

RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

## SAW Components

### SAW RF filter for base stations

Series/type:	B5109
Ordering code:	B39172B5109U410
Date:	Jan 23, 2015
Version:	2.1

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<b>Series/type:</b>	<b>B5109</b>
<b>Ordering code:</b>	<b>B39172B5109U410</b>
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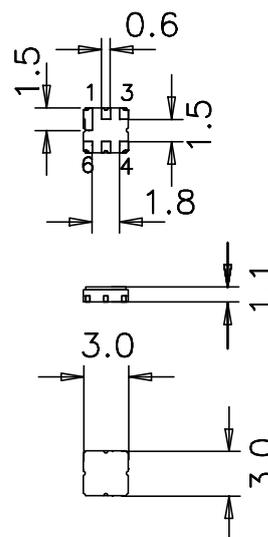
Data sheet

**Application**

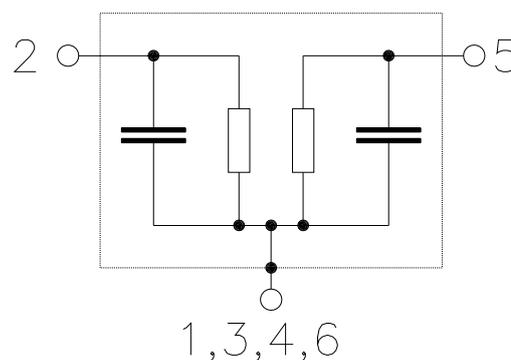
- Low-loss base-station RF filter
- Unbalanced to unbalanced operation
- Low amplitude ripple
- Usable passband 45 MHz
- No matching required for operation at 50 Ω


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

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	1732.5	—	MHz
<b>Minimum insertion attenuation</b> 1710.0 ... 1755.0 MHz	$\alpha_{\min}$	—	1.7	2.5	dB
<b>Maximum insertion attenuation</b> 1710.0 ... 1755.0 MHz	$\alpha_{\max}$	—	2.2	3.5	dB
<b>Passband width</b> $\alpha_{\text{ref}} \leq 1.8\text{ dB}$	$B_{1.8\text{dB}}$	45	62	—	MHz
<b>Amplitude ripple (p-p)</b> 1710.0 ... 1755.0 MHz	$\Delta\alpha$	—	0.5	1.8	dB
<b>Input VSWR</b> 1710.0 ... 1755.0 MHz		—	1.7:1	2.0:1	
<b>Output VSWR</b> 1710.0 ... 1755.0 MHz		—	1.5:1	2.0:1	
<b>Relative attenuation (relative to <math>\alpha_{\min}</math>)</b>	$\alpha_{\text{rel}}$				
10.0 ... 1680.0 MHz		20	23	—	dB
1680.0 ... 1690.0 MHz		4	10	—	dB
1690.0 ... 1694.0 MHz		1.5	6	—	dB
1771.0 ... 1778.0 MHz		1.5	9.5	—	dB
1778.0 ... 1785.0 MHz		5	22	—	dB
1785.0 ... 1805.0 MHz		10	28	—	dB
1805.0 ... 1850.0 MHz		25	28	—	dB
1850.0 ... 1880.0 MHz		30	33	—	dB
1880.0 ... 3200.0 MHz		20	27	—	dB
3200.0 ... 5200.0 MHz		4	7	—	dB

Data sheet


**Characteristics**

Temperature range for specification:  $T = -40\text{ °C to }+95\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	1732.5	—	MHz
<b>Minimum insertion attenuation</b> 1710.0 ... 1755.0 MHz	$\alpha_{\min}$	—	1.7	2.7	dB
<b>Maximum insertion attenuation</b> 1710.0 ... 1755.0 MHz	$\alpha_{\max}$	—	2.2	3.8	dB
<b>Passband width</b> $\alpha_{\text{ref}} \leq 1.8\text{ dB}$	$B_{1.8\text{dB}}$	44	62	—	MHz
<b>Amplitude ripple (p-p)</b> 1710.0 ... 1755.0 MHz	$\Delta\alpha$	—	0.5	2.1	dB
<b>Input VSWR</b> 1710.0 ... 1755.0 MHz		—	1.7:1	2.2:1	
<b>Output VSWR</b> 1574.4 ... 1576.4 MHz		—	1.5:1	2.2:1	
<b>Relative attenuation (relative to <math>\alpha_{\min}</math>)</b>	$\alpha_{\text{rel}}$				
10.0 ... 1680.0 MHz		15	23	—	dB
1680.0 ... 1690.0 MHz		3	10	—	dB
1690.0 ... 1694.0 MHz		1	6.0	—	dB
1771.0 ... 1778.0 MHz		1	9.5	—	dB
1778.0 ... 1785.0 MHz		5	22	—	dB
1785.0 ... 1805.0 MHz		10	28	—	dB
1805.0 ... 1850.0 MHz		23	28	—	dB
1850.0 ... 1880.0 MHz		28	33	—	dB
1880.0 ... 3200.0 MHz		20	27	—	dB
3200.0 ... 5200.0 MHz		4	7	—	dB

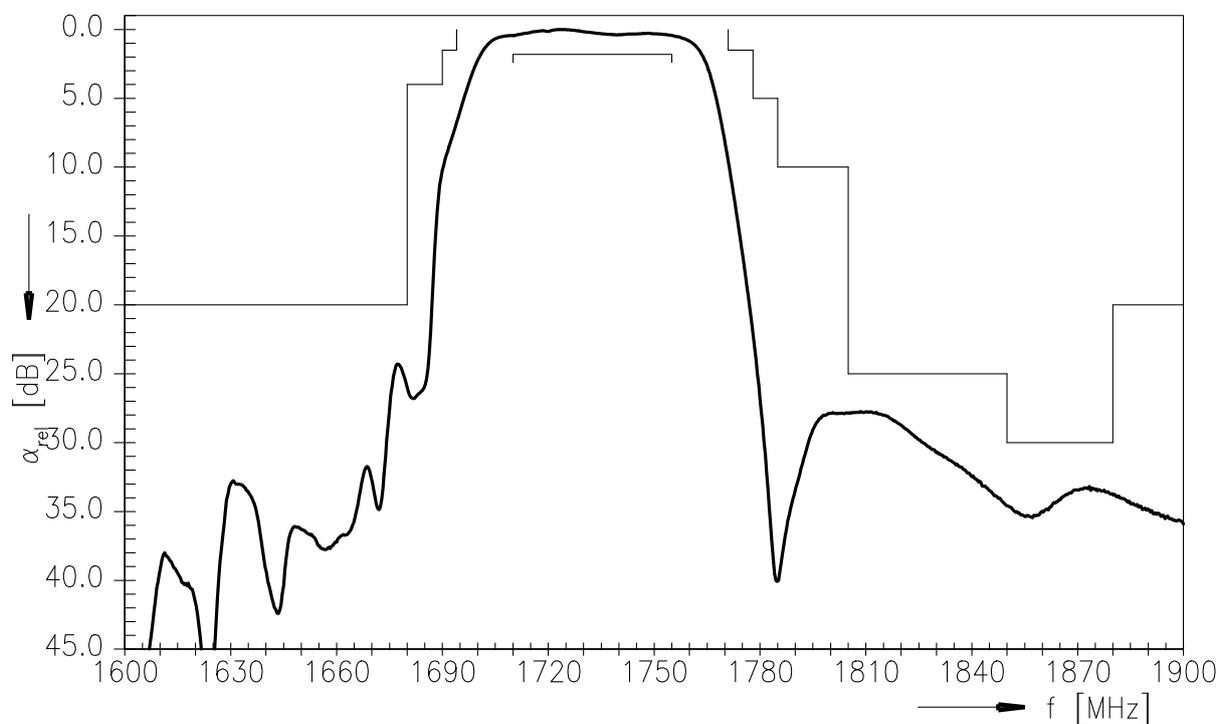
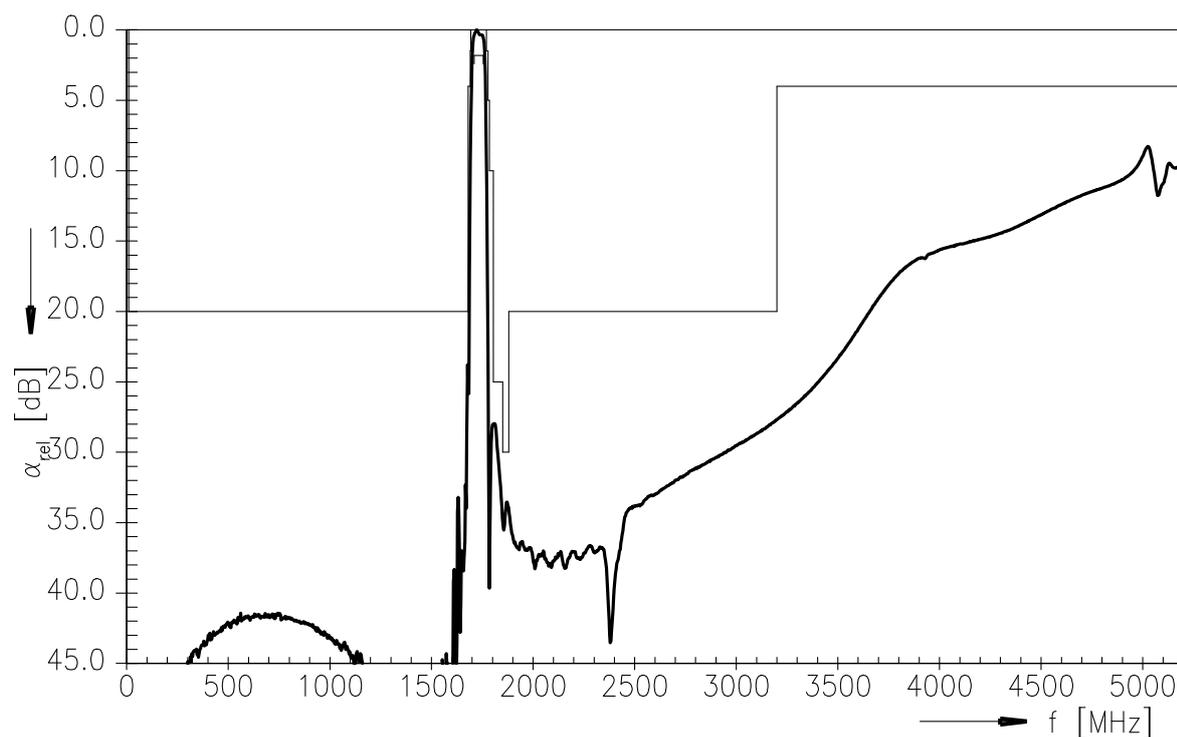
**Maximum ratings**

Operable temperature range	T	-45/+125	°C	
Storage temperature range	T <sub>stg</sub>	-45/+125	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	Machine Model
		225 <sup>2)</sup>	V	Human Body Model
Input power	P <sub>IN</sub>			
1710.0 ... 1755.0 MHz		10	dBm	cw

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

Data sheet

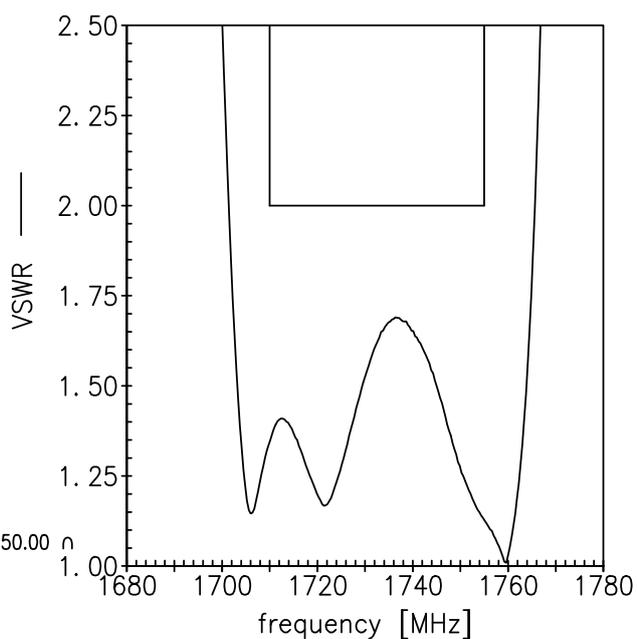
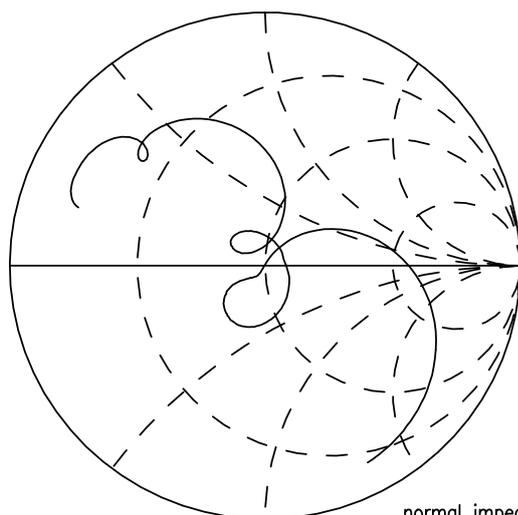
**SMD**
**Transfer function (S21, narrowband)**

**Transfer function (S21, wideband)**


Data sheet

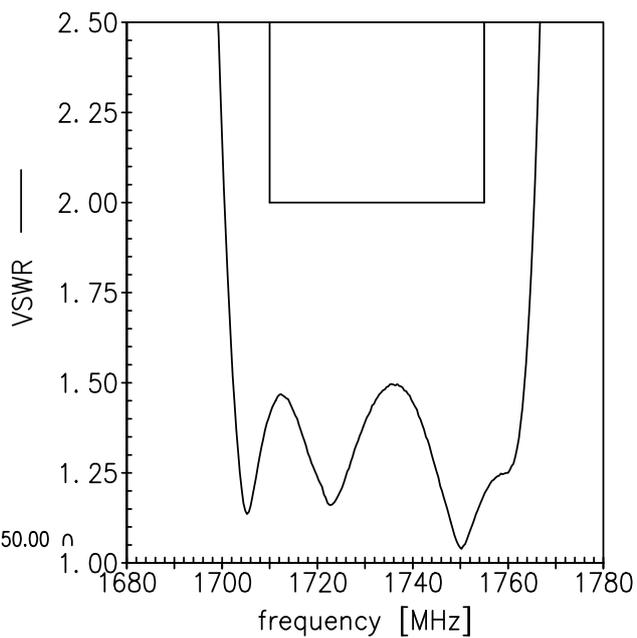
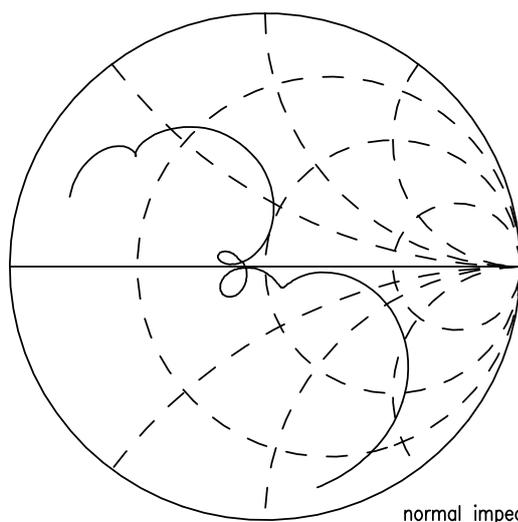
**SMD**

Smith charts

**S<sub>11</sub> function**



**S<sub>22</sub> function**



**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 B5109_WB.s2p 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.
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