



SAW Components

SAW Rx filter

Cellular / WCDMA Band V

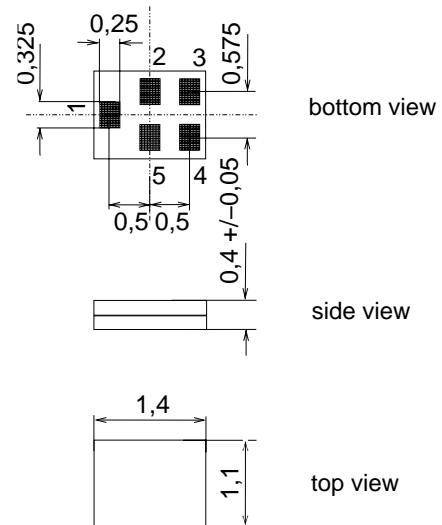
Series/type:	B9439
Ordering code:	B39881B9439M410
Date:	May 21, 2007
Version:	2.0

Application

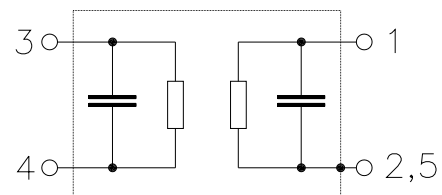
- Low-loss RF filter for mobile telephone
Cellular systems, receive path (RX)
- Suitable for diversity applications
- Impedance 50 Ω input and output
- Unbalanced / unbalanced operation
- Very high TX suppression
- Usable passband 25 MHz


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





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Characteristics

Temperature range for specification: T = -30 °C to +85 °C
 Terminating source impedance: Z_S = 50 Ω
 Terminating load impedance: Z_L = 50 Ω

				B9439			
				min.	typ. @ 25 °C	max.	
Center frequency			f _C	—	881.5	—	MHz
Maximum insertion attenuation							
	869.0 ... 894.0		MHz α _{max}	—	2.1	2.5	dB
	@f _{Carrier} 871.4 ... 891.6		MHz α _{WCDMA} ¹⁾	—	1.9	2.2	dB
Amplitude ripple (p-p)							
	869.0 ... 894.0		MHz Δα	—	0.8	1.2	dB
Error Vector Magnitude²⁾							
	@f _{Carrier} 871.4 ... 891.6		MHz EVM	—	1.9	2.5	%
Input VSWR							
	869.0 ... 894.0		MHz	—	1.7	2.0	
Output VSWR							
	869.0 ... 894.0		MHz	—	1.7	2.0	
Attenuation			α				
	0.0 ... 849.0		MHz	46	49	—	dB
	@f _{Carrier} 826.4 ... 846.6		MHz α _{WCDMA} ¹⁾	46	52	—	dB
	910.0 ... 914.0		MHz	18	26	—	dB
	914.0 ... 950.0		MHz	25	32	—	dB
	950.0 ... 1850.0		MHz	40	52	—	dB
	1850.0 ... 2000.0		MHz	46	56	—	dB
	2000.0 ... 3500.0		MHz	35	38	—	dB
	3500.0 ... 4000.0		MHz	28	33	—	dB
	4000.0 ... 4500.0		MHz	20	23	—	dB
	4500.0 ... 5200.0		MHz	17	23	—	dB
	5200.0 ... 6000.0		MHz	13	23	—	dB

¹⁾ Attenuation of WCDMA signal ("Powertransferfunction"). Please refer to annotation on page (4).
²⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.



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Annotation for characteristics section

(1) 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 871.4 MHz (lowest Tx channel) to 891.6 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	-40/+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, 10 pulses
Input power	P _{IN}	15	dBm	

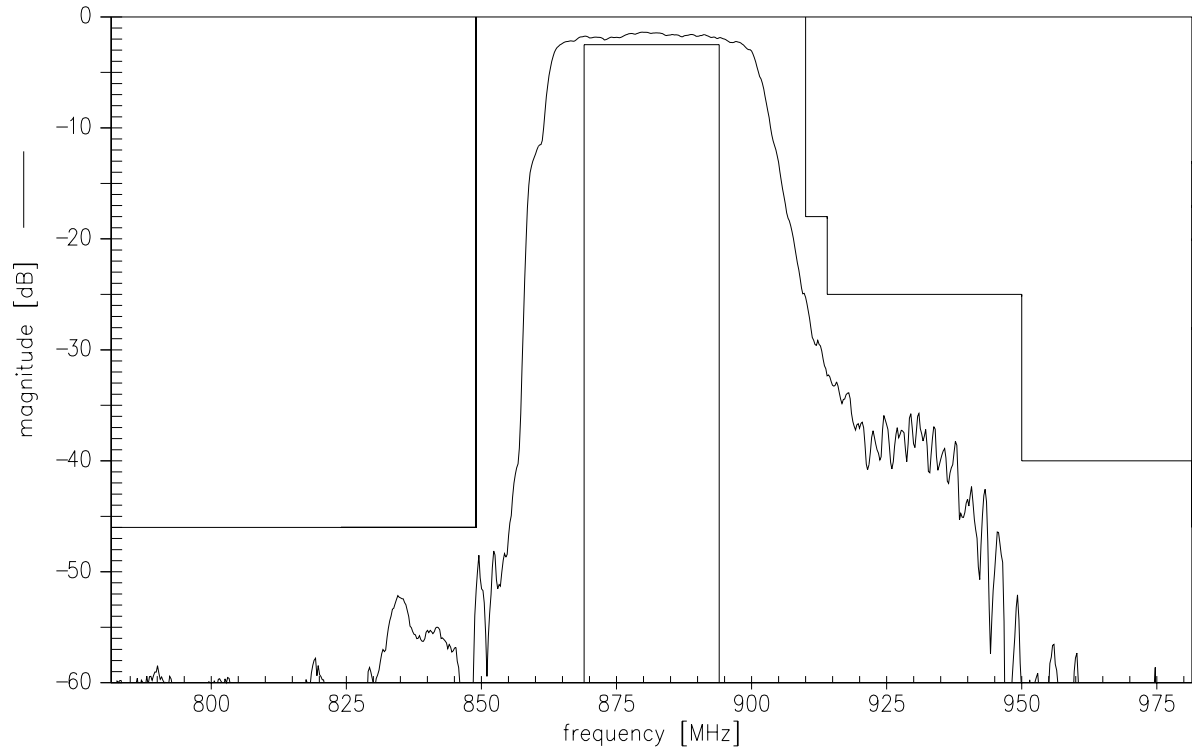
¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



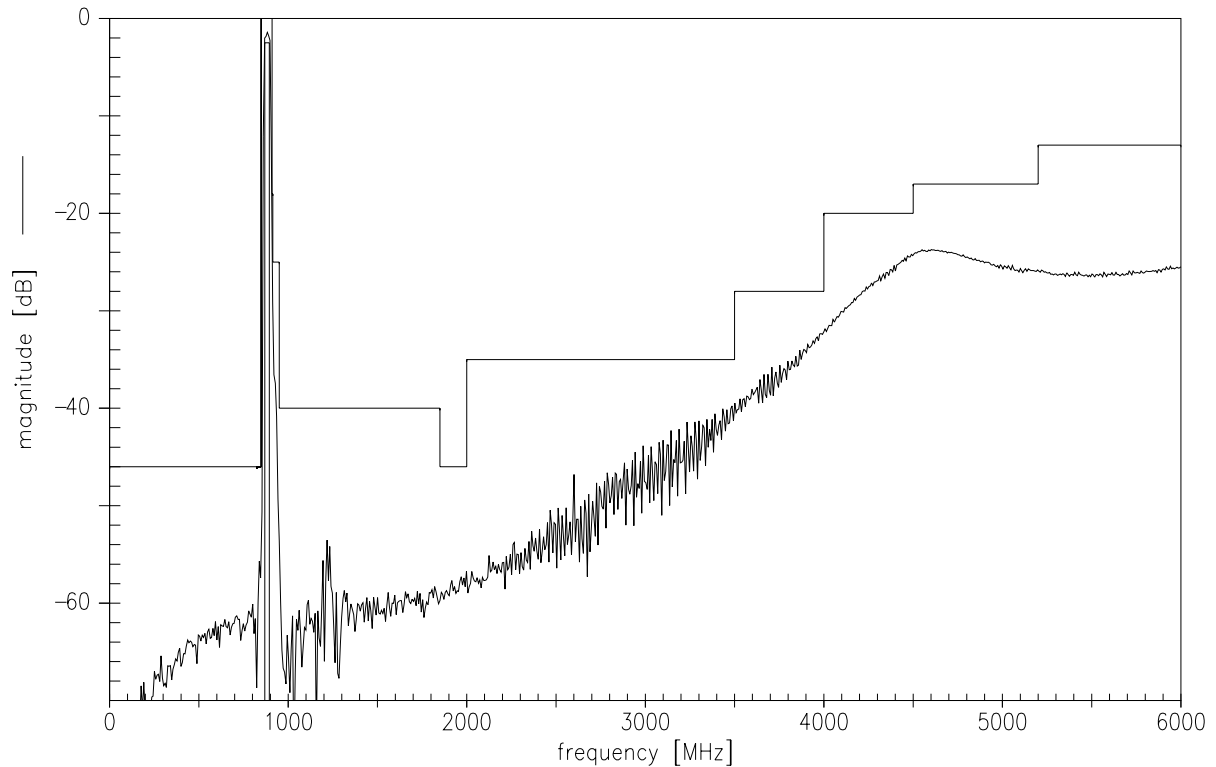
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Transfer function



Transfer function (wideband)



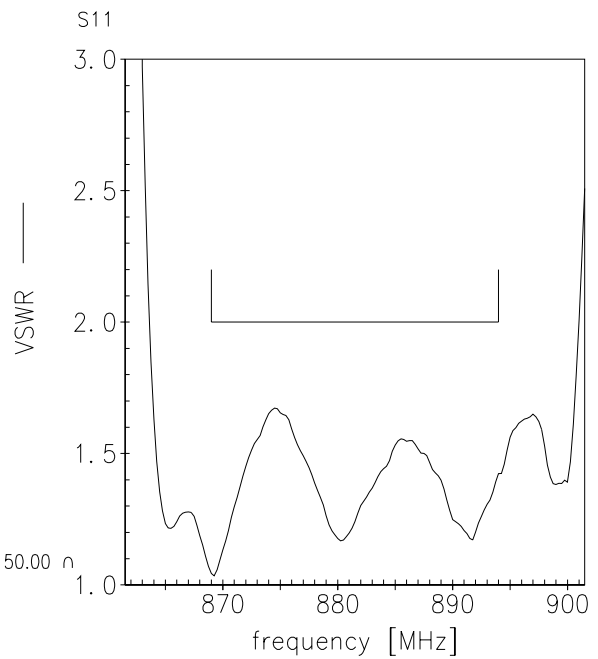
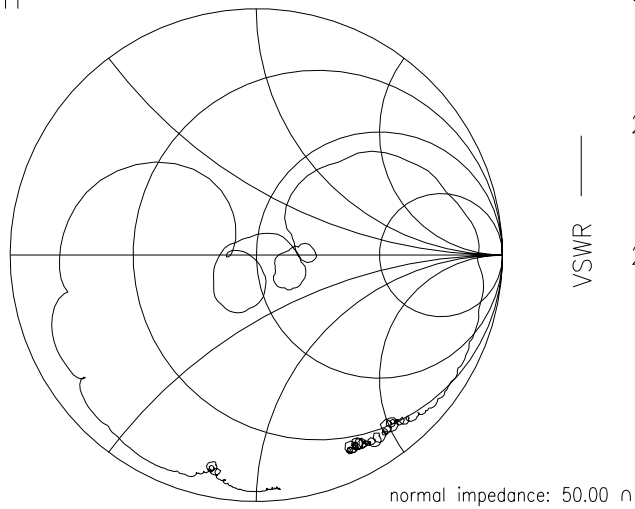
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Smith charts

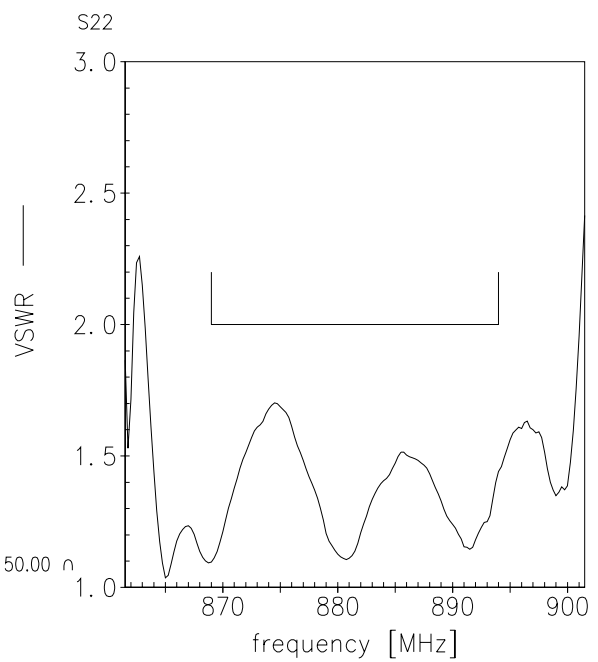
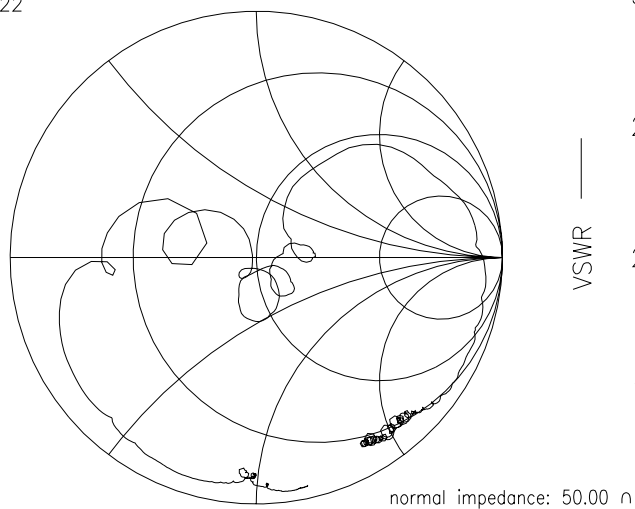
S_{11} function

S11



S_{22} function

S22



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**References**

Type	B9439
Ordering code	B39881B9439M410
Marking and package	C61157-A8-A3
Packaging	F61074-V8212-Z000
Date codes	L_1126
S-parameters	B9439_NB.s2p B9439_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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