



## **SAW Components**

### **SAW filter**

Bluetooth

<b>Series/type:</b>	<b>B9413</b>
<b>Ordering code:</b>	<b>B39242B9413K610</b>
<b>Date:</b>	<b>February 27, 2006</b>
<b>Version:</b>	<b>2.2</b>



Data Sheet



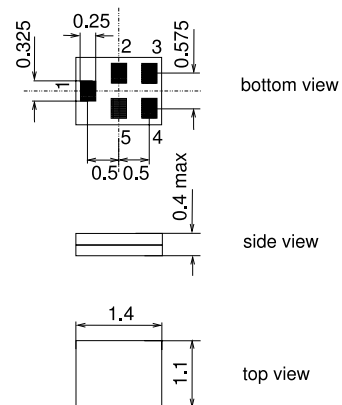
Application

- Low-loss RF filter for mobile telephone bluetooth systems
- Impedance transformation from 50 Ω to 50 Ω
- Unbalanced to unbalanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 83.5 MHz



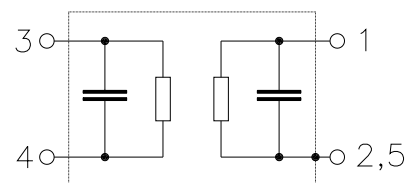
Features

- Package size 1.4 x 1.1 x 0.4 mm<sup>3</sup>
- Package code QCS5F
- 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





Data Sheet



Characteristics

Operating temperature range:  $T = -20\text{ °C to }+75\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega + 1.5\text{ nH (series)}$   
 Terminating load impedance:  $Z_L = 50\ \Omega + 2.5\text{ nH (series)}$

		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	2441.75	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$	—	2.0 2.2*)	2.8	dB
2400.0 ... 2483.5 MHz					dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	0.6	1.5	dB
2400.0 ... 2483.5 MHz					
<b>Input VSWR</b>		—	1.4 1.9*)	2.1	
2400.0 ... 2483.5 MHz					
<b>Output VSWR</b>		—	1.4 1.9*)	2.1	
2400.0 ... 2483.5 MHz					
<b>Attenuation</b>	$\alpha$				
0.0 ... 960.0 MHz		40	42	—	dB
960.0 ... 1710.0 MHz		35	39	—	dB
1710.0 ... 2170.0 MHz		36	38	—	dB
2170.0 ... 2250.0 MHz		30	41	—	dB
2250.0 ... 2300.0 MHz		25	38	—	dB
2550.0 ... 2650.0 MHz		18	26	—	dB
2650.0 ... 2800.0 MHz		20	30	—	dB
2800.0 ... 4000.0 MHz		25	35	—	dB
4000.0 ... 6000.0 MHz		30	40	—	dB

\*) without input matching ( $Z_S=50\Omega$ ) no serial coil'



**SAW Components** **B9413**

**SAW filter** **2441.75 MHz**

Data Sheet



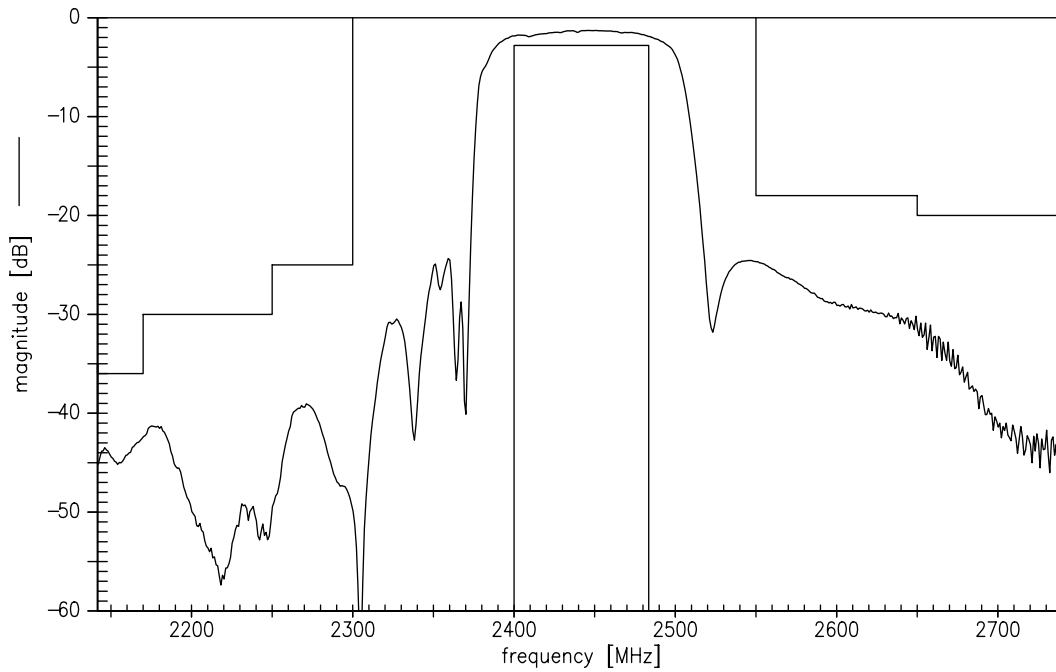
**Maximum ratings**

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	3.5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 10 pulses
Input power at				source/load impedance 50Ω/50Ω
2400 ... 2483.5 MHz	P <sub>IN</sub>	9	dBm	bluetooth signal
824 ... 849, 880 ... 915 MHz	P <sub>IN</sub>	15	dBm	cw
1710... 785, 1850... 1910 MHz	P <sub>IN</sub>	15	dBm	cw

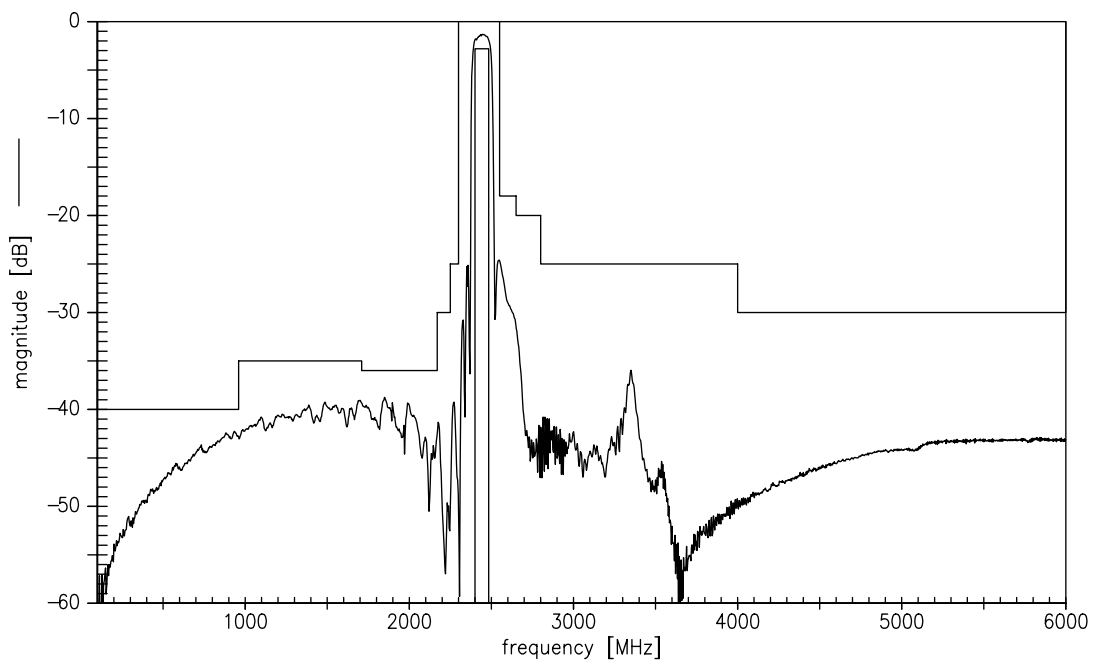
<sup>1)</sup> acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



Transfer function (narrow band)



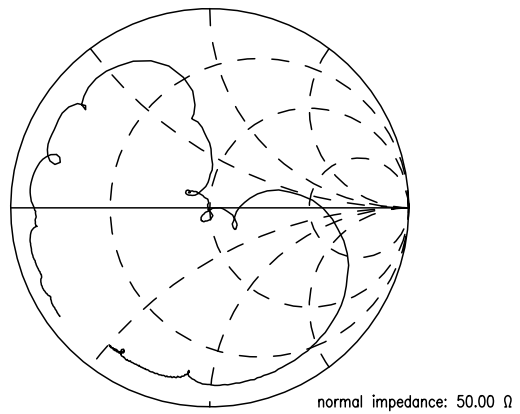
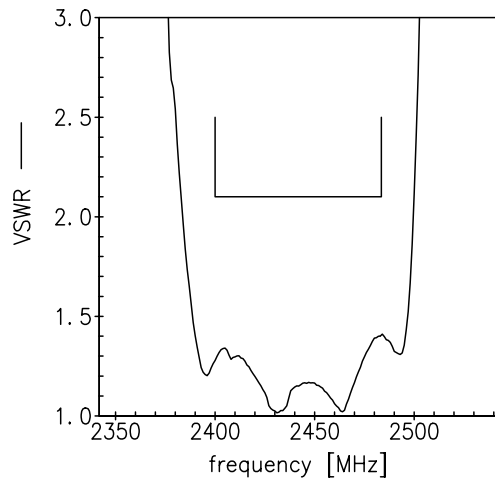
Transfer function (wide band)



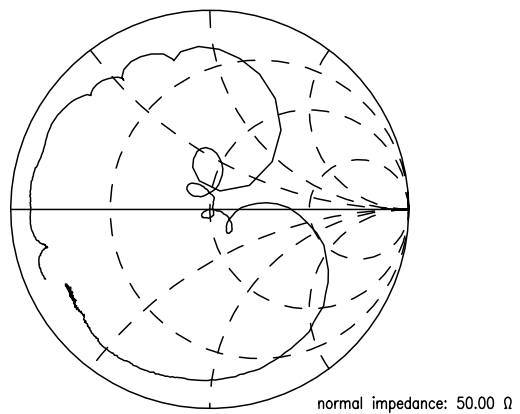
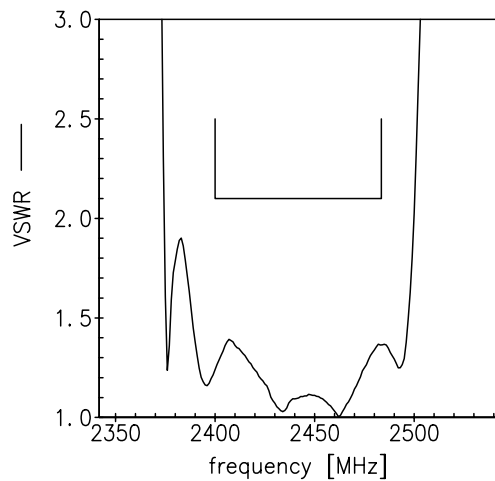


Smith charts

S<sub>11</sub> function



S<sub>22</sub> function





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B9413

SAW filter

2441.75 MHz

Data Sheet



## References

Type	B9413
Ordering code	B39242B9413K610
Marking and package	C61157-A8-A1
Packaging	F61074-V8212-Z000
Date codes	L_1126
S-parameters	LN97C_NB.s3p LN97C_WB.s3p
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "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."

For further information please contact your local EPCOS sales office or visit our webpage at [www.epcos.com](http://www.epcos.com).

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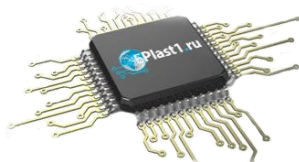
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