



# SAW Components

## SAW RF filter for base stations

Band 38 TD LTE

**Series/type:** B5308  
**Ordering code:** B39262B5308U410

**Date:** August 28, 2014  
**Version:** 2.2

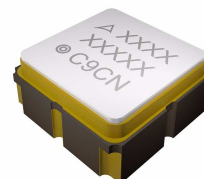
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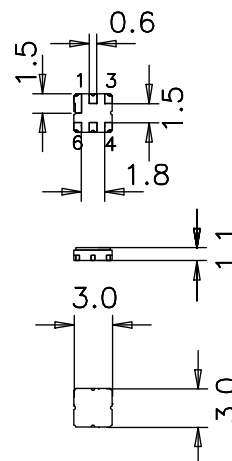
Data sheet

**Application**

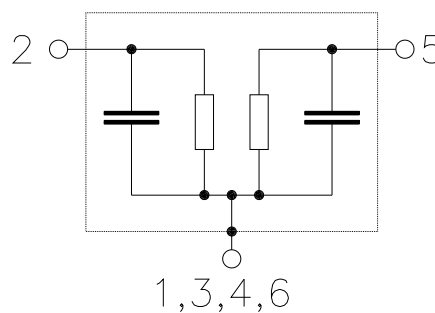
- RF filter for Band 38 TD LTE
- Unbalanced to unbalanced operation
- Low amplitude ripple
- Usable passband 50 MHz
- No matching required for operation at 50 Ω


**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)**
- **Moisture Sensitivity Level 1**
- Filter surface passivated


**Pin configuration**

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



**Data sheet**

**Characteristics**

|                                      |                                       |
|--------------------------------------|---------------------------------------|
| Temperature range for specification: | $T = -30\text{ °C to }+100\text{ °C}$ |
| Terminating source impedance:        | $Z_S = 50\ \Omega$                    |
| Terminating load impedance:          | $Z_L = 50\ \Omega$                    |

|  |                       | min. | typ.<br>@ 25 °C | max.  |     |
|--|-----------------------|------|-----------------|-------|-----|
| <b>Nominal frequency</b>   | $f_N$                 | —    | 2595.0          | —     | MHz |
| <b>Minimum insertion attenuation</b><br>2570.0 ... 2620.0 MHz                                  | $\alpha_{\min}$       | —    | 1.9             | 2.3   | dB  |
| <b>Maximum insertion attenuation</b><br>2570.0 ... 2620.0 MHz                                  | $\alpha_{\max}$       | —    | 2.4             | 2.8   | dB  |
| <b>Amplitude ripple (p-p)</b><br>2570.0 ... 2620.0 MHz   | $\Delta\alpha$        | —    | 0.5             | 1.2   | dB  |
| <b>Amplitude ripple (in any segment of 5 MHz)</b><br>2570.0 ... 2620.0 MHz                     | $\Delta\alpha$        | —    | 0.4             | 0.8   | dB  |
| <b>Input VSWR</b><br>2570.0 ... 2620.0 MHz   |                       | —    | 1.6:1           | 2.2:1 |     |
| <b>Output VSWR</b><br>2570.0 ... 2620.0 MHz  |                       | —    | 1.7:1           | 2.2:1 |     |
| <b>Phase ripple (p-p)</b><br>2570.0 ... 2620.0 MHz   | $\Delta\phi$          | —    | 5               | 20    | °   |
| <b>Absolute group delay</b><br>2570.0 ... 2620.0 MHz   | $\tau$                | —    | 15              | 50    | ns  |
| <b>Group delay ripple (p-p)</b><br>2570.0 ... 2620.0 MHz                                       | $\Delta\tau$          | —    | 5               | 30    | ns  |
| <b>Error vector magnitude<sup>1)</sup></b><br>2570.0 ... 2620.0 MHz                            | EVM                   | —    | 0.8             | 2.5   | %   |
| <b>Relative attenuation (to <math>\alpha_{\min}</math>)<sup>2)</sup></b><br>60.0 ... 120.0 MHz | $\alpha_{\text{rel}}$ | 40   | 60              | —     | dB  |
| 300.0 ... 500.0 MHz  |                       | 40   | 50              | —     | dB  |
| 850.0 ... 880.0 MHz  |                       | 40   | 49              | —     | dB  |

|                       |              |
|-----------------------|--------------|
| <b>SAW Components</b> | <b>B5308</b> |
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|----------------------|-------------------|
| <b>SAW RF filter</b> | <b>2595.0 MHz</b> |
|----------------------|-------------------|

**Data sheet**


|                                | min. | typ.<br>@ 25 °C | max. |    |
|--------------------------------|------|-----------------|------|----|
| 1280.0 ... 1315.0 MHz          | 40   | 55              | —    | dB |
| 1850.0 ... 1910.0 MHz          | 42   | 50              | —    | dB |
| 2030.0 ... 2140.0 MHz          | 35   | 46              | —    | dB |
| 2330.0 ... 2440.0 MHz          | 35   | 40              | —    | dB |
| 2440.0 ... 2520.0 MHz          | 10   | 20              | —    | dB |
| 2670.0 ... 2730.0 MHz          | 10   | 20              | —    | dB |
| 2730.0 ... 2830.0 MHz          | 30   | 35              | —    | dB |
| <b>Temperature Drift</b>       |      |                 |      |    |
| high temperature <sup>3)</sup> |      |                 |      |    |
| 2570.0 ... 2620.0 MHz          | —    | 0.2             | 0.5  | dB |
| low temperature <sup>4)</sup>  |      |                 |      |    |
| 2570.0 ... 2620.0 MHz          | —    | 0.3             | 0.5  | dB |

1) Evm calculation based on root raised cosine filtered QPSK signal  
( $f_{C_{RRC}}$  within 2572.5 ... 2617.5 MHz,  $bw_{RRC}=3.84$  MHz)

2) Attenuation depends on PCB layout

3)  $T_{25^{\circ}C}$  is transmission at 25°C in dB,  $T_{100^{\circ}C}$  at 100°C in dB

$$\text{tempdrift}_{\text{hightemp}} = \left| \frac{\max(T_{25^{\circ}C} - T_{100^{\circ}C}) - \min(T_{25^{\circ}C} - T_{100^{\circ}C})}{2} \right|$$

4)  $T_{25^{\circ}C}$  is transmission at 25°C in dB,  $T_{-30^{\circ}C}$  at -30°C in dB

$$\text{tempdrift}_{\text{lowtemp}} = \left| \frac{\max(T_{25^{\circ}C} - T_{-30^{\circ}C}) - \min(T_{25^{\circ}C} - T_{-30^{\circ}C})}{2} \right|$$

|                       |              |
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|----------------------|-------------------|

Data sheet



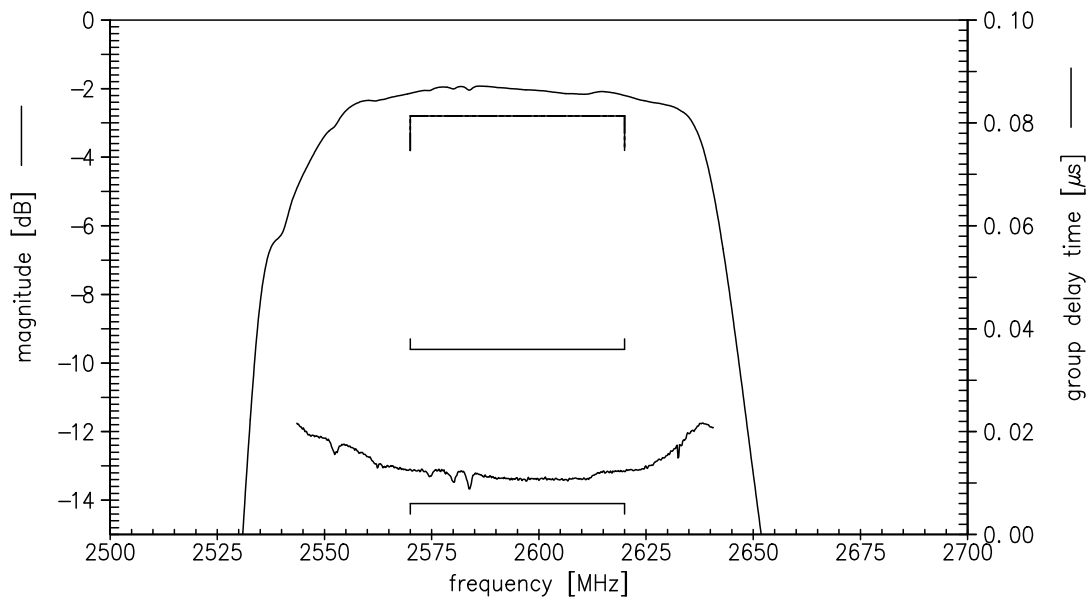
### Maximum ratings

|                            |                  |                   |     |                  |
|----------------------------|------------------|-------------------|-----|------------------|
| Operable temperature range | T                | -40/+100          | °C  |                  |
| Storage temperature range  | T <sub>stg</sub> | -40/+100          | °C  |                  |
| DC voltage                 | V <sub>DC</sub>  | 0                 | V   |                  |
| ESD voltage                | V <sub>ESD</sub> | 50 <sup>1)</sup>  | V   | Machine Model    |
|                            |                  | 150 <sup>2)</sup> | V   | Human Body Model |
| Input power                |                  |                   |     |                  |
| 2570.0 ... 2620.0 MHz      | P <sub>IN</sub>  | 22                | dBm | cw, 24 h, 85 °C  |

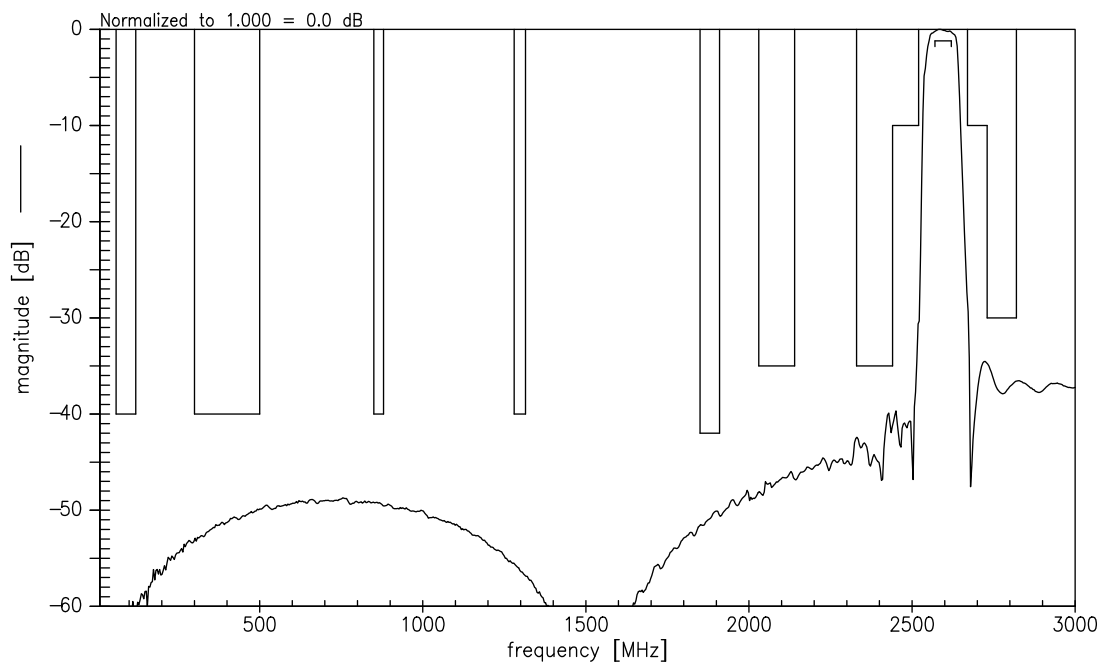
1) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

2) acc. to JESD22-A114F (HBM - Human Body Model), 1 negative & 1 positive pulses

Transfer function (S21, narrowband)



Transfer function (S21, wideband)

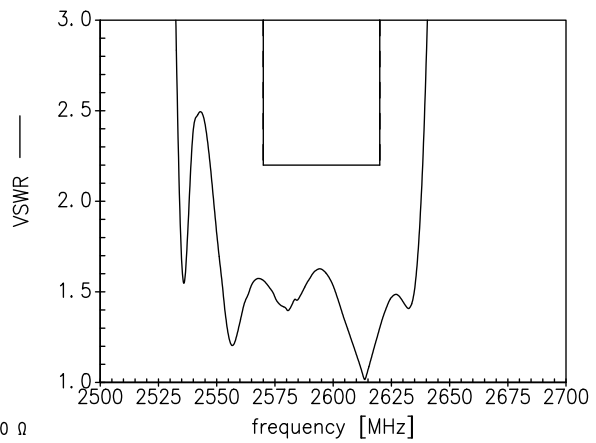
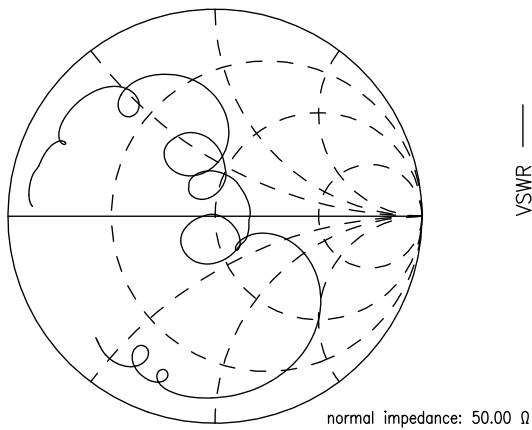


Data sheet

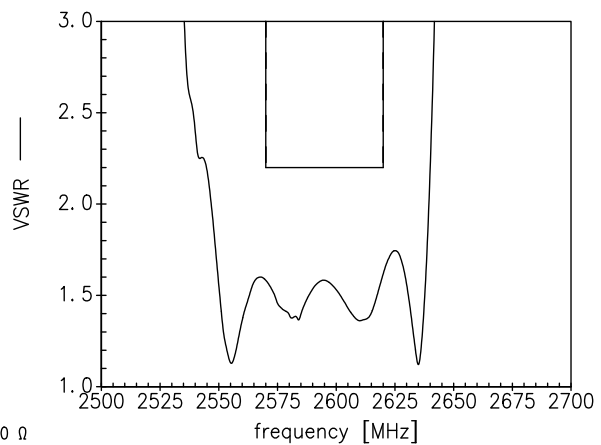
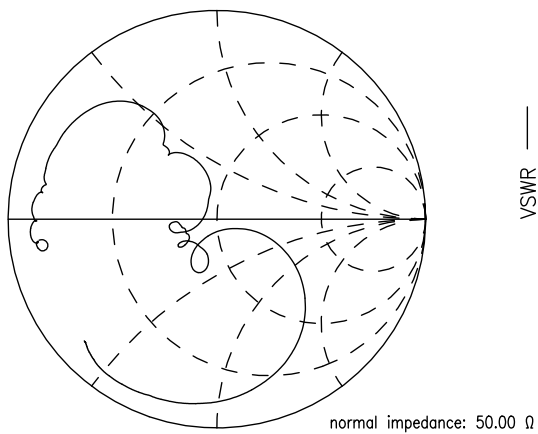


Smith charts

$S_{11}$  function



$S_{22}$  function



|                       |                   |
|-----------------------|-------------------|
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| <b>SAW RF filter</b>  | <b>2595.0 MHz</b> |

Data sheet



## References

|                            |  |
|----------------------------|--|
| <b>Type</b>                | B5308  |
| <b>Ordering code</b>       | B39262B5308U410  |
| <b>Marking and package</b> | C61157-A7-A67  |
| <b>Packaging</b>           | F61074-V8228-Z000  |
| <b>Date codes</b>          | L_1126   |
| <b>S-parameters</b>        | B5308_NB.s2p<br>B5308_WB.s2p<br>see file header for port/pin assignment table  |
| <b>Soldering profile</b>   | S_6001   |
| <b>RoHS compatible</b>     | 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. |
| <b>Matching coils</b>      | See Inductor pdf-catalog<br><a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a><br>and Data Library for circuit simulation<br><a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a><br>for a large variety of matching coils.  |

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