>           | F61074-V8168-Z000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Date codes</b>          | L_1126                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>S-parameters</b>        | B5109_NB.s2p<br>B5109_WB.s2p<br>See file header for port/pin assignment table                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Soldering profile</b>   | S_6001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>RoHS compatible</b>     | defined as compatible with the following documents:<br>"DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment." |

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