



## **SAW Components**

### **SAW RF low loss filter**

Digital radio

<b>Series/type:</b>	<b>B1644</b>
<b>Ordering code:</b>	<b>B39232-B1644-U510</b>
<b>Date:</b>	<b>July 27, 2010</b>
<b>Version:</b>	<b>2.6</b>



**SAW Components**

**B1644**

**SAW RF low loss filter**

**2338.75 MHz**

Data sheet



**Revision History: Changes compared to previous iteration issue**

ISSUE	ORIGINATOR	DETAILED SEPECIFICATION CHANGES	DATE
B1644_2.0	A. Ma	initial release	Dec 17, 2008
B1644_2.1	A. Ma	new temperature range included (-20 to 85)	Dec 09, 2009
B1644_2.2	A. Ma	typical value at 2320MHz changed from 6dB to 4dB. Min spec at output return loss removed	Jan 27, 2010
B1644_2.3	A. Ma	min output return loss added back (10.0dB), typical value change from 10dB to 15dB	Feb 04, 2010
B1644_2.4	A. Ma	typical value at 2320MHz changed back to 6dB	Feb 25, 2010
B1644_2.5	A. Ma	include human model spec and change machine model spec from 50V to 100V	Jul 16, 2010
B1644_2.6	A. Ma	include revision history page	Jul 27, 2010



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**SMD**

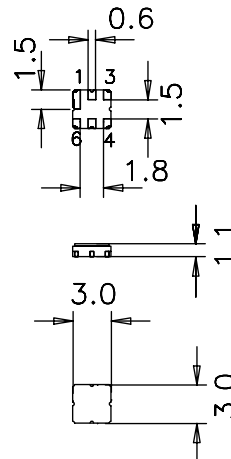
### Application

- Low-loss RF filter for digital radio
- Impedance transformation from 50  $\Omega$  to 100  $\Omega$
- Unbalanced to balanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 12.5 MHz
- no matching network required



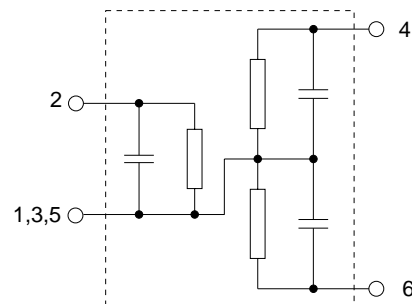
### Features

- Package size 3.0 x3.0 x 1.1 mm<sup>3</sup>
- Maximum height of 1.225 mm
- Package code DCC6D
- RoHS compatible
- Approximate weight 0.037 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- AEC-Q200 qualified component family
- **Electrostatic Sensitive Device (ESD)**



### Pin configuration

- 2 Input unbalanced
- 4,6 Output balanced
- 1,3,5 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 °C to +85 °C  
 Terminating source impedance: Z<sub>S</sub> = 50 Ω  
 Terminating load impedance: Z<sub>L</sub> = 100 Ω (balanced)

		min.	typ. @ 25 °C	max.	
<b>Nominal frequency</b>	f <sub>N</sub>	—	2338.75	—	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>	—	2.4	3.5	dB
2332.5 ... 2345.0 MHz					
<b>Amplitude ripple (p-p)</b>	Δα	—	0.4	1.6	dB
2332.5 ... 2345.0 MHz					
<b>Output amplitude balance ( S<sub>31</sub>/S<sub>21</sub> )</b>		-1.2	-0.7/0.0	1.5	dB
2332.5 ... 2345.0 MHz					
<b>Output phase balance (φ(S<sub>31</sub>) - φ(S<sub>21</sub>)+180°)</b>		-9.0	-7.0/-1.8	1.0	°
2332.5 ... 2345.0 MHz					
<b>Input return loss</b>		10.0	15.0	—	dB
<b>Output return loss</b>		10.0	15.0	—	dB
<b>Attenuation</b>	α				
88.0 ... 108.0 MHz		50	65	—	dB
880.0 ... 960.0 MHz		40	56	—	dB
1710.0 ... 1910.0 MHz		38	43	—	dB
2305.0 MHz		—	11	—	dB
2310.0 MHz		—	9	—	dB
2315.0 MHz		—	9	—	dB
2320.0 MHz		—	6	—	dB
2450.0 MHz		20	25	—	dB
3060.0 MHz		35	50	—	dB
<b>Group delay ripple (p-p)</b>		—	3	15	ns
2332.5 ... 2345.0 MHz					



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**Characteristics**

Temperature range for specification: T = -40 °C to+105 °C  
 Terminating source impedance: Z<sub>S</sub> = 50 Ω  
 Terminating load impedance: Z<sub>L</sub> = 100 Ω (balanced)

		min.	typ. @ 25 °C	max.	
<b>Nominal frequency</b>	f <sub>N</sub>	—	2338.75	—	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>	—	2.4	4.8	dB
2332.5 ... 2345.0 MHz					
<b>Amplitude ripple (p-p)</b>	Δα	—	0.4	2.9	dB
2332.5 ... 2345.0 MHz					
<b>Output amplitude balance ( S<sub>31</sub>/S<sub>21</sub> )</b>		-5.0	-0.7/0.0	3.5	dB
2332.5 ... 2345.0 MHz					
<b>Output phase balance (φ(S<sub>31</sub>) - φ(S<sub>21</sub>)+180°)</b>		-12.0	-7.0/-1.8	8.0	°
2332.5 ... 2345.0 MHz					
<b>Input return loss</b>		10.0	15.0	—	dB
<b>Output return loss</b>		10.0	15.0	—	
<b>Attenuation</b>	α				dB
88.0 ... 108.0 MHz		50	65	—	
880.0 ... 960.0 MHz		40	56	—	
1710.0 ... 1910.0 MHz		38	43	—	
2305.0 MHz		—	11	—	
2310.0 MHz		—	9	—	
2315.0 MHz		—	9	—	
2320.0 MHz		—	6	—	
2450.0 MHz		20	25	—	
3060.0 MHz		35	50	—	
<b>Group delay ripple (p-p)</b>		—	3	20	ns
2332.5 ... 2345.0 MHz					



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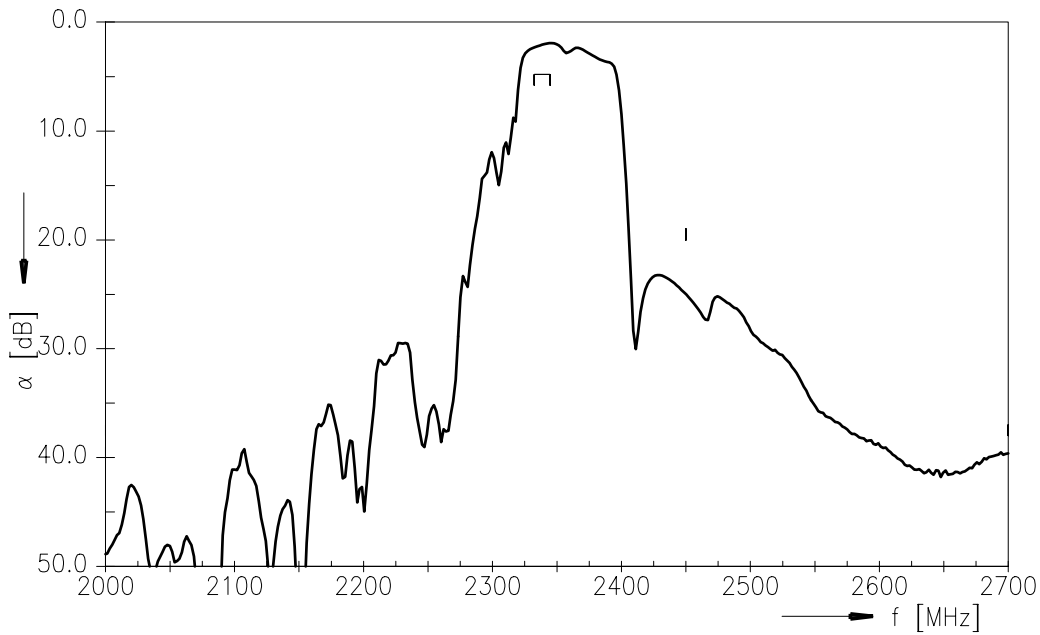
**Maximum ratings**

Operable temperature range	T	-40/+105	°C	
Storage temperature range	T <sub>stg</sub>	-40/+125	°C	
DC voltage	V <sub>DC</sub>	0	V	
ESD voltage	V <sub>ESD</sub>	100 <sup>1)</sup>	V	machine model, 1 pulse
	V <sub>ESD</sub>	200 <sup>2)</sup>	V	human body model, 1 pulse
Input power at 2332.5 MHz...2345.0 MHz	P <sub>IN</sub>	0	dBm	source impedance 50 Ω

1) according to JESD22-A115A (machine model), 1 negative & 1 positive pulse.

2) acc. to JESD22-A114F (human body model), 1 negative & 1 positive pulse.

**Transfer function**



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



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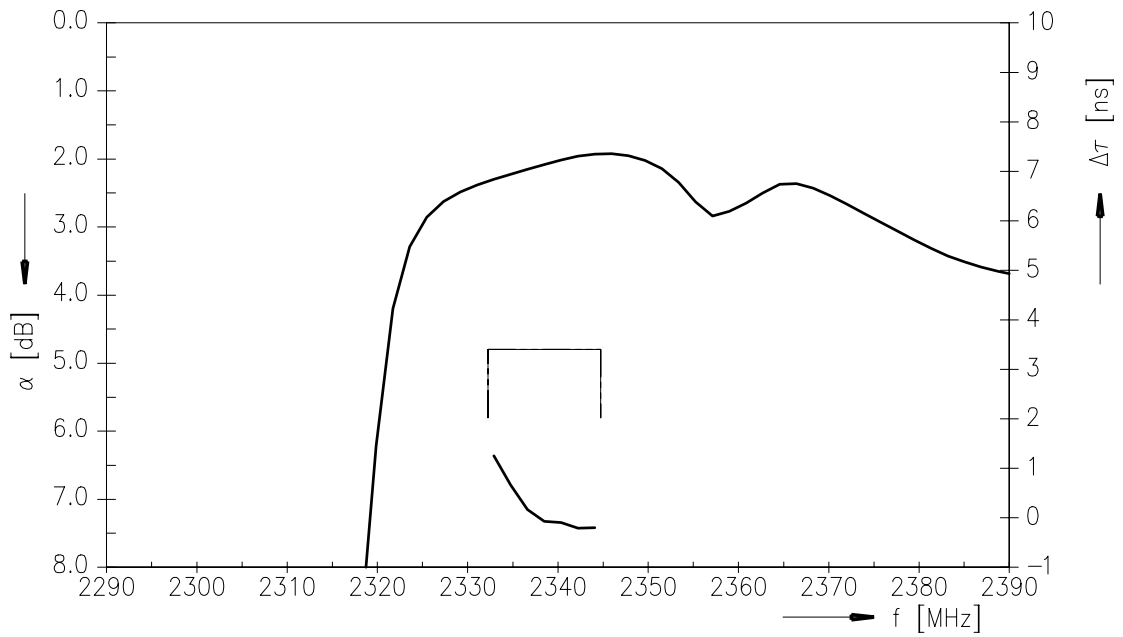
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2338.75 MHz

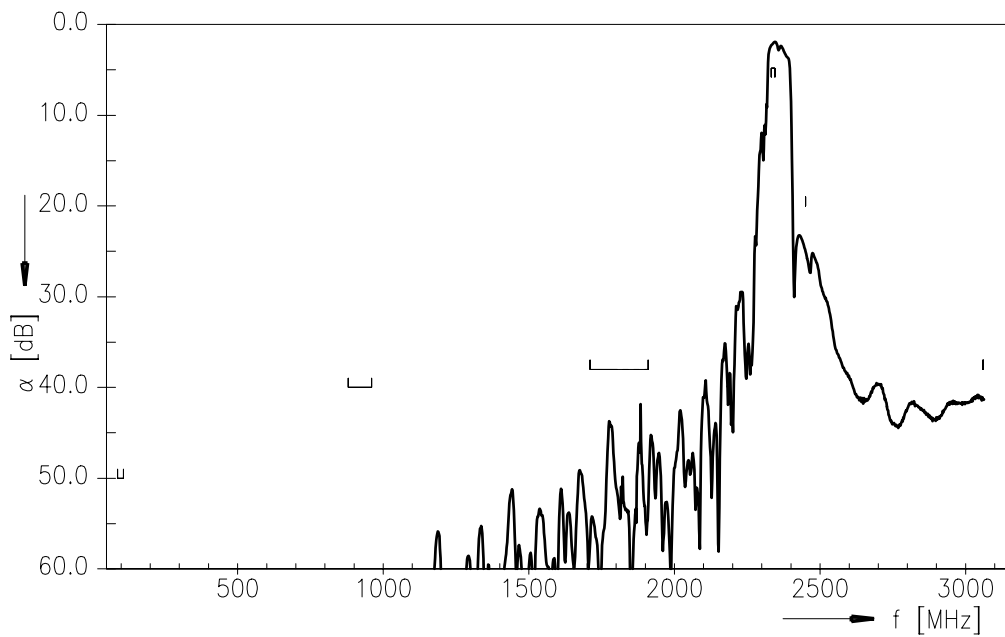
Data sheet



Transfer function (passband)



Transfer function (wideband)



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## References

Type	B1644
Ordering code	B39232-B1644-U510
Marking and package	C61157-A7-A68
Packaging	F61074-V8168-Z000
Date codes	L_1126
S-parameters	B1644_NB.s3p See file header for port/pin assignment table.
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."

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

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