SAW Components

SAW Tx Filter

WCDMA Band VIII

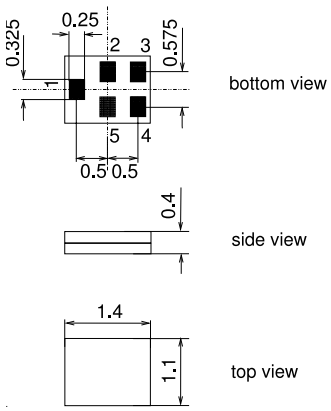
Series/type:	**B9442**
Ordering code:	**B39901B9442M410**
Date:	May 04, 2009
Version:	2.1

Application

- Low-loss RF filter for mobile telephone WCDMA 900 systems, transmit path (Tx)
- Usable passband 35.0 MHz
- Unbalanced to unbalanced operation
- Low insertion attenuation
- Suitable for GPRS class 1 to 12

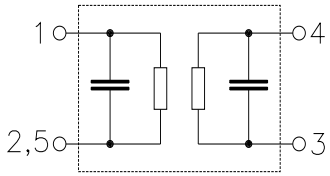
Features

- Package size 1.4 x 1.1 x 0.4 mm³
- Package code QCS5I
- RoHS compatible
- Approximate weight 0.003 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

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



Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

					min.	typ. @ 25 ˚C	max.	
Center frequency				f_C	—	897.5	—	MHz
Maximum insertion attenuation								
880.0	...	915.0	MHz	α_{max}	—	2.3	3.6	dB
882.4	...	912.6	MHz	α_{WCDMA} [1]	—	1.8	2.6	dB
Amplitude ripple (p-p)								
880.0	...	915.0	MHz	$\Delta\alpha$	—	1.3	2.6	dB
880.0	...	915.0	MHz	$\Delta\alpha_{5MHz}$ [2]	—	1.0	2.0	dB
Group delay ripple								
880.0	...	915.0	MHz	$\Delta\tau_{5MHz}$ [2]	—	30	120	ns
Error Vector Magnitude								
@$f_{Carrier}$ 882.4	...	912.6	MHz	EVM [3]	—	2.6	4.0	%
Input VSWR								
880.0	...	915.0	MHz		—	2.0	2.3	
Output VSWR								
880.0	...	915.0	MHz		—	2.0	2.3	
Attenuation								
10.0	...	835.0	MHz		30	37	—	dB
835.0	...	870.0	MHz		15	23	—	dB
925.0	...	960.0	MHz		15	28	—	dB
@$f_{Carrier}$ 927.4	...	957.6	MHz	α_{WCDMA} [1]	25 [4]	33	—	dB
960.0	...	1576.5	MHz		32	35	—	dB
1576.5	...	2400.0	MHz		38	42	—	dB
2400.0	...	2640.0	MHz		35	39	—	dB
2640.0	...	2800.0	MHz		38	43	—	dB
2800.0	...	6000.0	MHz		25	38	—	dB

[1] Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on the next page.
[2] Ripple determined within any 5MHz channel.
[3] Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
[4] Minimum attenuation of 28dB in the temperature range 0 ˚C to +85 ˚C.

Annotation for characteristics section

Attenuation of WCDMA signal ("Powertransferfunction", α_{WCDMA}) is determined by

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

$f_{Carrier}$ according to 3GPP TS 25.101 (e.g. for Passband, $f_{Carrier}$ ranges from 882.4 MHz (lowest Tx channel) to 912.6 MHz (highest Tx channel)). $H_{RRC}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

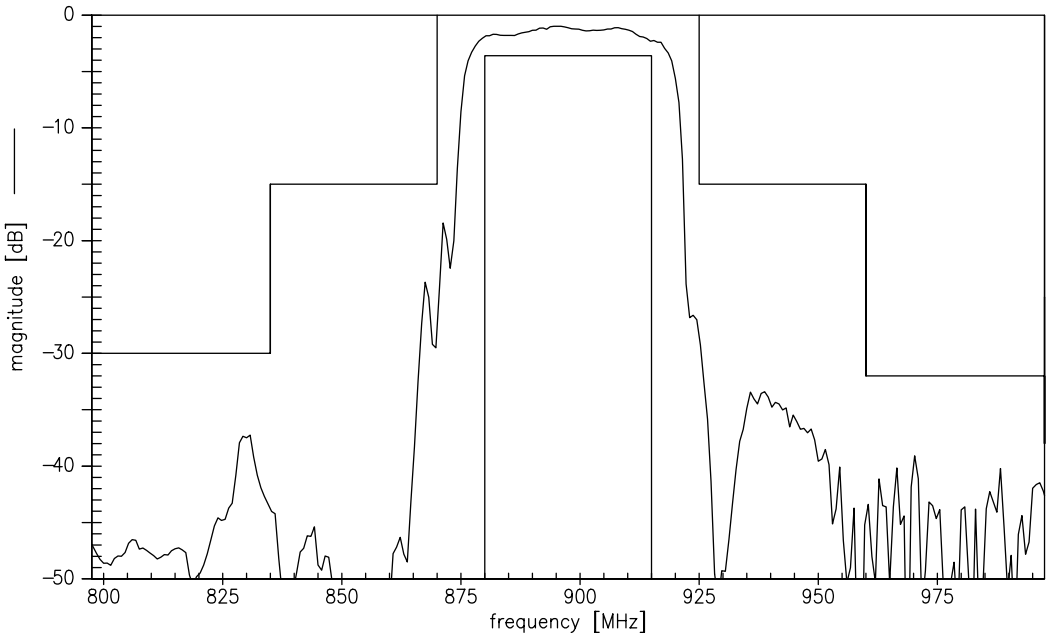
$$\int_{\infty}^{\infty} |H_{RRC}(f)|^2 df = 1$$

Maximum ratings

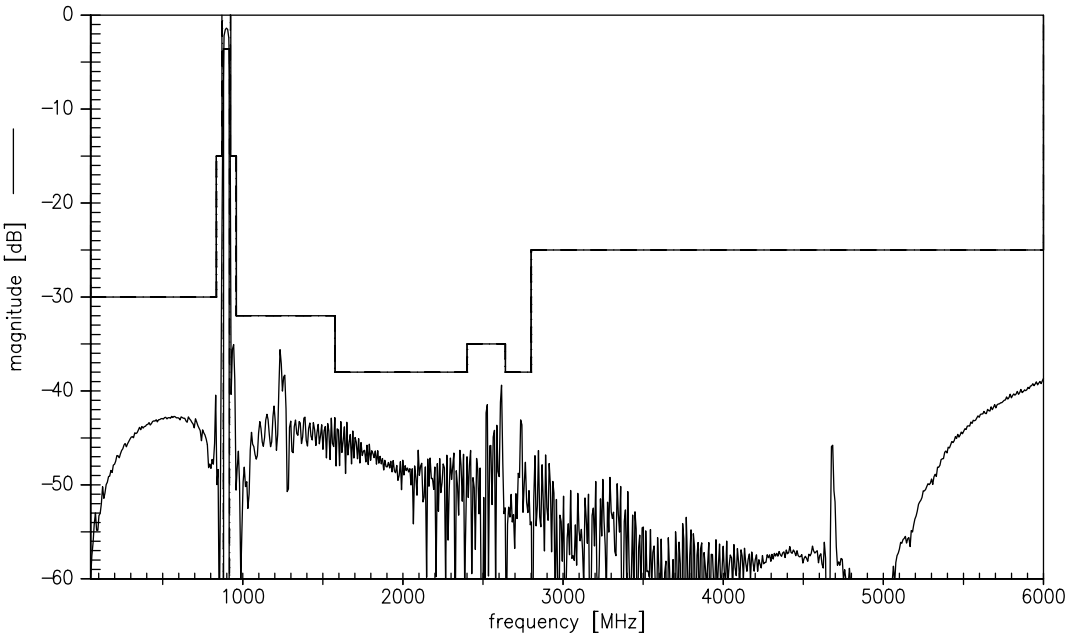
Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 1 pulse
Input Power	P_{IN}	13	dBm	cw signal

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

Transfer function (S21, Narrowband)

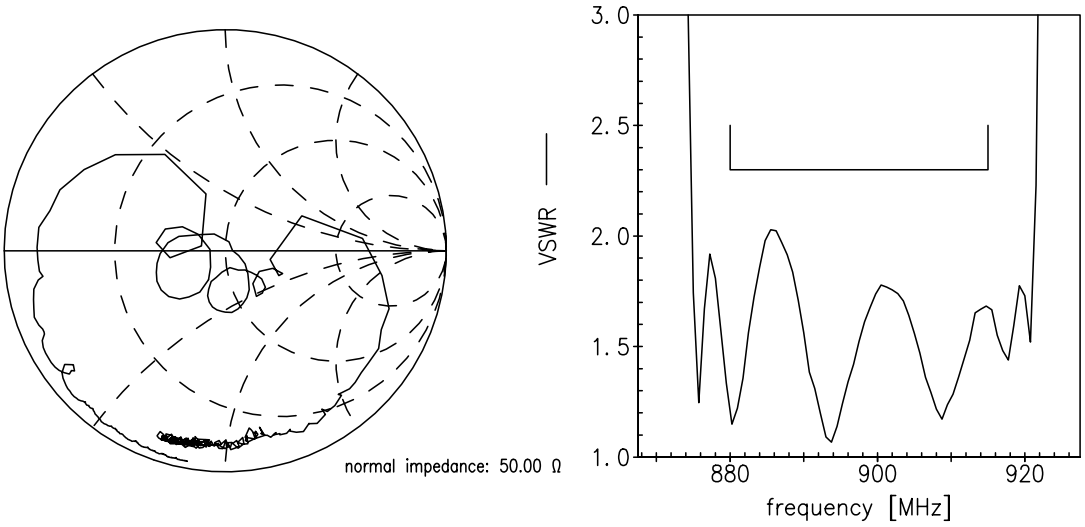


Transfer function (S21, Wideband)

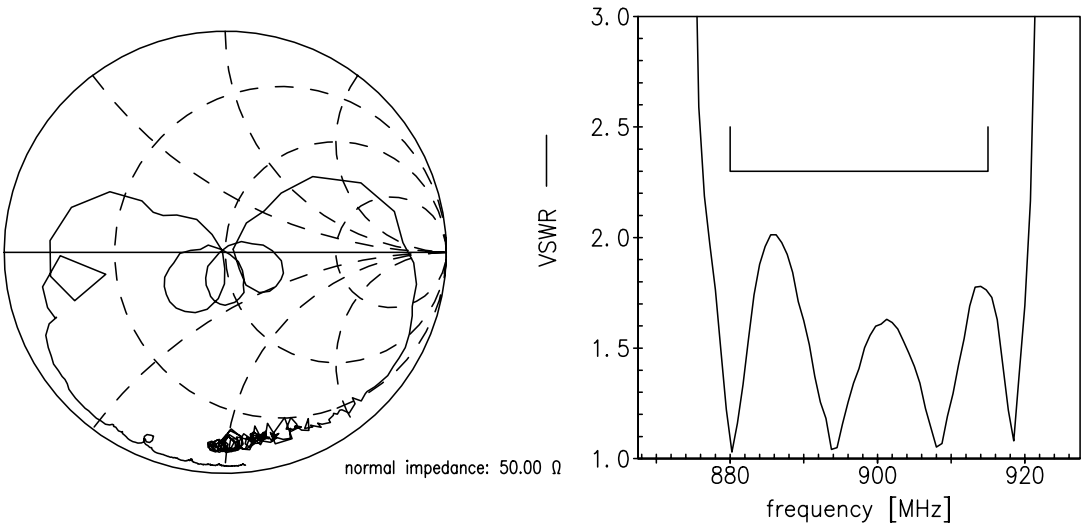


Smith chart

S_{11} function (unbalanced input)



S_{22} function (unbalanced output)



References

Type	B9442
Ordering code	B39901B9442M410
Marking and package	C61157-A8-A3
Packaging	F61074-V8212-Z000
Date codes	L_1126
S-parameters	B9442_NB.s2p B9442_WB.s2p
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.

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