SAW Components

SAW Rx Filter

GSM 900

Series/Type:	**B9405**
Ordering code:	**B39941B9405K610**
Date:	May 15, 2006
Version:	2.1

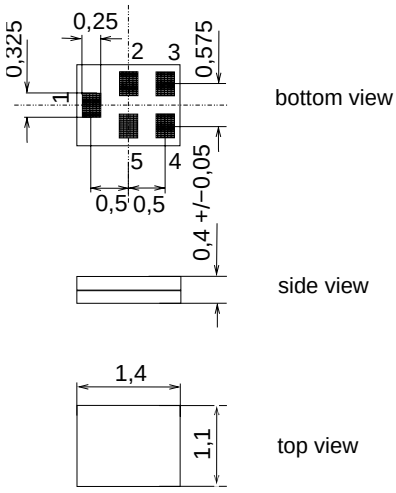
Data Sheet SMD

Application

- Low-loss RF filter for mobile telephone GSM 900 systems, receive path (RX)
- Impedance transform from 50 Ω to 100 Ω
- Unbalanced to balanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 35 MHz
- Suitable for GPRS class 1 to 12

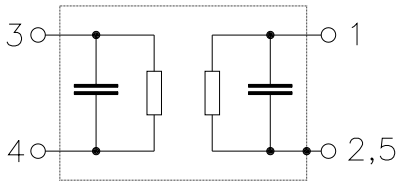
Features

- Package size 1.4 x1.1 x 0.4 mm³
- Package code QCS5F
- RoHS compatible
- Approx. weight 0.003 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

- 1 Input, unbalanced
- 3,4 Output balanced
- 2,5 To be grounded



Characteristics

Temperature range for specification: T = -10 to +85 °C
Terminating source impedance: Z_S = 50Ω
Terminating load impedance: Z_L = 100 Ω (balanced)

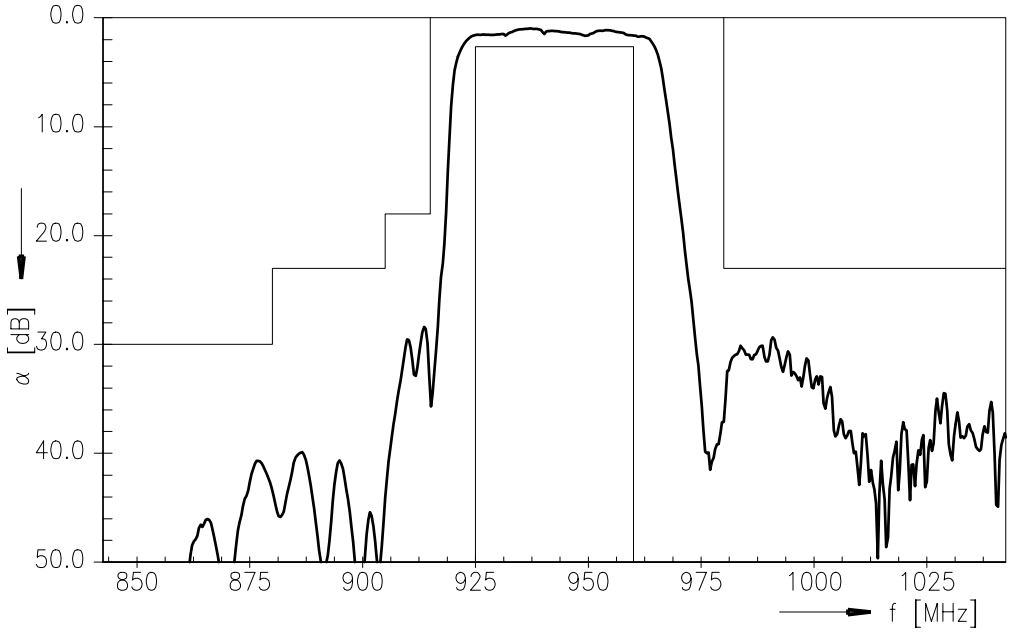
		B9405			
		min.	typ. @ 25°C	max.	
Center frequency	f_C	—	942.5	—	MHz
Maximum insertion attenuation	α_{max}				
925.0 ... 960.0 MHz		—	1.9	2.6	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
925.0 ... 960.0 MHz		—	1.0	1.6	dB
Input VSWR					
925.0 ... 960.0 MHz		—	1.9	2.2	
Output VSWR					
925.0 ... 960.0 MHz		—	1.8	2.2	
Common mode suppression	S_{cs21}				
925.0 ... 960.0 MHz		20	27	—	dB
824.0 ... 995.0 MHz		20	24	—	dB
1648.0 ... 1990.0 MHz		20	48	—	dB
3296.0 ... 3980.0 MHz		20	33	—	dB
Attenuation	α				
0.3 ... 480.0 MHz		45	56	—	dB
480.0 ... 880.0 MHz		30	33	—	dB
880.0 ... 905.0 MHz		23	35	—	dB
905.0 ... 915.0 MHz		18	29	—	dB
980.0 ... 1850.0 MHz		23	29	—	dB
1850.0 ... 1920.0 MHz		30	48	—	dB
1920.0 ... 2400.0 MHz		25	44	—	dB
2400.0 ... 2500.0 MHz		40	44	—	dB
2500.0 ... 5150.0 MHz		30	42	—	dB
5150.0 ... 5825.0 MHz		40	45	—	dB
5825.0 ... 6000.0 MHz		30	45	—	dB
6000.0 ...12750.0 MHz		—	—	—	dB

Maximum ratings

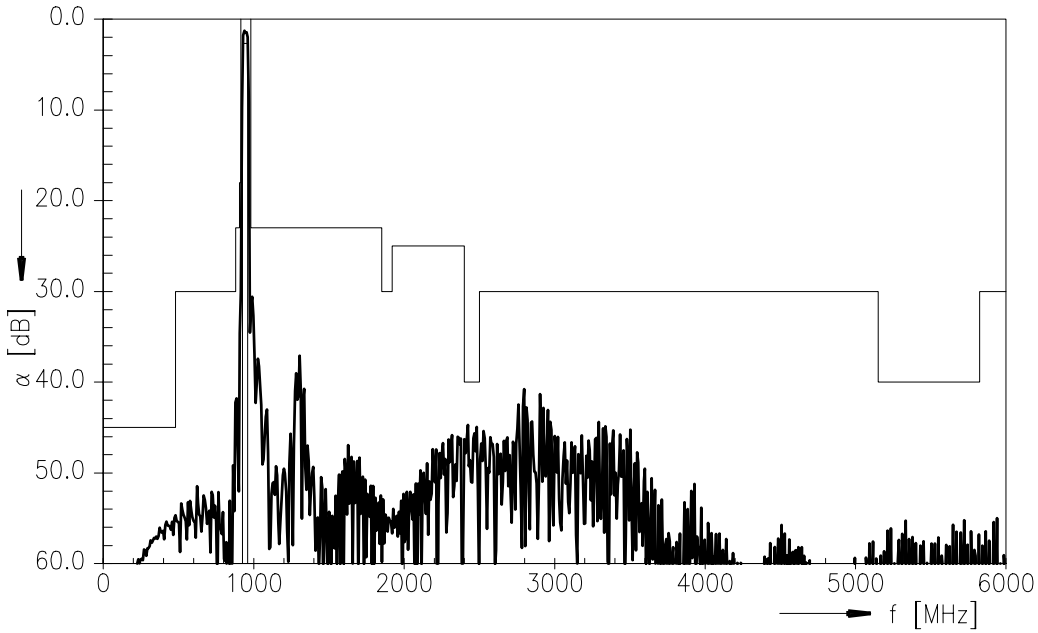
Operable temperature range	T	-30/+85	˚C	
Storage temperature range	T_{stg}	-40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100 [1)]	V	machine model, 10 pulses
Input Power at				
GSM850, GSM900	P_{IN}	15	dBm	effective power in the on-state
GSM1800, GSM1900	P_{IN}	15	dBm	duty cycle 4:8
Tx bands				

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

Transfer function (passband)

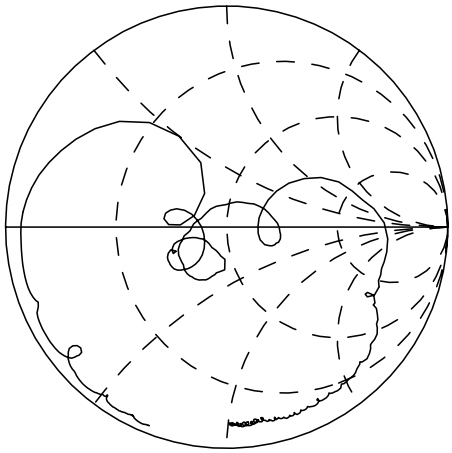


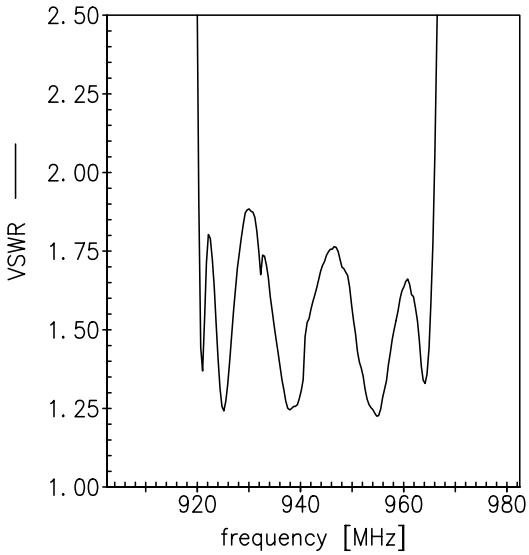
Transfer function



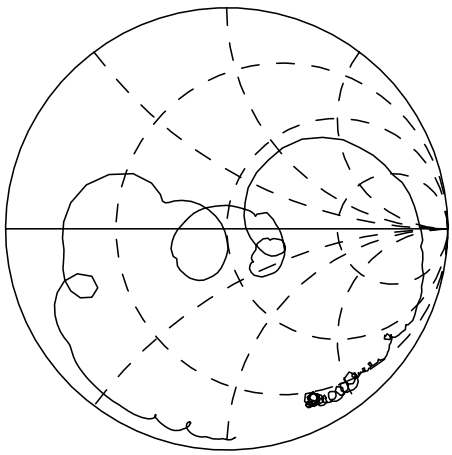
Smith chart / VSWR

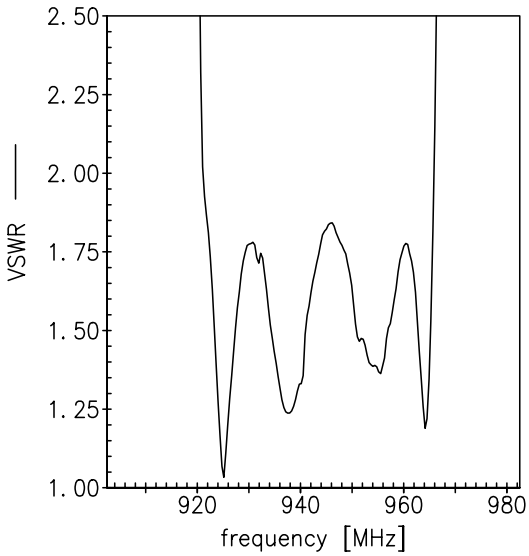
S_{11} function





S_{22} function





References

Type	B9405
Ordering code	B39941B9405K610
Marking and package	C61157-A8-A1
Packaging	F61074-V8212-Z000
Date codes	L_1126
S-parameters	B9405_NB.s3p B9405_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."
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.

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

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.

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, SilverCap, 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.