



SAW Components

SAW filter

Bluetooth

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



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2441.75 MHz

Data sheet



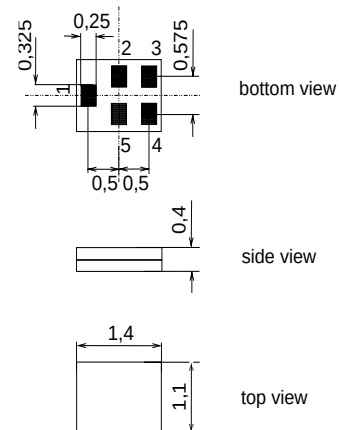
Application

- 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



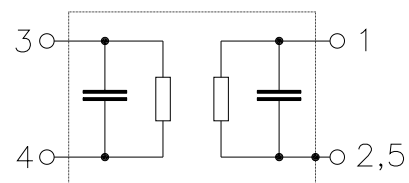
Features

- 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: $T = -30\text{ °C to } +85\text{ °C}$
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

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



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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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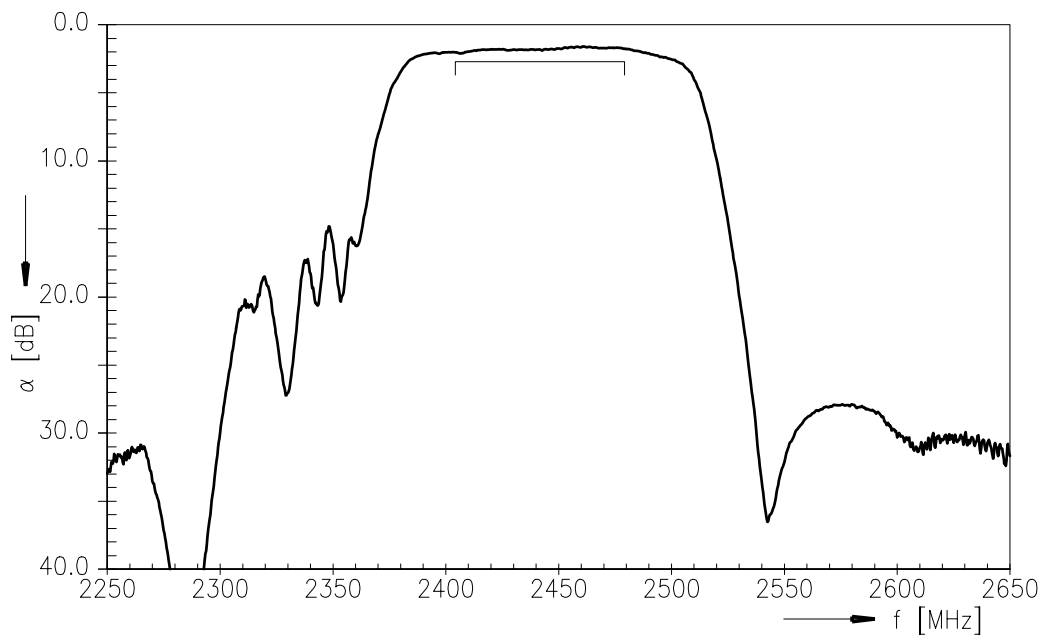
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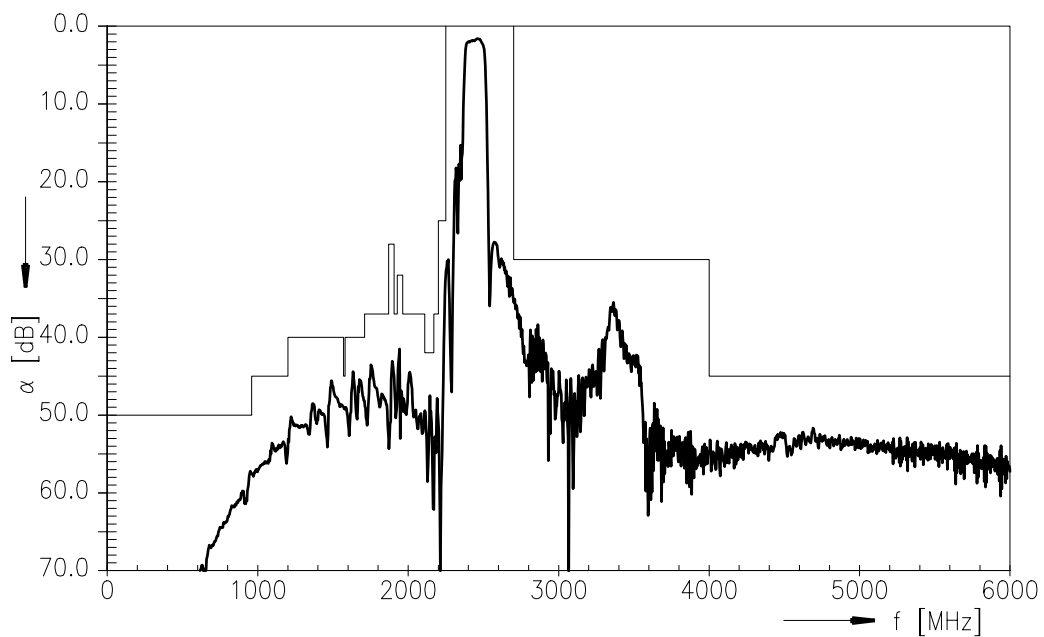
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Transfer function (narrow band)



Transfer function (wide band)



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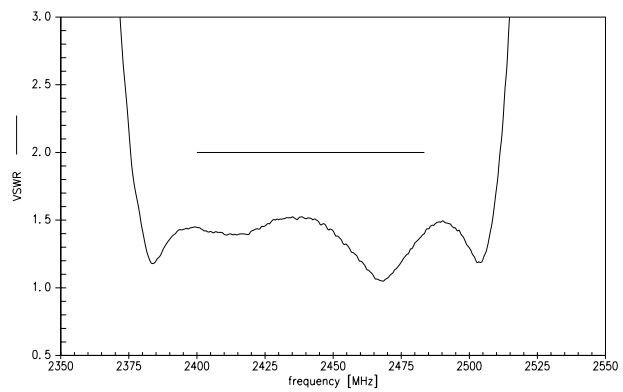
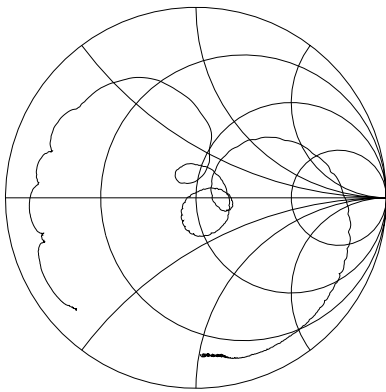
2441.75 MHz

Data sheet

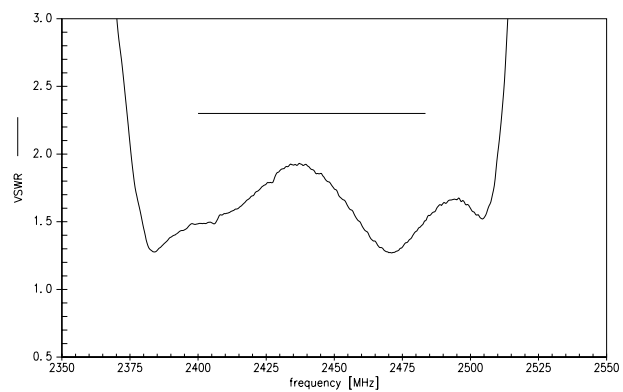
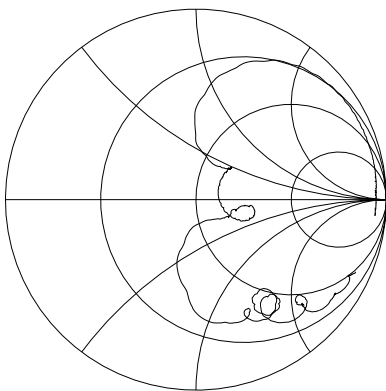


Smith chart / VSWR

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 maxi- mum concentration values for certain hazardous substances in electrical and electronic equipment."
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.

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