



# SAW Components

## SAW Filter

TD-LTE Band 40

<b>Series/Type:</b>	<b>B9496</b>
<b>Ordering code:</b>	<b>B39232B9496P810</b>
<b>Date:</b>	<b>August 08, 2012</b>
<b>Version:</b>	<b>2.0</b>

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Data sheet



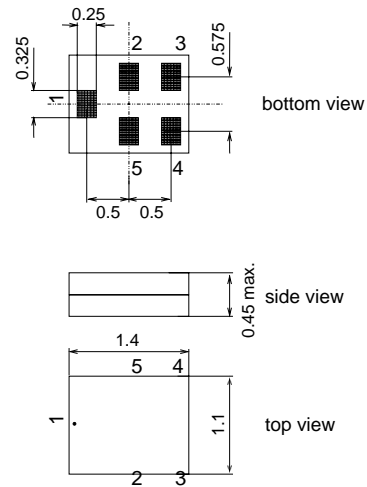
**Application**

- Low-loss RF filter for mobile telephone TDSCDMA and TD-LTE Band 40 system
- Low amplitude ripple
- Usable passband: 50 MHz
- Impedance at input and output 50 Ω
- Unbalanced to unbalanced operation



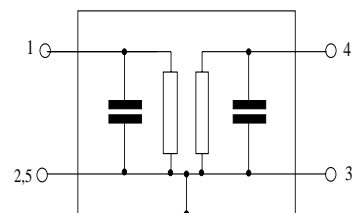
**Features**

- Package size 1.4 x 1.1 mm<sup>2</sup>
- max. Package height 0.45 mm
- RoHS compatible
- Approx. weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitive 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.

Data sheet


**Characteristics**

Operating temperature range:  $T = -30\text{ °C to }+85\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

		min.	typ. @ 25°C	max.	
<b>Center frequency</b>	$f_C$	—	2345.0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	—	1.7	2.4	dB
2320.0 ... 2370.0MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	0.8	1.5	dB
2320.0 ... 2370.0MHz					
<b>Input VSWR</b>		—	1.8	2.1	
2320.0 ... 2370.0MHz					
<b>Output VSWR</b>		—	1.8	2.1	
2320.0 ... 2370.0MHz					
<b>Attenuation</b>	$\alpha$				
50.0 ... 2215.0MHz		26	31	—	dB
2215.0 ... 2240.0MHz		35	40	—	
2240.0 ... 2280.0MHz		15	26	—	dB
2412.0 ... 2472.0MHz $\alpha_{\text{WLAN}}^{1)}$		23	33	—	
2410.0 ... 2485.0MHz		30	42	—	dB
2485.0 ... 6000.0MHz		27	32	—	


**Annotation for characteristics section**

1) Attenuation of WLAN signal ("Powertransferfunction",  $\alpha_{\text{WLAN}}$ ) is determined by

$$\int_{-\infty}^{\infty} |S_{\text{ds21}}(f)H_{\text{RECT}}(f - f_{\text{Carrier}})|^2 df$$

$f_{\text{Carrier}}$  according to IEEE802.11 n (e.g. for WLAN,  $f_{\text{Carrier}}$  ranges from 2412 MHz (lowest channel) to 2472 MHz (highest channel)).  $H_{\text{RECT}}(f)$  is the transfer function of a rectangular shaped filter (BW=18MHz) with the following normalization:

$$\int_{-\infty}^{\infty} |H_{\text{RECT}}(f)|^2 df = 1$$

**Maximum ratings**

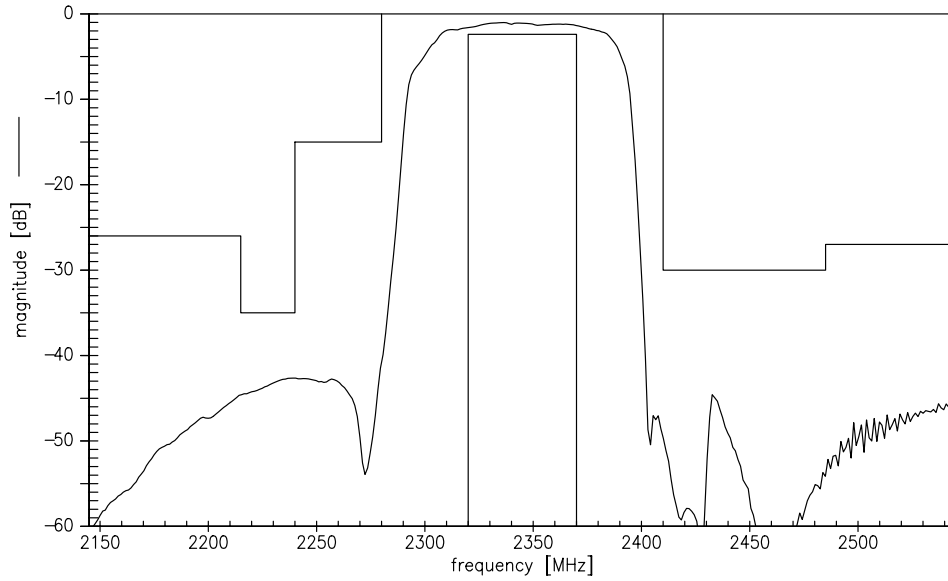
Operable temperature range	T	-40/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 10 pulses
Input Power at 2320.0...2370.0 MHz	P <sub>IN</sub>	22	dBm	continuous wave

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

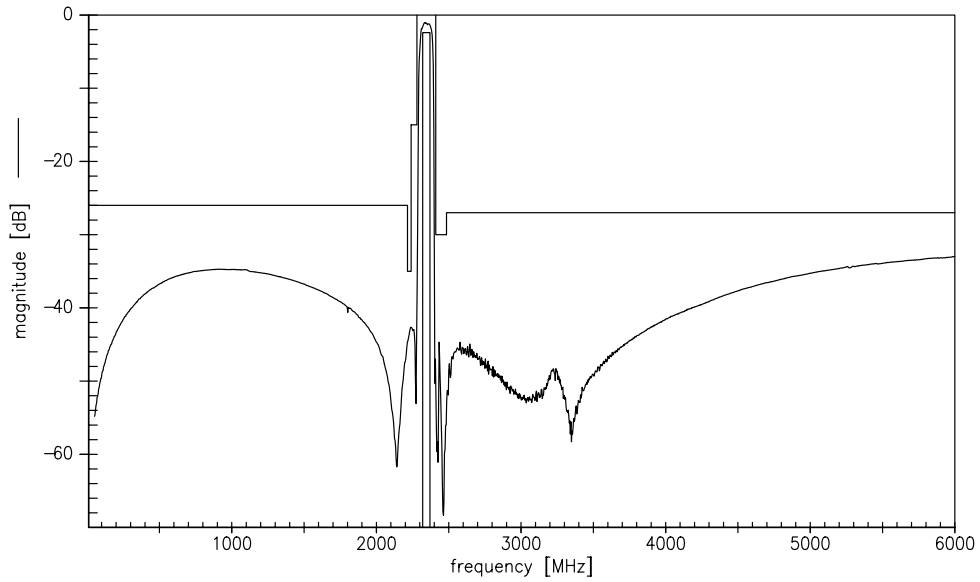
Data sheet



Transfer function



Transfer function (wideband)

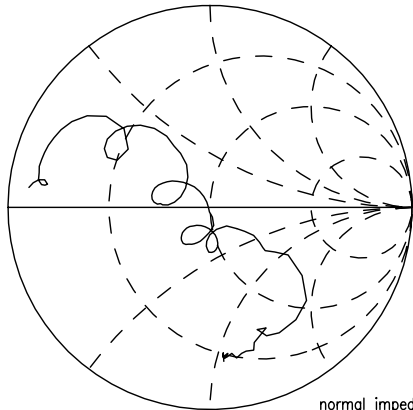


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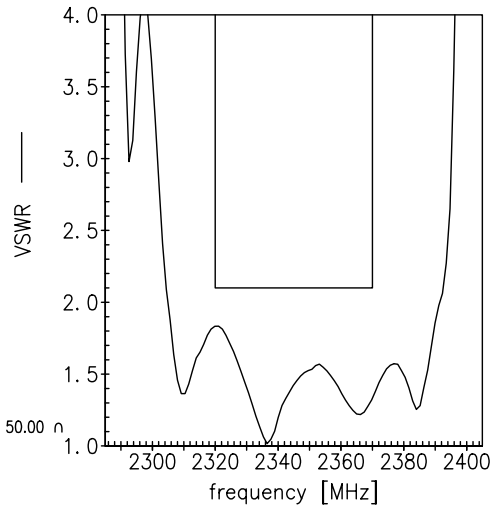


**Smith charts**

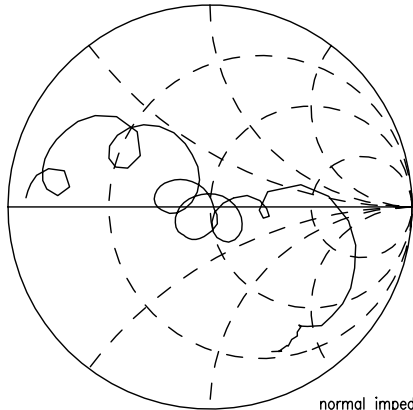
**S<sub>11</sub> function**



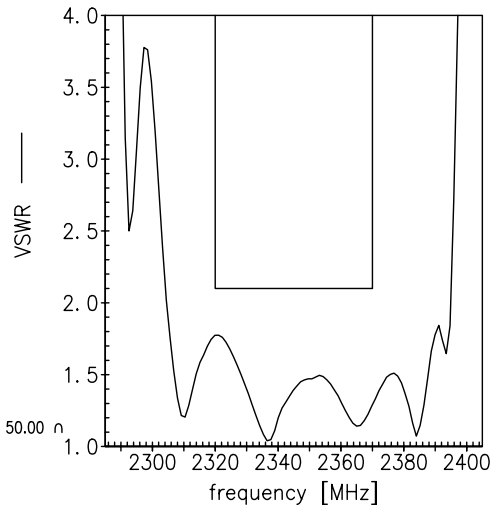
normal impedance: 50.00  $\Omega$



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



normal impedance: 50.00  $\Omega$



<b>SAW Components</b>	<b>B9496</b>
<b>SAW Filter</b>	<b>2345.0 MHz</b>
Data sheet	

## References

<b>Type</b>	B9496
<b>Ordering code</b>	B39232B9496P810
<b>Marking and package</b>	C61157-A8-A3
<b>Packaging</b>	F61074-V8237-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B9496_NB.s2p, B9496_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."
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<b>Matching coils</b>	See <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a> for a large variety of matching coils.

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