



# **SAW Components**

## **BAW Bluetooth/WLAN Filter**

**Series/type:** B9604

**Ordering code:** B39242B9604P810

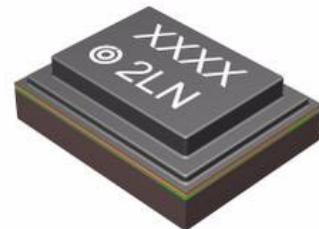
**Date:** June 27, 2012

**Version:** 2.0

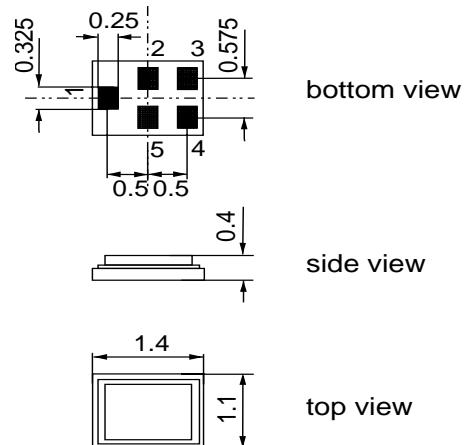
**SAW Components**
**B9604**
**BAW Bluetooth/WLAN Filter**
**2441.0 MHz**
**Data Sheet**

**Application**

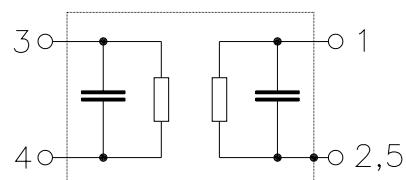
- Low-loss RF filter for Bluetooth/WLAN with LTE Band 7 coexistence
- Usable passband: 79.0 MHz
- Unbalanced to unbalanced operation
- Good insertion attenuation
- High out of band selectivity
- Filter impedance 50 Ω


**Features**

- Package size 1.4 x1.1 x 0.4 mm<sup>3</sup>
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Moisture Sensitivity Level 3


**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.

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**Characteristics**

Temperature range for specification:

 $T = -20^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ 

Terminating source impedance:

 $Z_S = 50\Omega$  (unbalanced)

Terminating load impedance:

 $Z_L = 50\Omega$  shunt coil 15nH

		<b>B9604</b>			
		<b>min.</b>	<b>typ. @ 25 °C</b>	<b>max.</b>	
<b>Center frequency</b>	$f_C$	—	2441.0	—	MHz
<b>Maximum insertion attenuation - BT<sup>1)</sup></b> 2401.5 ... 2480.5 MHz	$\alpha_{\text{max}}$	—	1.9 <sup>1)</sup>	2.6 <sup>1)</sup>	dB
<b>Maximum insertion attenuation - WLAN<sup>2)</sup></b> 2403.1 ... 2480.9 MHz	$\alpha_{\text{max}}$	—	2.4 <sup>2)</sup>	3.3 <sup>2)</sup>	dB
<b>VSWR (Input and Output)</b> 2401.5 ... 2480.9 MHz 2401.5 ... 2480.9 MHz		—	1.8	2.3 <sup>3)</sup>	
<b>Attenuation</b>	$\alpha$				
100.0 ... 699.0 MHz		38	40	—	dB
699.0 ... 960.0 MHz		35	38	—	dB
960.0 ... 1428.0 MHz		34	37	—	dB
1428.0 ... 1607.0 MHz		35	38	—	dB
1607.0 ... 1995.0 MHz		37	39	—	dB
1995.0 ... 2110.0 MHz		39	42	—	dB
2110.0 ... 2170.0 MHz		42	45	—	dB
2300.0 ... 2370.0 MHz		40	47	—	dB
2500.0 ... 2502.0 MHz		26	60	—	dB
2500.0 ... 2502.0 MHz		50 <sup>4)</sup>	60	—	dB
2502.0 ... 2530.0 MHz		50	60	—	dB
2530.0 ... 2570.0 MHz		45	49	—	dB
2570.0 ... 2690.0 MHz		43	47	—	dB
4800.0 ... 5805.0 MHz		27	35	—	dB

1) Averaged value over whole passband due to frequency hopping in Bluetooth mode

2) Averaged for any 17.8 MHz BW over frequency range

 3) At  $+25^{\circ}\text{C}$ 

 4)  $+25^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

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**Maximum ratings**

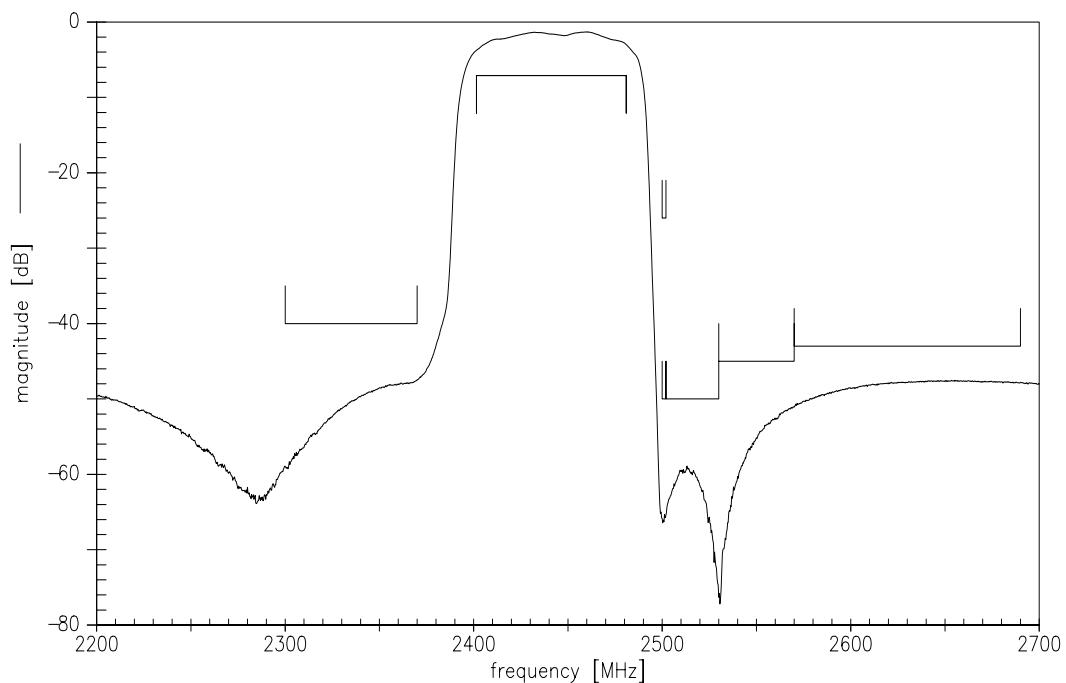
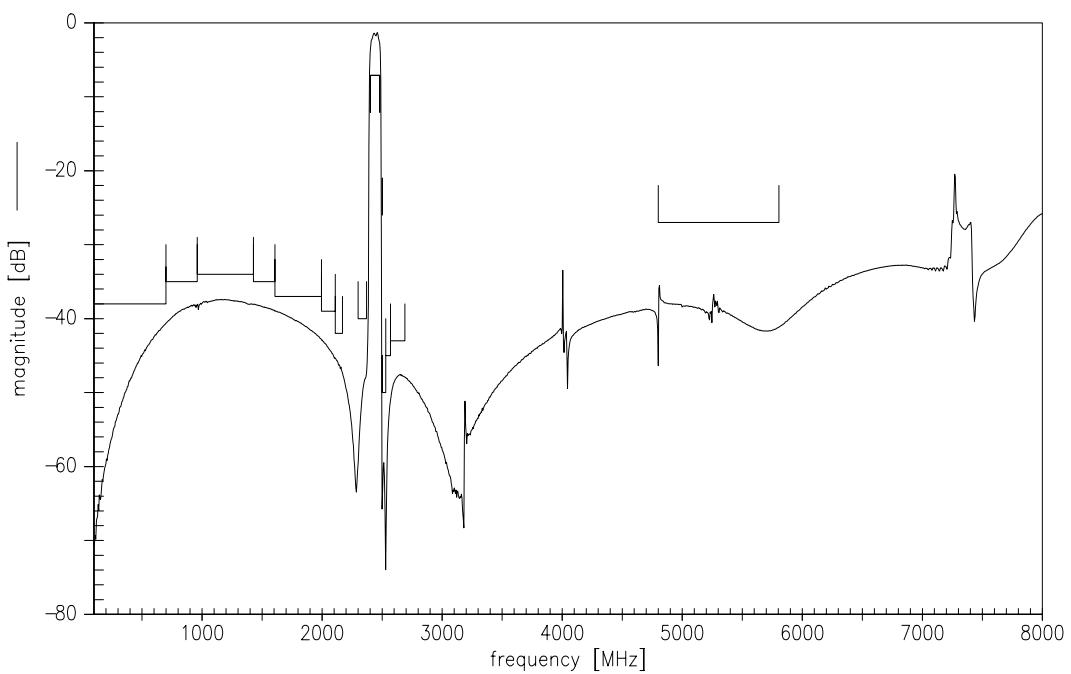
Operable temperature range	T	-30/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	Machine Model
ESD voltage	V <sub>ESD</sub>	500 <sup>2)</sup>	V	Human Body Model
ESD voltage	V <sub>ESD</sub>	600 <sup>3)</sup>	V	Charge Device Model
Input power at 2401.5 - 2480.5 MHz	P <sub>IN</sub>	24	dBm	20 MHz OFDM signal, 65 °C, 2000hr

<sup>1)</sup> acc. to JESD22-A115A.

<sup>2)</sup> acc. to JESD22-A114F.

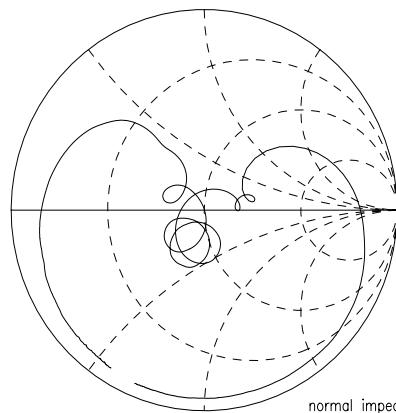
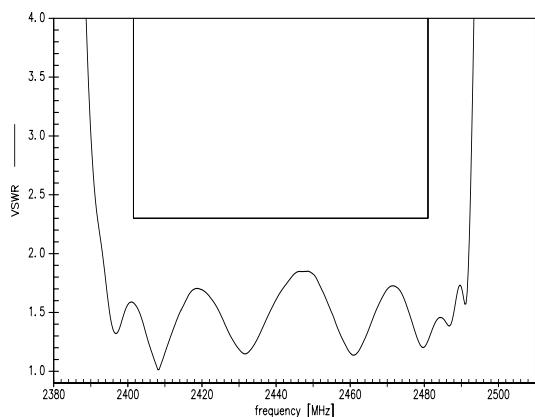
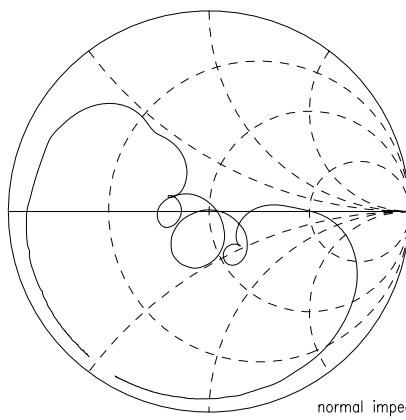
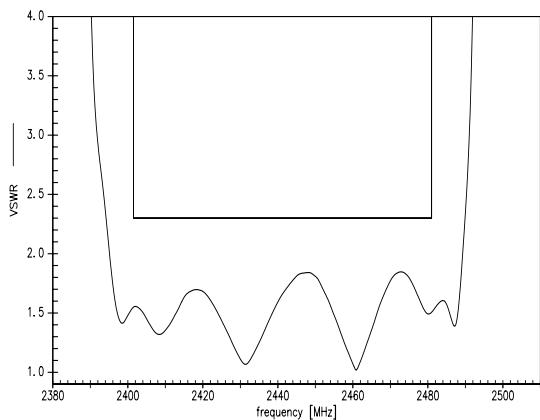
<sup>3)</sup> acc. to JESD22-C101.

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**Transfer function**

**Transfer function (wideband)**


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important notes at the end of this document.

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**S11 VSWR**

 normal impedance:  $50.00 \Omega$ 
**S22 VSWR**

 normal impedance:  $50.00 \Omega$

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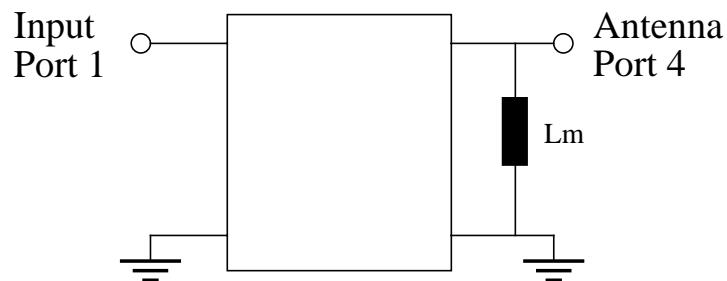
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**Matching network**

- $Lm = 15 \text{ nH}$
- Recommendation to use TDK MLG0603 P-series



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**References**

<b>Type</b>	B9604
<b>Ordering code</b>	B39242B9604P810
<b>Marking and package</b>	C61157-A8-A59
<b>Packaging</b>	F61074-V8212-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B9604_NB.s2p B9604_WB.s2p 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>Matching coils</b>	See Inductor pdf-catalog <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> and Data Library for circuit simulation <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a>
<b>Moldability</b>	Before using in overmolding environment, please contact your EPCOS sales office.

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