



## SAW Components

### SAW filter

GPS

|                       |                         |
|-----------------------|-------------------------|
| <b>Series/type:</b>   | <b>B9415</b>            |
| <b>Ordering code:</b> | <b>B39162B9415K610</b>  |
| <b>Date:</b>          | <b>January 23, 2009</b> |
| <b>Version:</b>       | <b>2.3</b>              |



## SAW Components

B9415

### SAW filter

1575.42 MHz

#### Data sheet



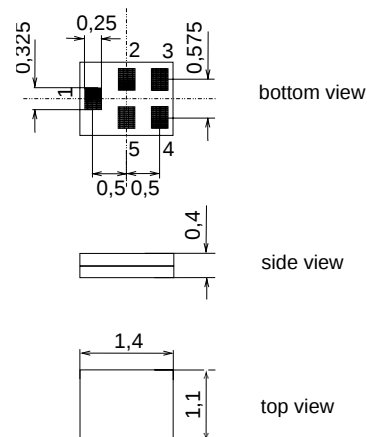
#### Application

- Low-loss RF filter for mobile telephone  
GPS systems
- Filter impedance 50  $\Omega$
- Unbalanced to unbalanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 2.0 MHz



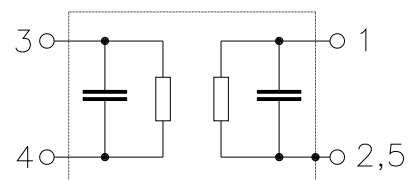
#### Features

- Package size 1.4 x 1.1 x 0.4 mm<sup>3</sup>
- Package code QCS5U
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**



#### Pin configuration

- 1 Input unbalanced
- 4 Output unbalanced
- 2,3,5 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>              | $f_C$           | —    | 1575.42         | —                 | MHz |
| <b>Maximum insertion attenuation</b> | $\alpha_{\max}$ |      |                 |                   |     |
| 1574.42 ... 1576.42 MHz              |                 | —    | 0.6             | 1.0 <sup>1)</sup> | dB  |
| <b>Amplitude ripple (p-p)</b>        | $\Delta\alpha$  |      |                 |                   |     |
| 1574.42 ... 1576.42 MHz              |                 | —    | 0.0             | 0.3               | dB  |
| <b>Input VSWR</b>                    |                 |      |                 |                   |     |
| 1574.42 ... 1576.42 MHz              |                 | —    | 1.2             | 1.6 <sup>2)</sup> |     |
| <b>Output VSWR</b>                   |                 |      |                 |                   |     |
| 1574.42 ... 1576.42 MHz              |                 | —    | 1.2             | 1.6 <sup>3)</sup> |     |
| <b>Attenuation</b>                   | $\alpha$        |      |                 |                   |     |
| 500.0 ... 894.0 MHz                  |                 | 16   | 18              | —                 | dB  |
| 894.0 ... 1500.0 MHz                 |                 | 15   | 17              | —                 | dB  |
| 1650.0 ... 4000.0 MHz                |                 | 17   | 19              | —                 | dB  |
| 4000.0 ... 6000.0 MHz                |                 | 15   | 20              | —                 | dB  |

1) 0.9dB max. at -30 °C ... 75 °C

2) 1.5 max. at -30 °C ... 75 °C

3) 1.5 max. at -30 °C ... 75 °C



|                       |                    |
|-----------------------|--------------------|
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| <b>SAW filter</b>     | <b>1575.42 MHz</b> |
| <b>Data sheet</b>     | <b>SMD</b>         |

#### 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>  | 3                | V   |                               |
| ESD voltage                | V <sub>ESD</sub> | 50 <sup>1)</sup> | V   | machine model, 10 pulses      |
| Input power at             |                  |                  |     | source/load impedance 50Ω/50Ω |
| 1574.42 ... 1576.42 MHz    | P <sub>IN</sub>  | 10               | dBm | cw                            |
| 2400 ... 2483.5 MHz        | P <sub>IN</sub>  | 20               | dBm | cw                            |
| 824...960, 1710...2170 MHz | P <sub>IN</sub>  | 25               | dBm | cw                            |

<sup>1)</sup> acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



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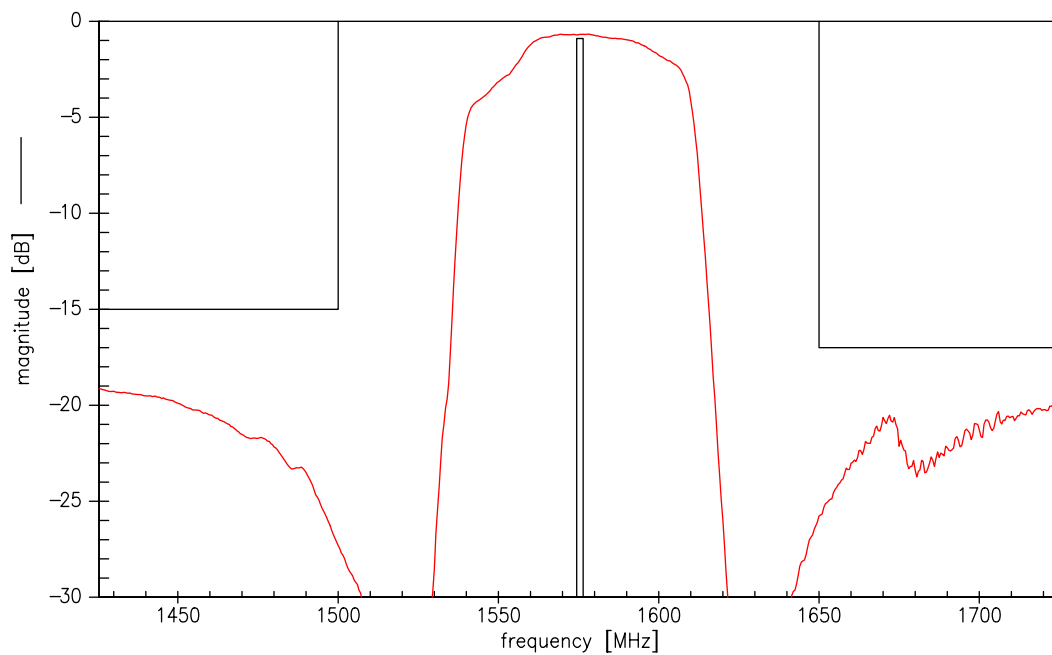
SAW filter

1575.42 MHz

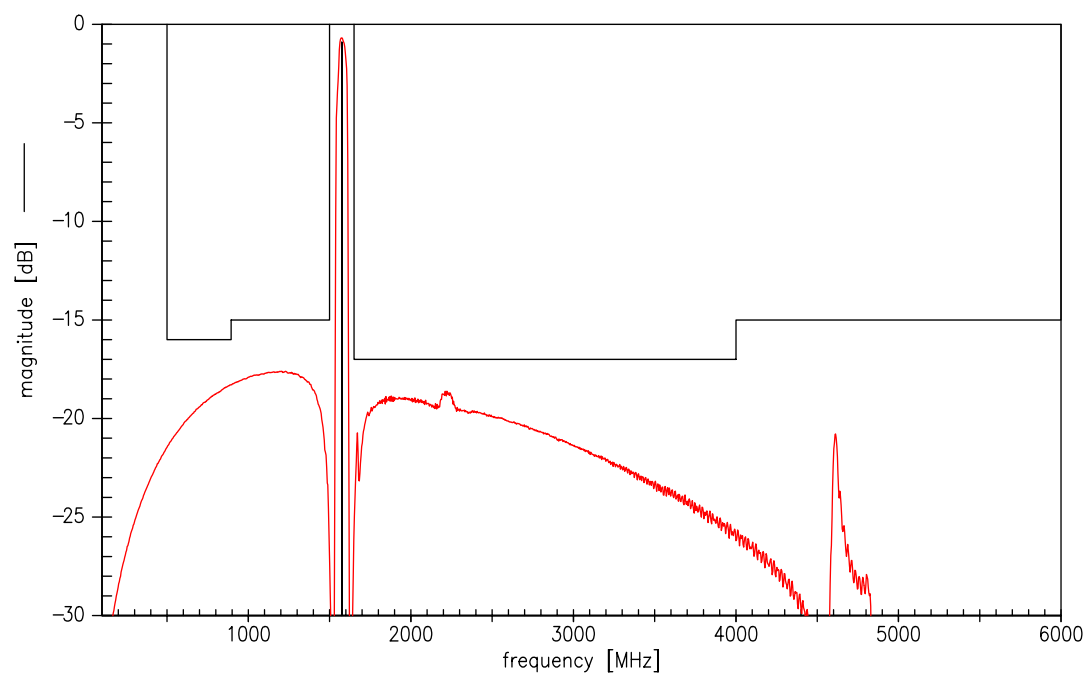
Data sheet



Transfer function (narrow band)



Transfer function (wide band)





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**SAW filter**

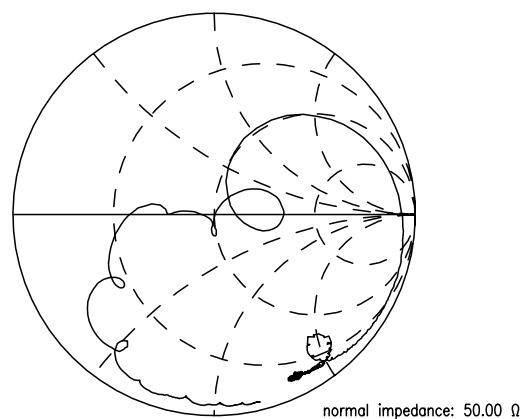
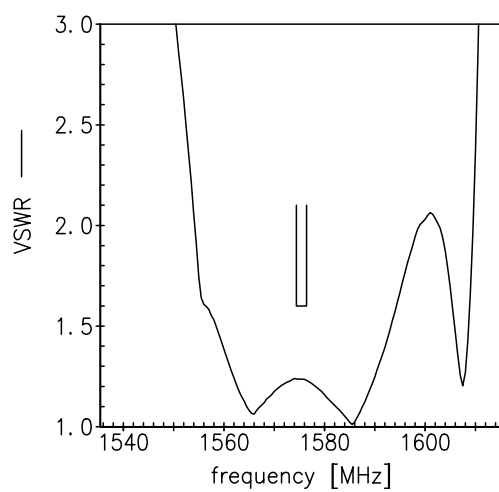
**1575.42 MHz**

Data sheet

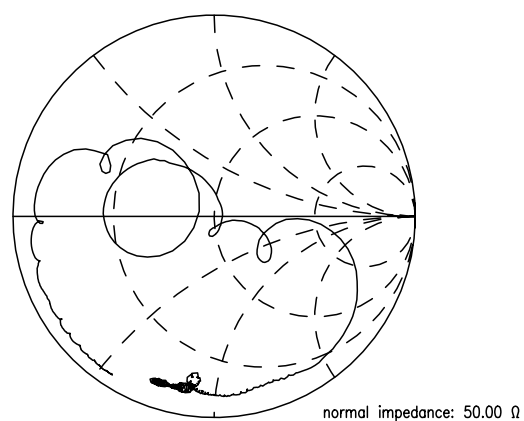
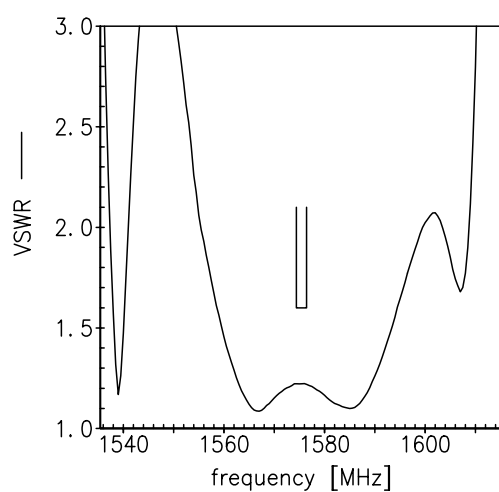


Smith charts

**$S_{11}$  function**



**$S_{22}$  function**





|                       |                    |
|-----------------------|--------------------|
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| <b>SAW filter</b>     | <b>1575.42 MHz</b> |
| <b>Data sheet</b>     | <b>SMD</b>         |

#### References

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>                | B9415                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Ordering code</b>       | B39162B9415K610                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Marking and package</b> | C61157-A8-A14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Packaging</b>           | F61074-V8237-Z000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Date codes</b>          | L_1126                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>S-parameters</b>        | B9415_NB.s2p<br>B9415_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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