



## **SAW Components**

### **SAW Rx Filter**

GSM 1900

<b>Series/Type:</b>	<b>B9403</b>
<b>Ordering code:</b>	<b>B39202B9403K610</b>
<b>Date:</b>	<b>November 28, 2008</b>
<b>Version:</b>	<b>2.1</b>



Data Sheet



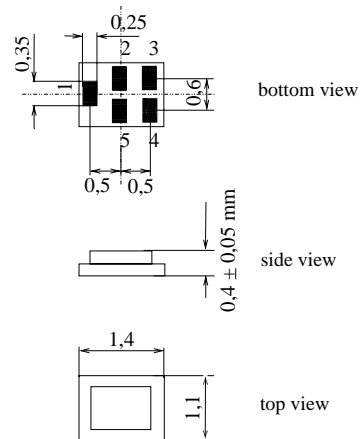
Application

- Low-loss RF filter for mobile telephone PCS systems, receive path (RX)
- Impedance transform from 50 Ω to 150 Ω
- Unbalanced to balanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz
- Suitable for GPRS class 1 to 12



Features

- Package size 1.4 x 1.1 x 0.4 mm<sup>3</sup>
- Package code QCS5U
- RoHS compliant
- Approx. weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals



Pin configuration

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





Data Sheet



Characteristics

Operating temperature range:  $T = -20$  to  $+75$  °C  
 Terminating source impedance:  $Z_S = 50\Omega$   
 Terminating load impedance:  $Z_L = 150\Omega \parallel 18$  nH (balanced)

		min.	typ. @ 25°C	max.	
<b>Center frequency</b>	$f_C$	—	1960	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$	—	1.6	2.6	dB
1930.0 ... 1990.0 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	0,7	1.4	dB
1930.0 ... 1990.0 MHz					
<b>Input VSWR</b>		—	1.7	2.2	
1930.0 ... 1990.0 MHz					
<b>Output VSWR</b>		—	1.7	2.2	
1930.0 ... 1990.0 MHz					
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>		-1.2	-0.6/0.5	1.2	dB
1930.0 ... 1990.0 MHz					
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^\circ</math>)</b>		-10	-1/+4	10	°
1930.0 ... 1990.0 MHz					
<b>Attenuation</b>	$\alpha$				
0.0 ... 1510.0 MHz		40	46	—	dB
1510.0 ... 1830.0 MHz		30	37	—	dB
1830.0 ... 1850.0 MHz		26	32	—	dB
1850.0 ... 1890.0 MHz		23	28	—	dB
1890.0 ... 1910.0 MHz		12	18	—	dB
2010.0 ... 2070.0 MHz		11.5	12.5	—	dB
2070.0 ... 2400.0 MHz		27	29	—	dB
2400.0 ... 2500.0 MHz		35	42	—	dB
2500.0 ... 3860.0 MHz		28	33	—	dB
3860.0 ... 3980.0 MHz		40	49	—	dB
3980.0 ... 5790.0 MHz		28	42	—	dB
5790.0 ... 6000.0 MHz		35	45	—	dB



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B9403

Low-Loss Filter for Mobile Communication

1960.0 MHz

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### Maximum ratings

Operable temperature range	T	-30/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 10 pulses
Input Power at				
GSM850, GSM900	P <sub>IN</sub>	15	dBm	peak power of GSM signal,
GSM1800, GSM1900	P <sub>IN</sub>	15	dBm	duty cycle 4:8
Tx bands				

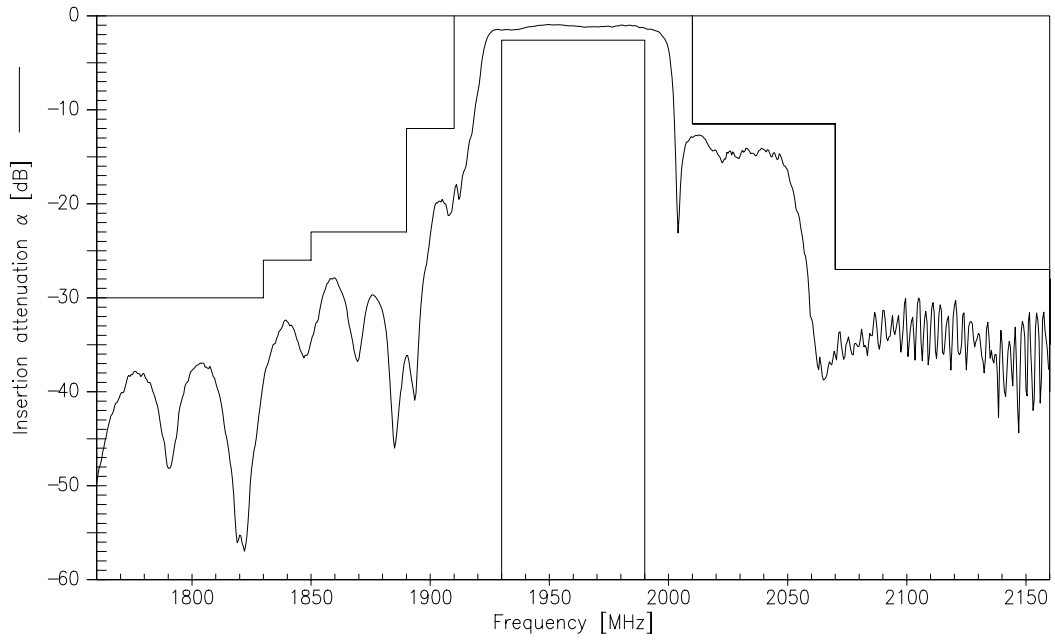
<sup>1)</sup> acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



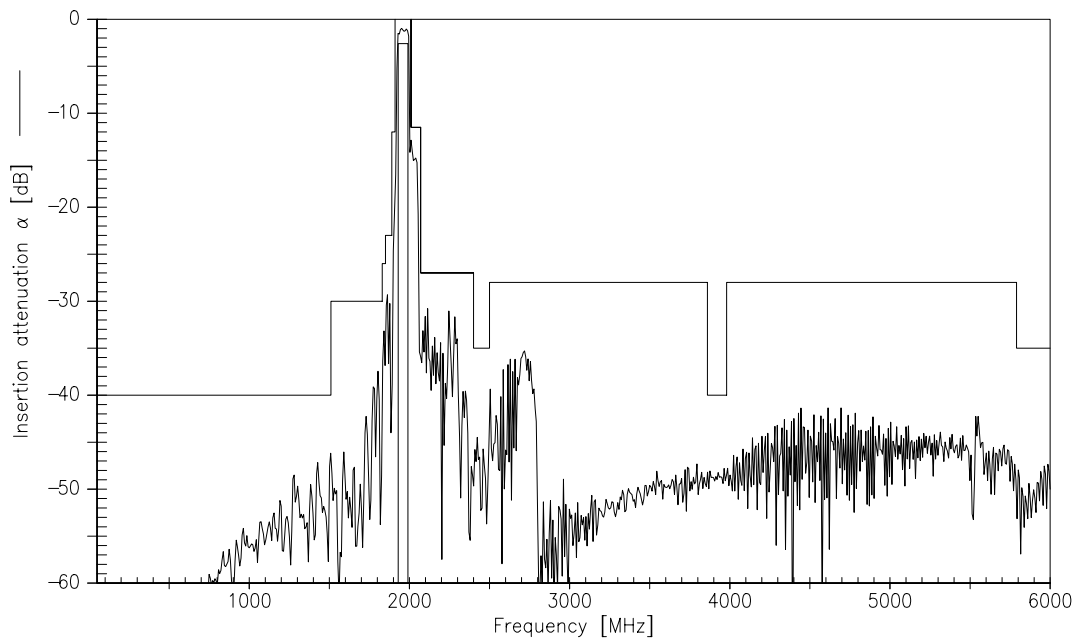
Data Sheet



Transfer function



Transfer function



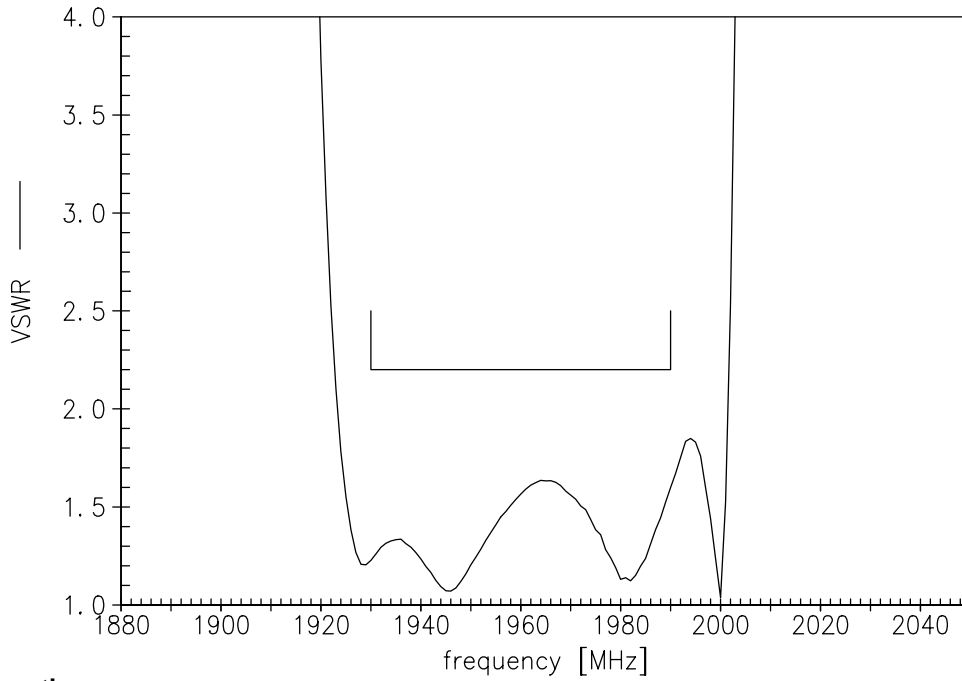


Data Sheet

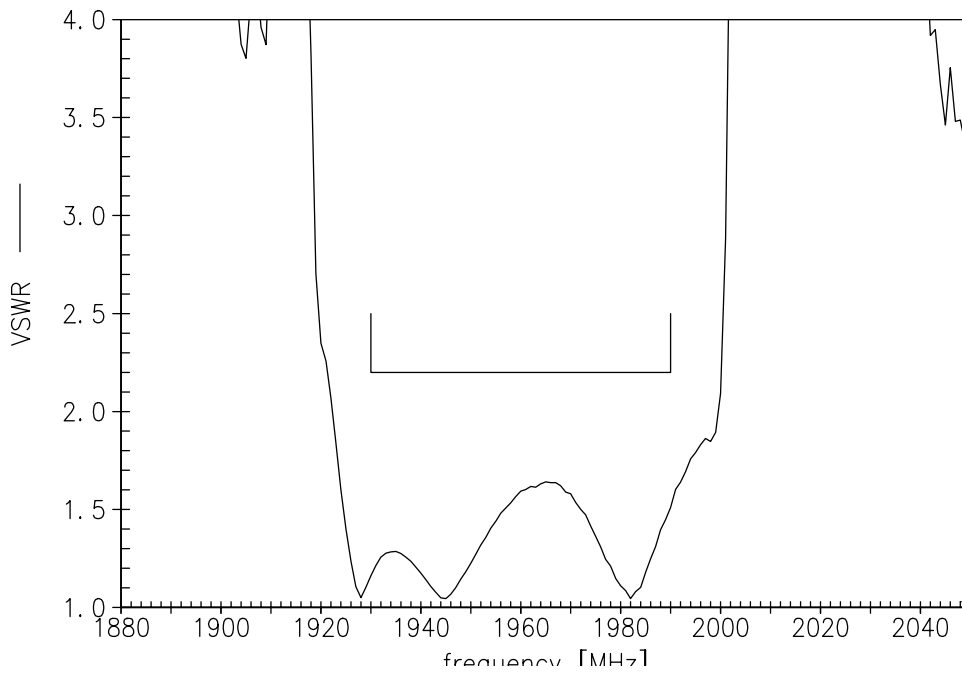


Smith chart

**S<sub>11</sub> function**



**S<sub>22</sub> function**



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



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**Low-Loss Filter for Mobile Communication** **1960.0 MHz**

Data Sheet



### References

<b>Type</b>	B9403
<b>Ordering code</b>	B39202B9403K610
<b>Marking and package</b>	C61157-A8-A14
<b>Packaging</b>	F61074-V8237-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B9403_NB.s3p, B9403_WB.s3p see file header for port/pin assignment table
<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."
<b>Moldability</b>	Before using in overmolding environment, please contact your EPCOS sales office.

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