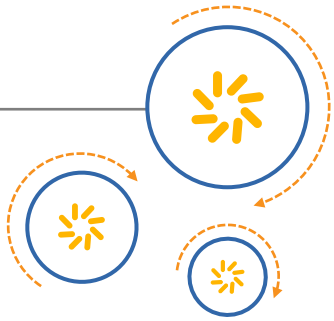
RF360 Europe GmbH

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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SAW Components

SAW RF filter for base stations

Series/type:	**B5109**
Ordering code:	**B39172B5109U410**
Date:	Jan 23, 2015
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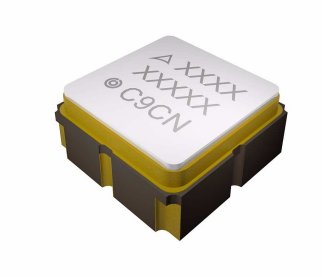
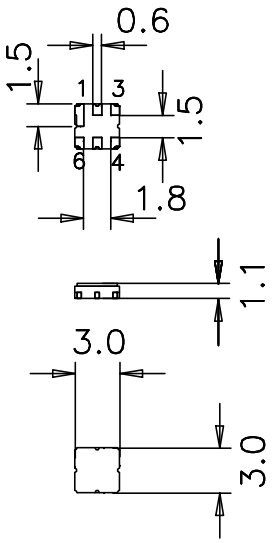
Application

- 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



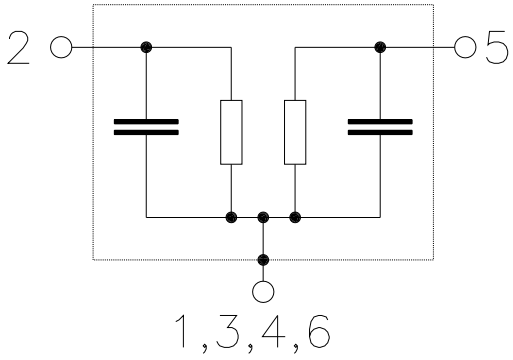
Features

- Package size 3.0 x 3.0 x 1.1 mm³
- Package code DCC6C
- RoHS compatible
- Approximate weight 0.037 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitivity **L**evel 1
- Filter surface passivated



Pin configuration

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



Data sheet SMD

Characteristics

Temperature range for specification: T = –40 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1732.5	—	MHz
Minimum insertion attenuation	α_{min}				
1710.0 ... 1755.0 MHz		—	1.7	2.5	dB
Maximum insertion attenuation	α_{max}				
1710.0 ... 1755.0 MHz		—	2.2	3.5	dB
Passband width					
α_{ref} ≤ 1.8 dB	$B_{1.8dB}$	45	62	—	MHz
Amplitude ripple (p-p)	$\Delta\alpha$				
1710.0 ... 1755.0 MHz		—	0.5	1.8	dB
Input VSWR					
1710.0 ... 1755.0 MHz		—	1.7:1	2.0:1	
Output VSWR					
1710.0 ... 1755.0 MHz		—	1.5:1	2.0:1	
Relative attenuation (relative to α_{min})	α_{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 SMD

Characteristics

Temperature range for specification: T = –40 ˚C to +95 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1732.5	—	MHz
Minimum insertion attenuation	α_{min}				
1710.0 ... 1755.0 MHz		—	1.7	2.7	dB
Maximum insertion attenuation	α_{max}				
1710.0 ... 1755.0 MHz		—	2.2	3.8	dB
Passband width					
α_{ref} ≤ 1.8 dB	$B_{1.8dB}$	44	62	—	MHz
Amplitude ripple (p-p)	$\Delta\alpha$				
1710.0 ... 1755.0 MHz		—	0.5	2.1	dB
Input VSWR					
1710.0 ... 1755.0 MHz		—	1.7:1	2.2:1	
Output VSWR					
1574.4 ... 1576.4 MHz		—	1.5:1	2.2:1	
Relative attenuation (relative to α_{min})	α_{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

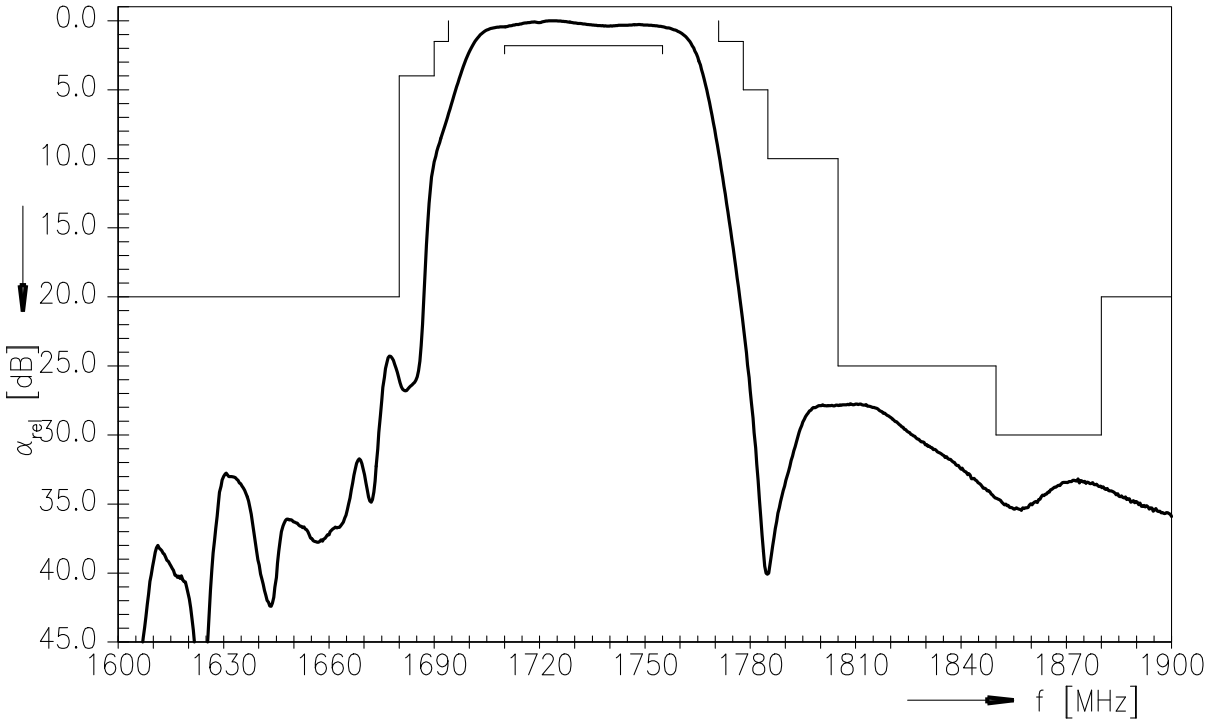
Maximum ratings

Operable temperature range	T	–45/+125	˚C	
Storage temperature range	T_{stg}	–45/+125	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	Machine Model
		225[2)]	V	Human Body Model
Input power	P_{IN}			
1710.0 ... 1755.0 MHz		10	dBm	cw

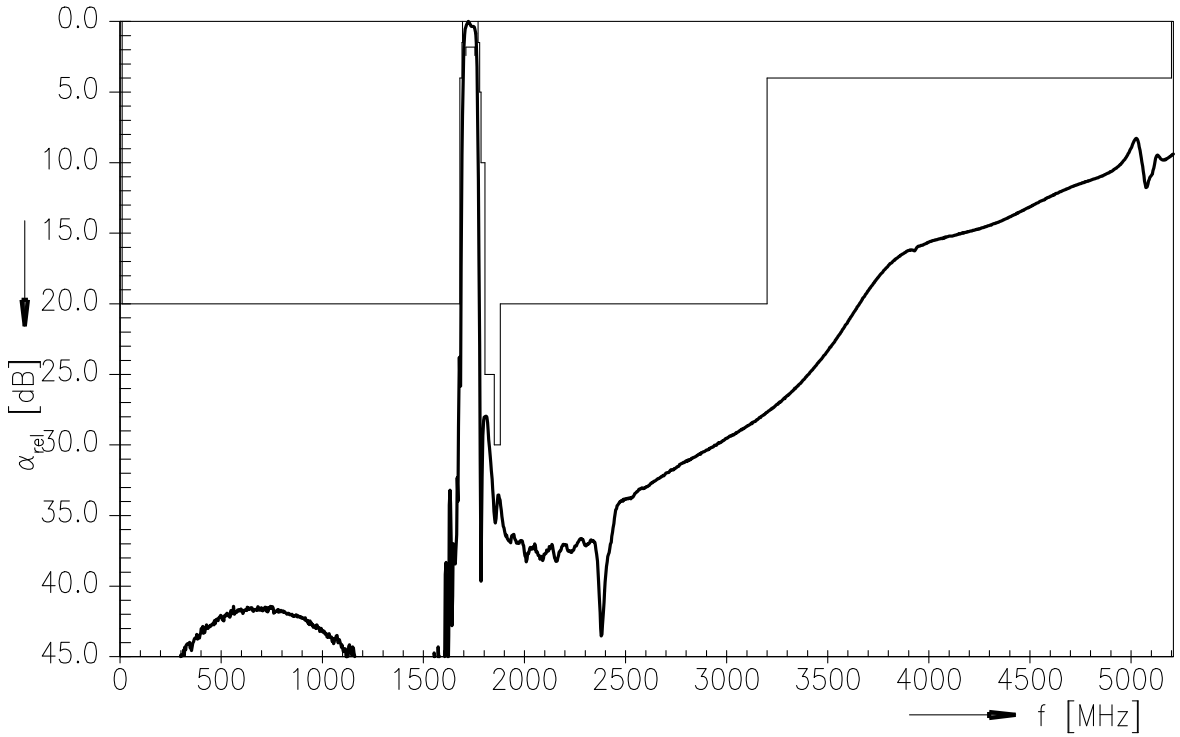
1) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

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

Transfer function (S21, narrowband)

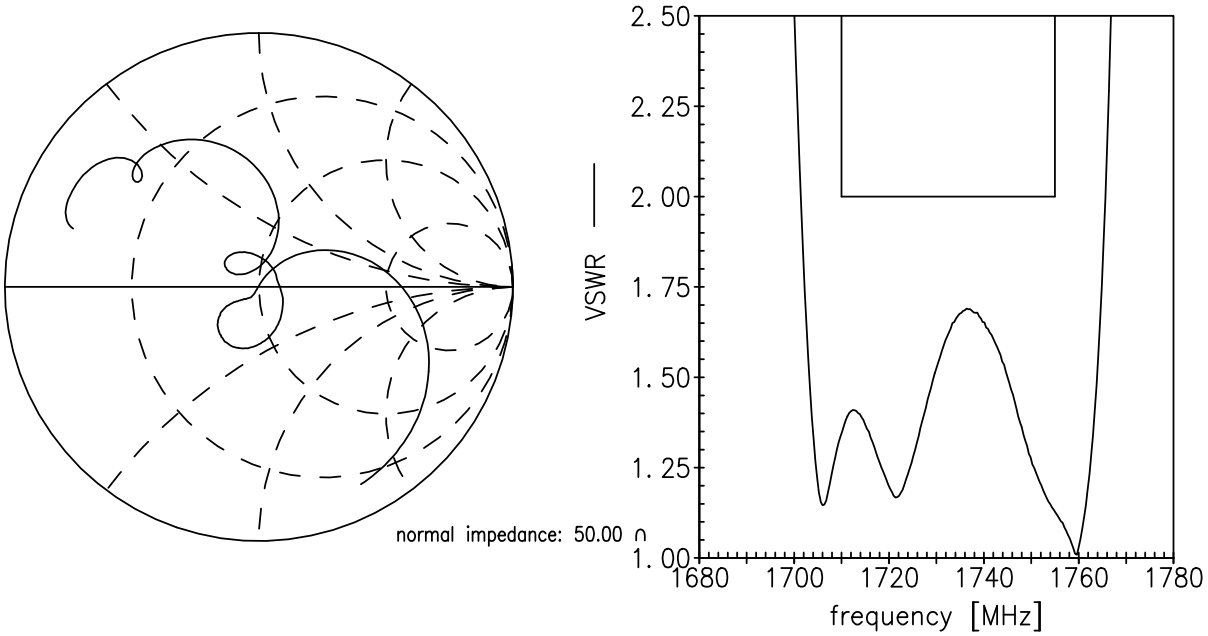


Transfer function (S21, wideband)

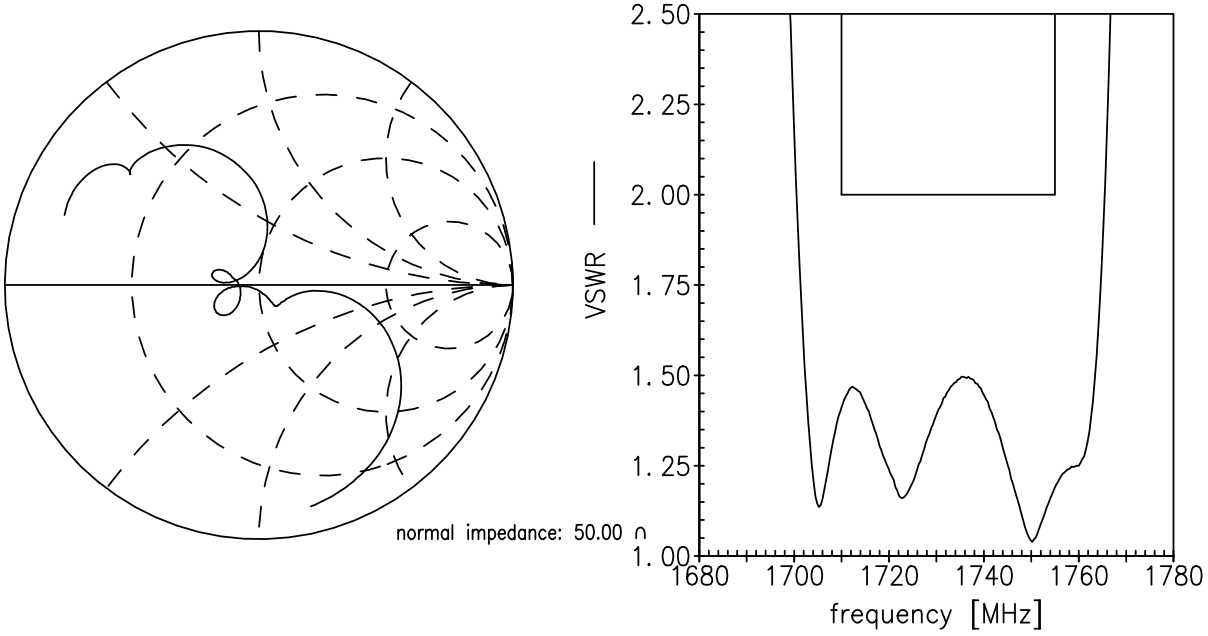


Smith charts

S_{11} function



S_{22} function



References

Type	B5109
Ordering code	B39172B5109U410
Marking and package	C61157-A7-A67
Packaging	F61074-V8168-Z000
Date codes	L_1126
S-parameters	B5109_NB.s2p B5109_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/etvcl/index.htm for a large variety of matching coils.

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