



SAW Components

SAW filter

Bluetooth

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



Data Sheet



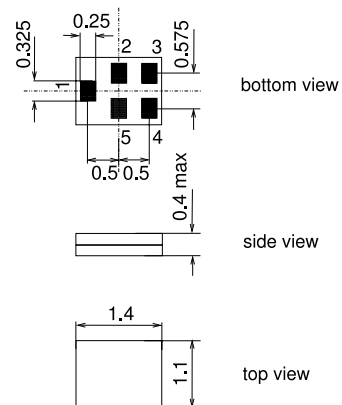
Application

- 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



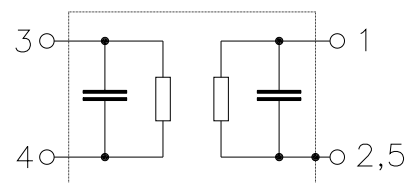
Features

- Package size 1.4 x 1.1 x 0.4 mm³
- 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.	
Center frequency	f_C	—	2441.75	—	MHz
Maximum insertion attenuation	α_{max}	—	2.0 2.2*)	2.8	dB
2400.0 ... 2483.5 MHz					dB
Amplitude ripple (p-p)	$\Delta\alpha$	—	0.6	1.5	dB
2400.0 ... 2483.5 MHz					
Input VSWR		—	1.4 1.9*)	2.1	
2400.0 ... 2483.5 MHz					
Output VSWR		—	1.4 1.9*)	2.1	
2400.0 ... 2483.5 MHz					
Attenuation	α				
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



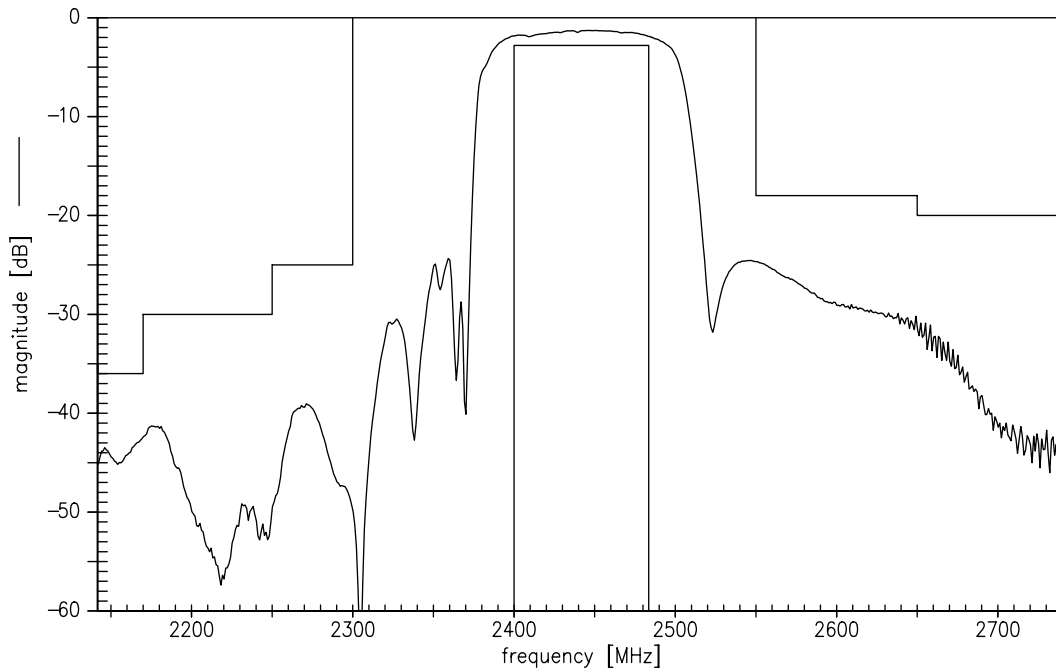
Maximum ratings

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

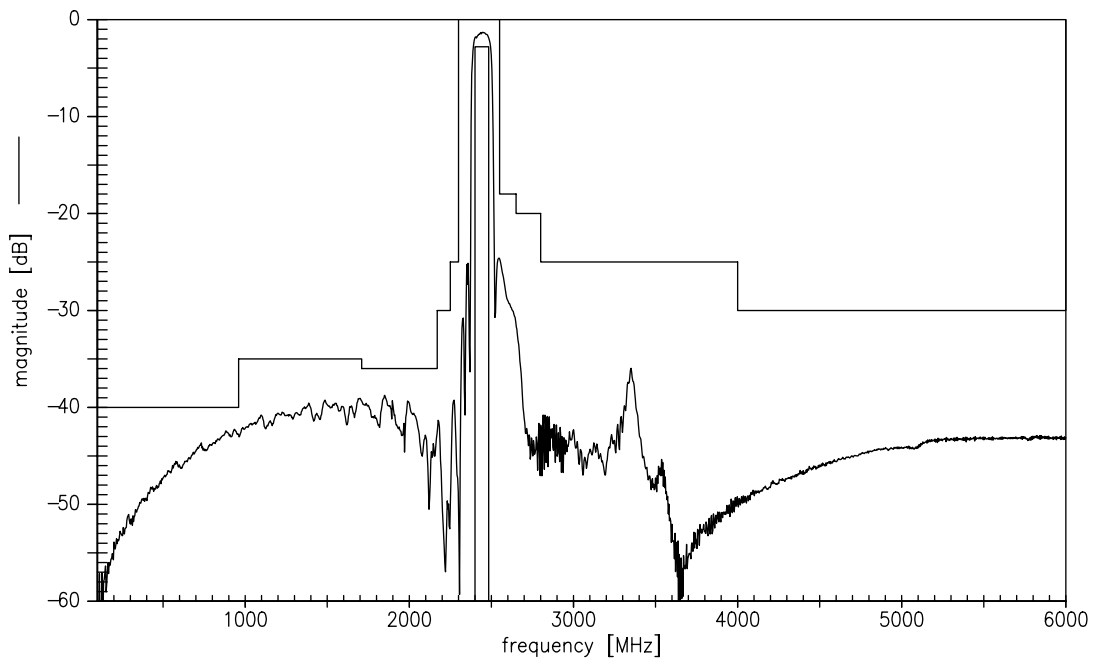
¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



Transfer function (narrow band)



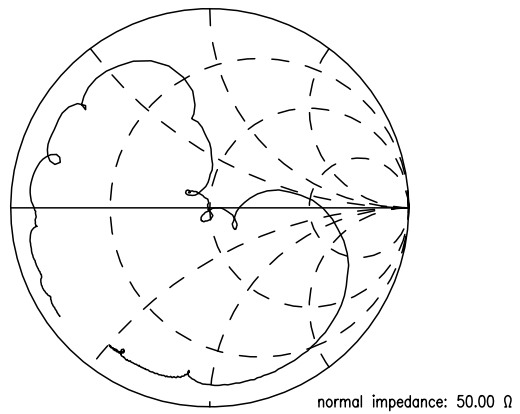
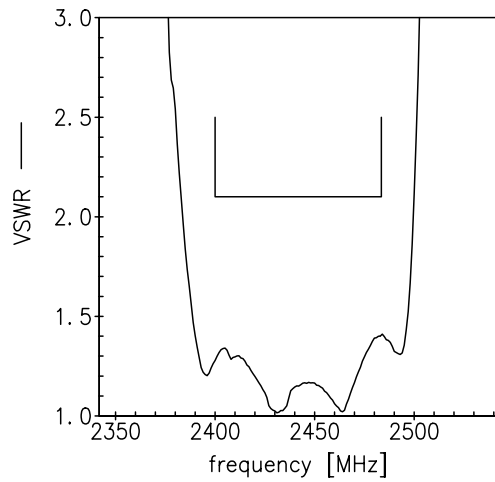
Transfer function (wide band)



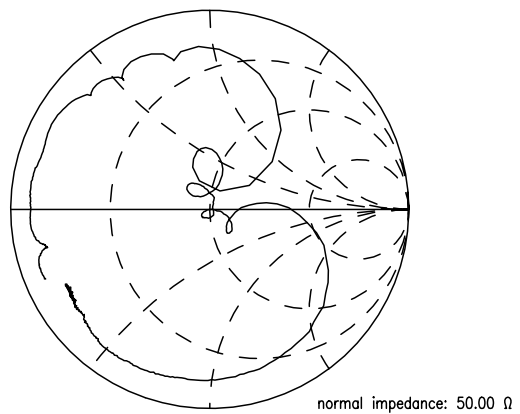
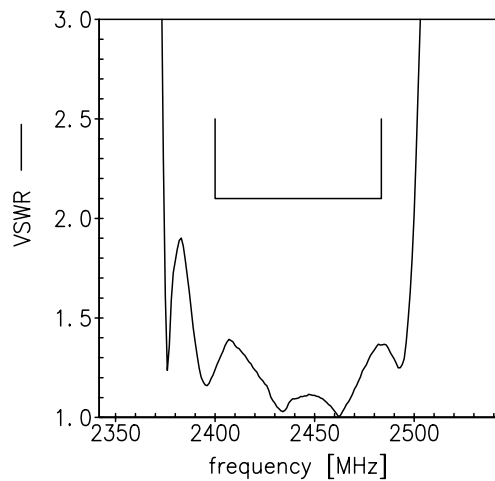


Smith charts

S₁₁ function



S₂₂ function





SAW Components

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.

Published by EPCOS AG
Surface Acoustic Wave Components Division
P.O. Box 80 17 09, 81617 Munich, GERMANY

© EPCOS AG 2006. This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.

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



Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.
3. The warnings, cautions and product-specific notes must be observed.
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as "hazardous")**. Useful information on this will be found in our Material Data Sheets on the Internet (www.epcos.com/material). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order. We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available.
6. Unless otherwise agreed in individual contracts, **all orders are subject to the current version of the "General Terms of Delivery for Products and Services in the Electrical Industry" published by the German Electrical and Electronics Industry Association (ZVEI)**.
7. The trade names EPCOS, CeraDiode, CSSP, PhaseCap, PhaseMod, SIFI, SIKOREL, Silver-Cap, SIMID, SIOV, SIP5D, SIP5K, TOPcap, UltraCap, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.epcos.com/trademarks.