



SAW Components

SAW filter

Bluetooth

Series/type:	B9447
Ordering code:	B39242B9447K610
Date:	July 31, 2008
Version:	2.0



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B9447

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2441.75 MHz

Data sheet



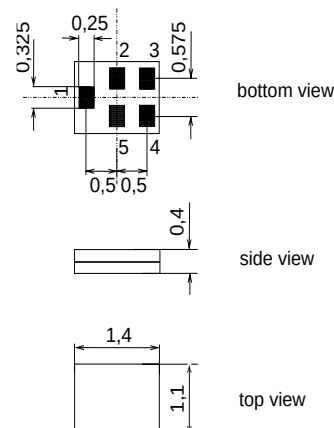
Application

- Low-loss RF filter for mobile telephone bluetooth systems
- Impedance transformation from 50 Ω to 100 Ω
- Unbalanced to balanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 83.5 MHz



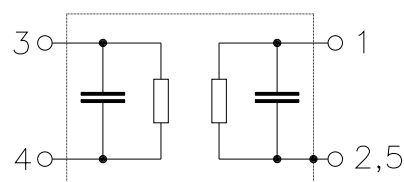
Features

- Package size 1.4 x 1.1 x 0.4 mm³
- Package code QCS5U
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**



Pin configuration

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





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Characteristics of Filter

Temperature range for specification: $T = -30\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$
 Terminating source impedance: $Z_S = 50\ \Omega \parallel 5.6\text{ nH}$
 Terminating load impedance: $Z_L = 100\ \Omega \parallel 10\text{ nH (balanced)}$

		B9447			
		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	2441.75	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$	—	2.2	2.7	dB
2400.0 ... 2483.5 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0.5	1.1	dB
2400.0 ... 2483.5 MHz					
VSWR (Input)		—	1.6	2.0	
2400.0 ... 2483.5 MHz					
VSWR (Output)		—	2.0	2.3	
2400.0 ... 2483.5 MHz					
CMRR ($S_{21}-S_{31} / S_{21}+S_{31}$)		18 ¹⁾	22	—	dB
2400.0... 2483.5 MHz					
Attenuation	α				
0.1 ... 960.0 MHz		50	57	—	dB
960 ... 1200.0 MHz		45	53	—	dB
1200.0 ... 1570.0 MHz		40	45	—	dB
1570.0 ... 1580.0 MHz		45	49	—	dB
1580.0 ... 1710.0 MHz		40	45	—	dB
1710.0 ... 1870.0 MHz		37	46	—	dB
1870.0 ... 1906.0 MHz		28 ²⁾	32	—	dB
1906.0 ... 1927.0 MHz		37	42	—	dB
1927.0 ... 1964.0 MHz		32 ³⁾	36	—	dB
1964.0 ... 1990.0 MHz		37	47	—	dB
1990.0 ... 2110.0 MHz		37	44	—	dB
2110.0 ... 2170.0 MHz		42	46	—	dB
2170.0 ... 2200.0 MHz		37	47	—	dB
2200.0 ... 2250.0 MHz		25	30	—	dB
2700.0 ... 4000.0 MHz		30	35	—	dB
4000.0 ... 6000.0 MHz		45	52	—	dB
7200.0 ... 7500.0 MHz		40	50	—	dB

¹⁾ A phase balance of 10° together with an amplitude balance of 1.8 dB correspond to a CMRR of 17.4 dB

²⁾ 1 narrow spike inside this frequency range with typical 32 dB and a typical bandwidth of 0.5MHz at 35 dB

³⁾ 1 narrow spike inside this frequency range with typical 36 dB and a typical bandwidth of 0.5MHz at 37 dB



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Maximum ratings of Filter

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}	50 ¹⁾	V	machine model, 10 pulses
Input power at				source/load impedance 50Ω/100Ω
2400 ... 2483.5 MHz	P _{IN}	15	dBm	bluetooth signal
824 ... 941 MHz	P _{IN}	15	dBm	cw
1710 ... 1910 MHz	P _{IN}	15	dBm	cw
1920 ... 1980 MHz	P _{IN}	15	dBm	cw

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



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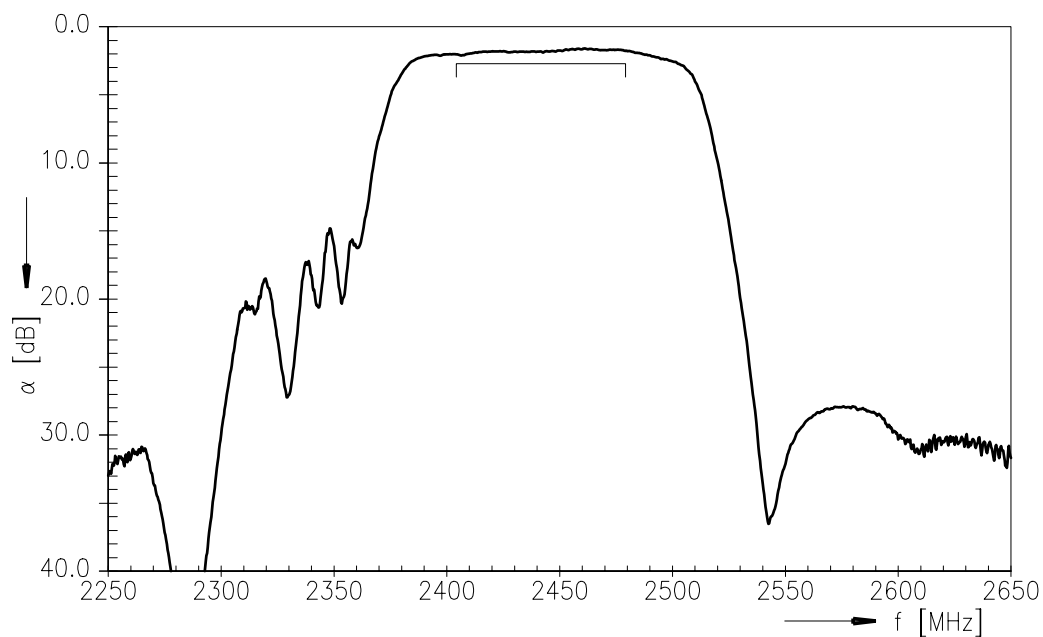
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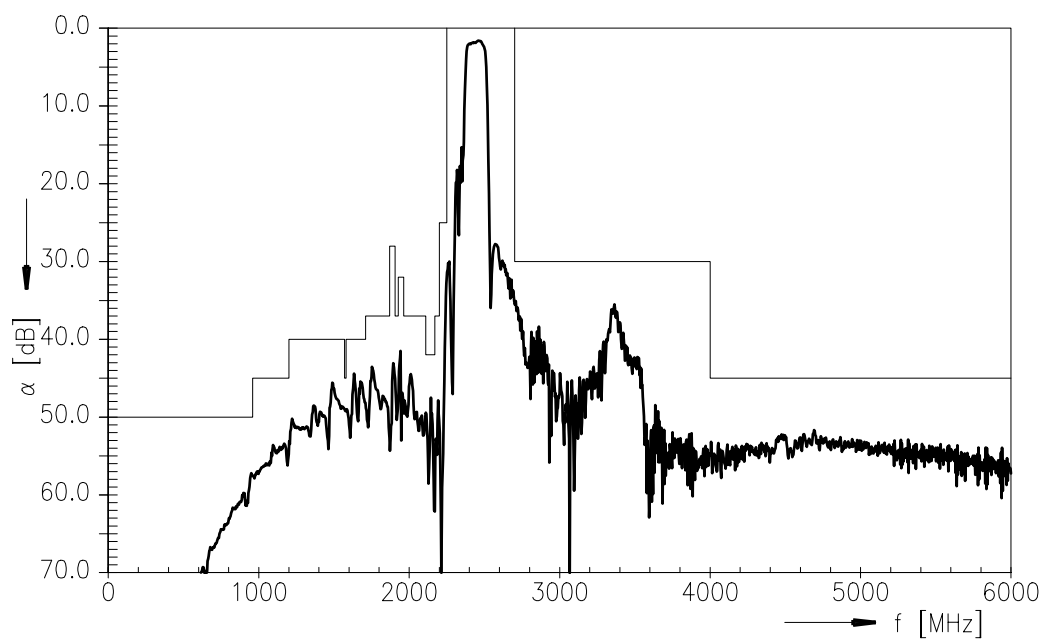
Data sheet



Transfer function (narrow band)



Transfer function (wide band)





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SAW filter

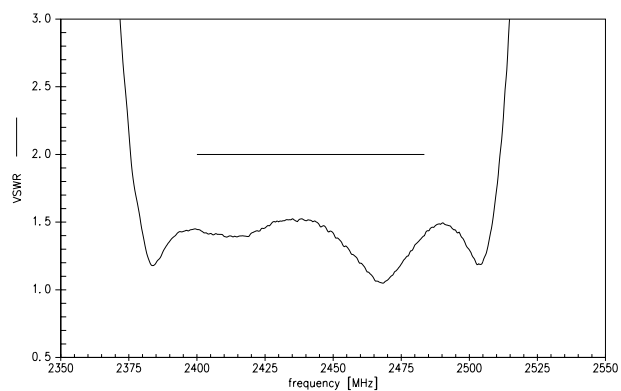
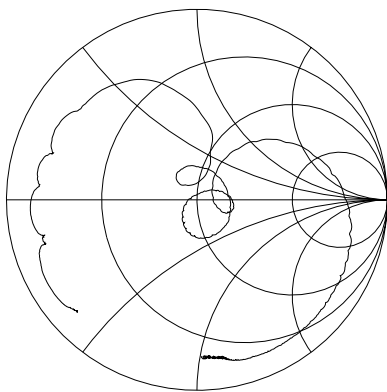
2441.75 MHz

Data sheet

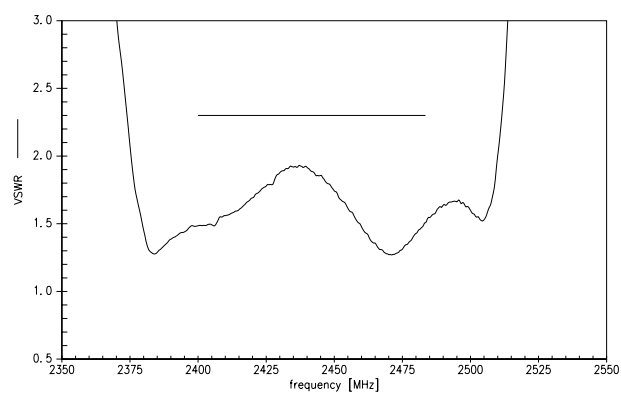
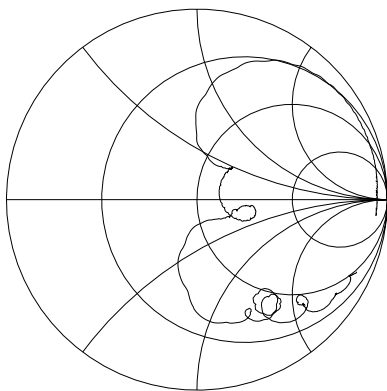


Smith chart / VSWR

S_{11} function



S_{22} function





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References

Type	B9447
Ordering code	B39242B9447K610
Marking and package	C61157-A8-A14
Packaging	F61074-V8212-Z000
Date codes	L_1126
S-parameters	B9447_NB.s3p, B9447_WB.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."
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.

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