



## **SAW Components**

### **SAW filter**

Bluetooth

**Series/type:**

**B9413**

**Ordering code:**

**B39242B9413K610**

**Date:**

February 27, 2006

**Version:**

2.2

## SAW Components

B9413

### SAW filter

2441.75 MHz

#### Data Sheet



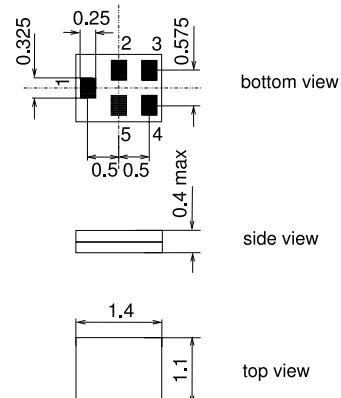
#### Application

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



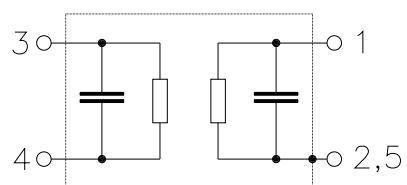
#### Features

- Package size  $1.4 \times 1.1 \times 0.4 \text{ mm}^3$
- 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



Please read *cautions and warnings and important notes* at the end of this document.

**SAW Components****B9413****SAW filter****2441.75 MHz****Data Sheet****Characteristics**

Operating temperature range:

 $T = -20^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$ 

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>	$\alpha_{\max}$				
2400.0 ... 2483.5 MHz		—	2.0 2.2*)	2.8	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
2400.0 ... 2483.5 MHz		—	0.6	1.5	dB
<b>Input VSWR</b>					
2400.0 ... 2483.5 MHz		—	1.4 1.9*)	2.1	
<b>Output VSWR</b>					
2400.0 ... 2483.5 MHz		—	1.4 1.9*)	2.1	
<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

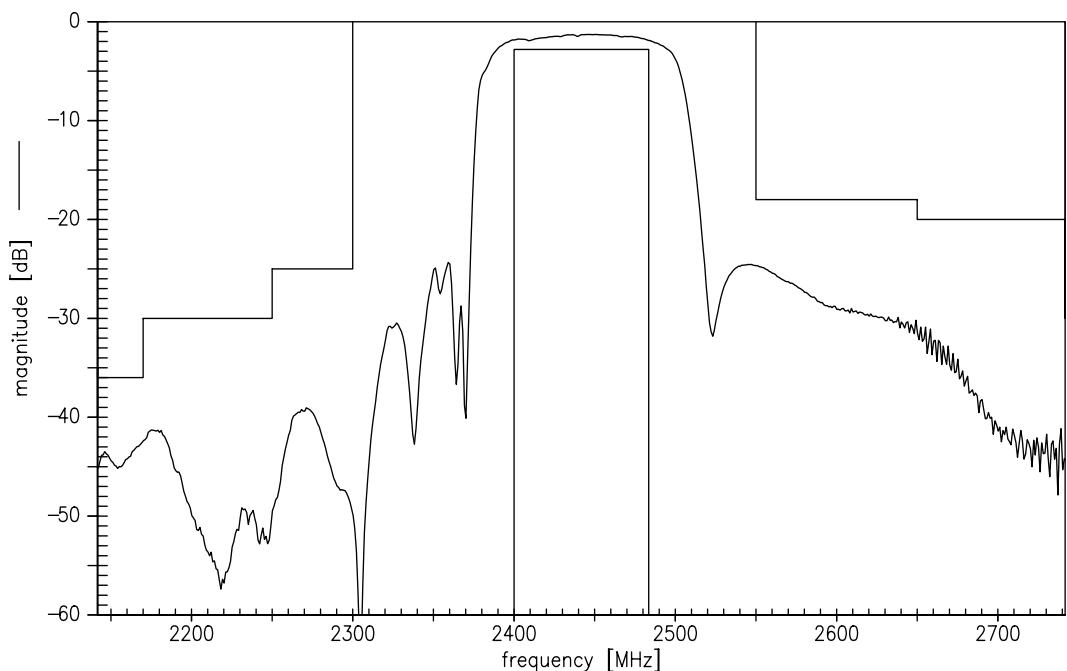
\*) without input matching ( $Z_S=50\Omega$ ) no serial coil

**SAW Components****B9413****SAW filter****2441.75 MHz****Data Sheet****Maximum ratings**

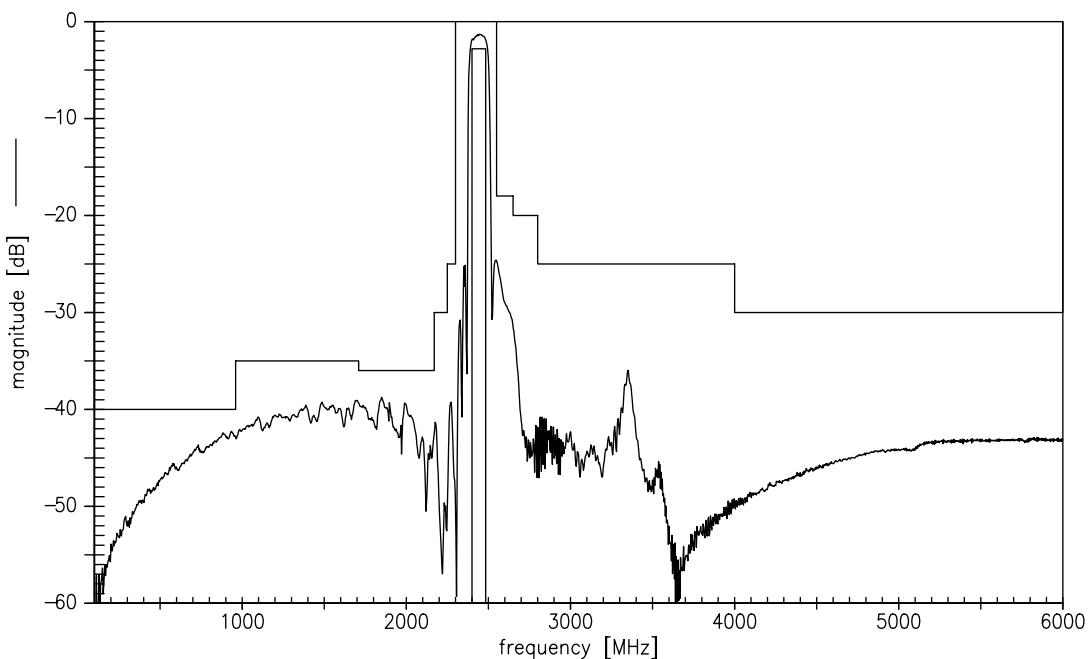
Operable temperature range	T	-40/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	3.5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 10 pulses
Input power at				source/load impedance 50Ω/50Ω
2400 ... 2483.5 MHz	P <sub>IN</sub>	9	dBm	bluetooth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

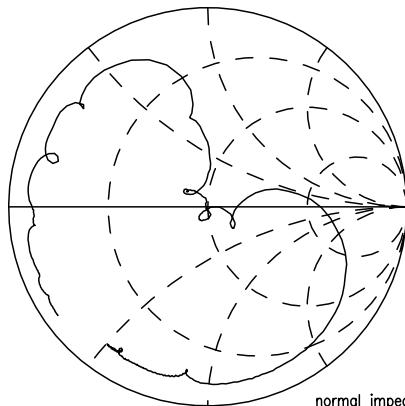
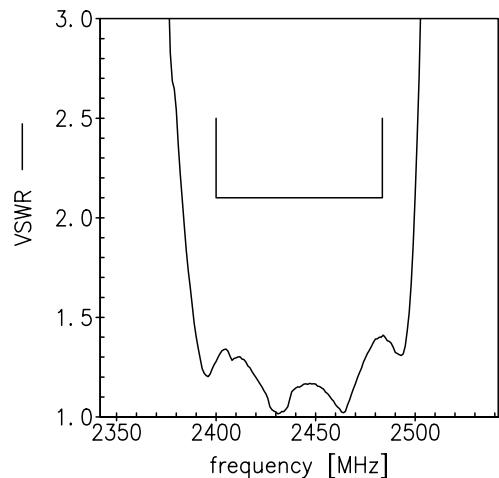
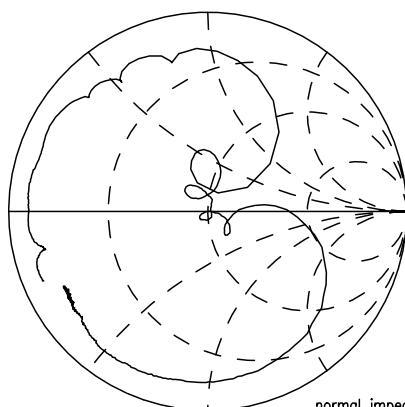
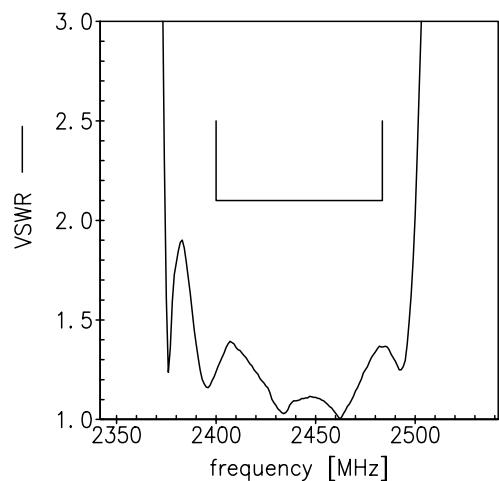
**Transfer function (narrow band)**



**Transfer function (wide band)**



**SAW Components**
**B9413**
**SAW filter**
**2441.75 MHz**
**Data Sheet**

**Smith charts**
 **$S_{11}$  function**

 **$S_{22}$  function**


Please read *cautions and warnings and important notes* at the end of this document.

**SAW Components****B9413****SAW filter****2441.75 MHz****Data Sheet****References**

<b>Type</b>	B9413
<b>Ordering code</b>	B39242B9413K610
<b>Marking and package</b>	C61157-A8-A1
<b>Packaging</b>	F61074-V8212-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	LN97C_NB.s3p LN97C_WB.s3p
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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."

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**Published by EPCOS AG**

**Surface Acoustic Wave Components Division**

**P.O. Box 80 17 09, 81617 Munich, GERMANY**

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