SAW Components

SAW Tx 2in1 Filter

WCDMA band I / WCDMA band V

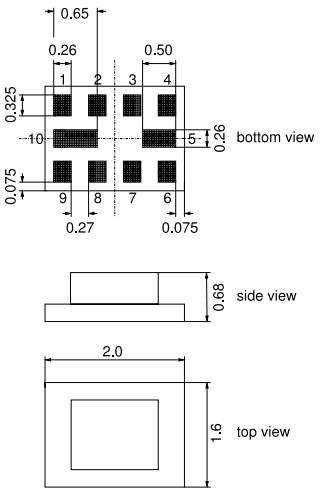
Series/type:	**B9315**
Ordering code:	**B39202B9315N410**
Date:	June 16, 2006
Version:	2.0

Application

- Low-loss RF dual band filter for mobile telephone WCDMA band I and band V systems, transmit path (TX)
- Usable passband:
  Filter 1 (Band V): 25 MHz
  Filter 2 (Band I): 60 MHz
- Balanced to unbalanced operation for both filters
- Impedance transformation from100 Ω to 50 Ω both filters)

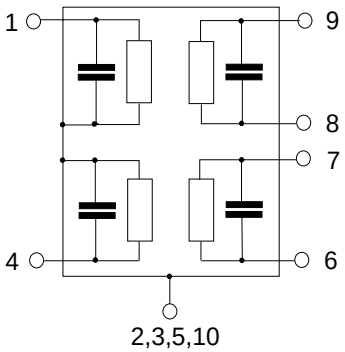
Features

- Package size 2.0 x1.6 x 0.68 mm^3
- Package code QCS10I
- RoHS compatible
- Approximate weight 0.007 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

■	1	Output unbalanced filter 1 (Band V)
■	4	Output unbalanced filter 2 (Band I)
■	6,7	Input balanced filter 2 (Band I)
■	8,9	Input balanced filter 1 (Band V)
■	2,3,5,10	Case ground



Data sheet SMD

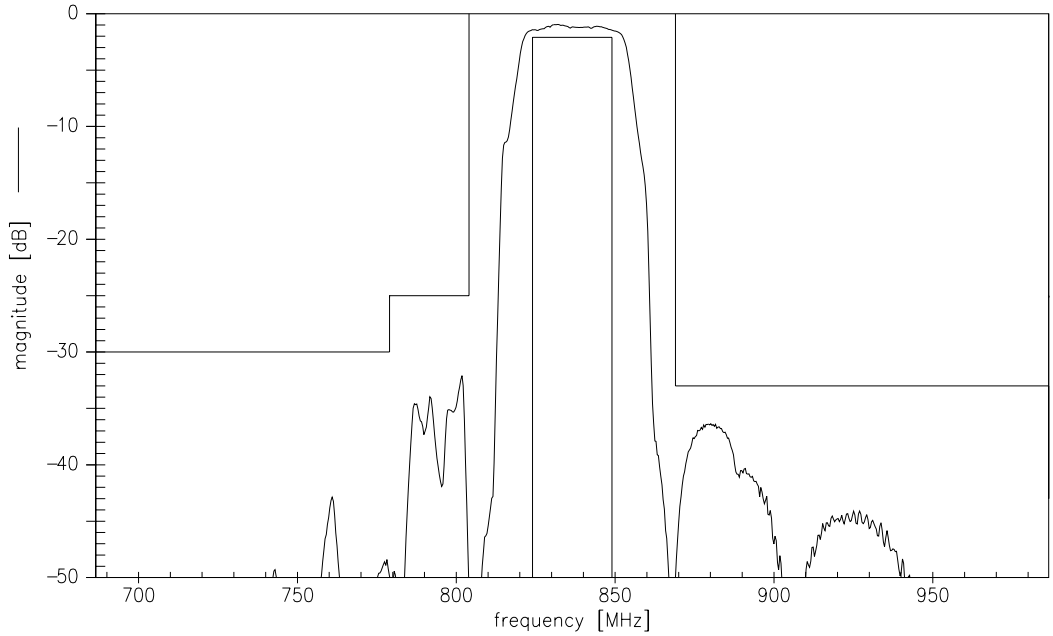
Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
Terminating source impedance: Z_S = 100 Ω (balanced)
Terminating load impedance: Z_L = 50 Ω (unbalanced)

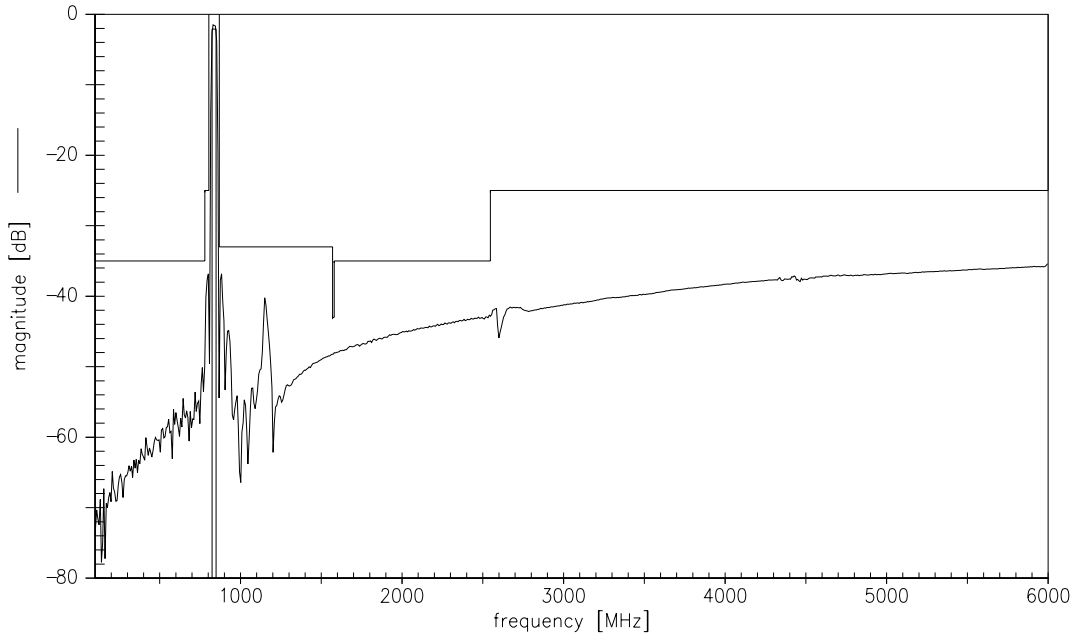
		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	836.5	—	MHz
Maximum insertion attenuation	α_{max}				
824.0 ... 849.0 MHz		—	1.5	2.1[1)]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
824.0 ... 849.0 MHz		—	0.5	1.2	dB
Amplitude ripple per 5 MHz channel (p-p)	$\Delta\alpha_{5MHz}$				
824.0 ... 849.0 MHz		—	0.5	0.7	dB
Group delay ripple per 5 MHz channel (p-p)	$\Delta\tau$				
824.0 ... 849.0 MHz		—	20	40	ns
Input VSWR					
824.0 ... 849.0 MHz		—	1.7	2.0	
Output VSWR					
824.0 ... 849.0 MHz		—	1.7	2.0	
Input amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
824.0 ... 849.0 MHz		-1.0	—	1.0	dB
Input phase balance ($\phi(S_{31}) - \phi(S_{21})+180^\circ$)					
824.0 ... 849.0 MHz		-10	—	10	°
Attenuation	α				
0.3 ... 779.0 MHz		35	43	—	dB
779.0 ... 804.0 MHz		25	32	—	dB
869.0 ... 1570.0 MHz		33	37	—	dB
1570.0 ... 1580.0 MHz		43	48	—	dB
1580.0 ... 2547.0 MHz		35	43	—	dB
2547.0 ... 6000.0 MHz		25	35	—	dB

1) 2.3 dB for T = –30 ˚C to +85 ˚C

Transfer function

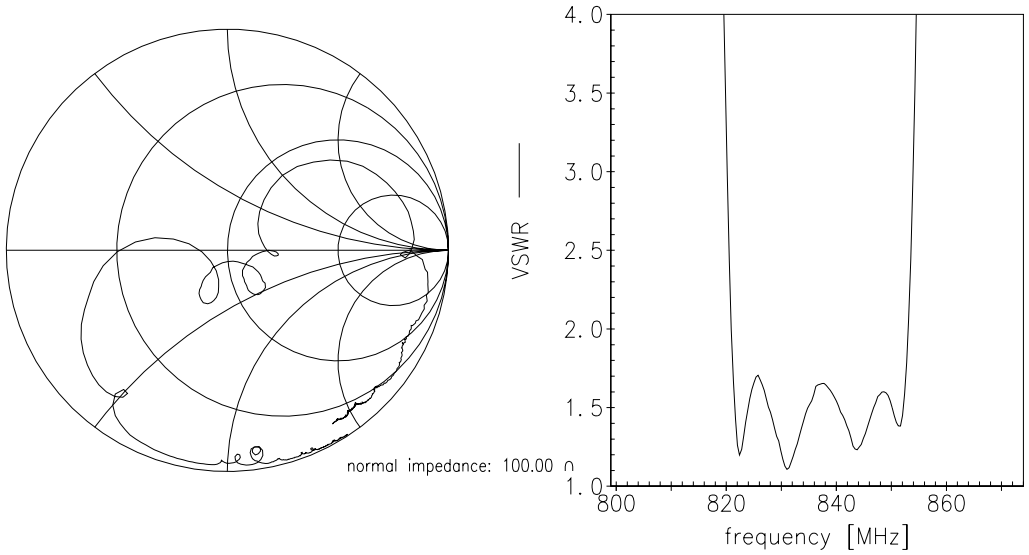


Transfer function (wideband)

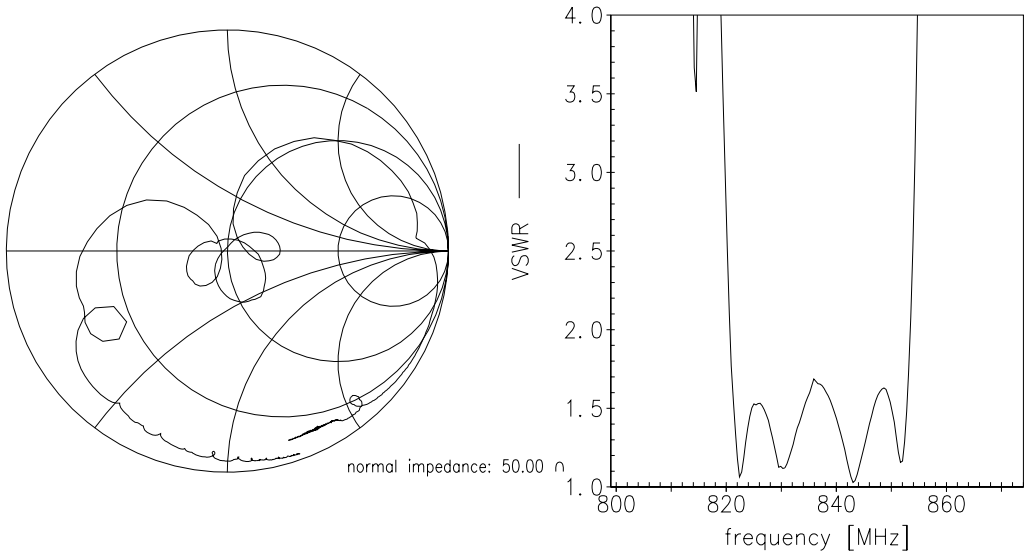


Smith charts

S_{11} function



S_{22} function



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}	50[1)]	V	Machine model, 10 pulses
Input power at				
WCDMA Band V	P_{IN}	10	dBm	continuous wave
				@ +55˚C ambient
Tx band				

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

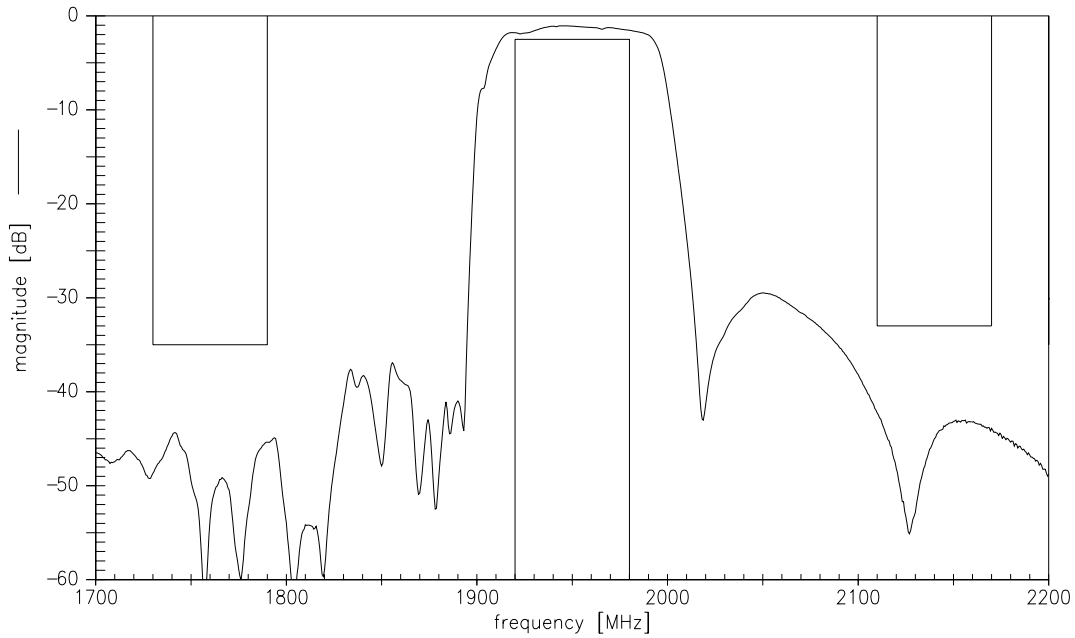
Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
Terminating source impedance: Z_S = 100 Ω (balanced) || 33 nH
Terminating load impedance: Z_L = 50 Ω (unbalanced)

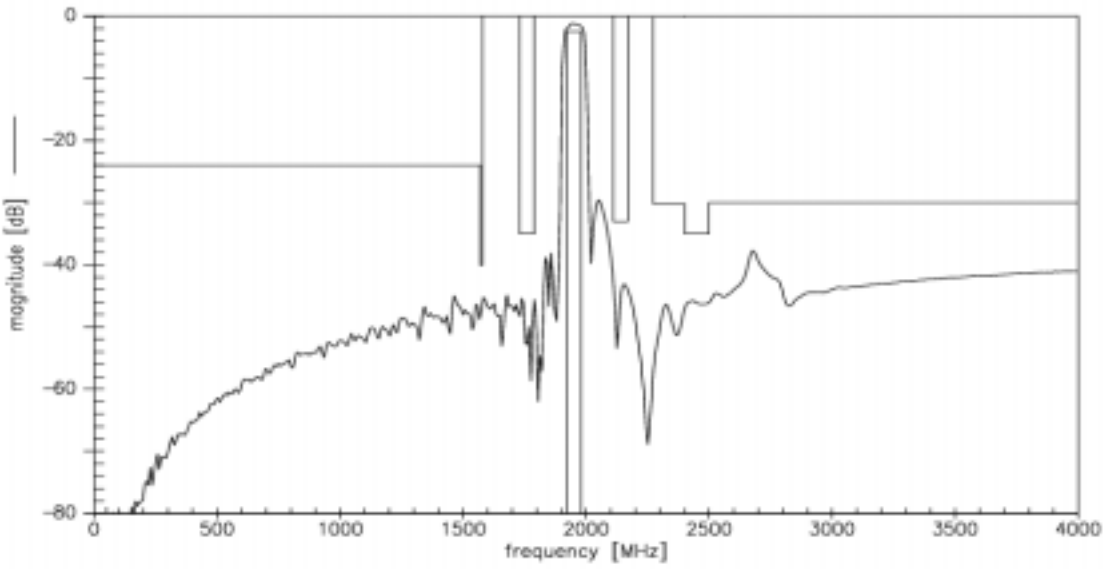
		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1950.0	—	MHz
Maximum insertion attenuation	α_{max}				
1920.0 ... 1980.0 MHz		—	1.9	2.5[1)]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1920.0 ... 1980.0 MHz		—	0.9	1.5	dB
Amplitude ripple per 5 MHz channel (p-p)	$\Delta\alpha_{5MHz}$				
1920.0 ... 1980.0 MHz		—	0.4	0.6	dB
Group delay ripple per 5 MHz channel (p-p)	$\Delta\tau$				
1920.0 ... 1980.0 MHz		—	10	20	ns
Input VSWR					
1920.0 ... 1980.0 MHz		—	1.7	2.2	
Output VSWR					
1920.0 ... 1980.0 MHz		—	1.7	2.2	
Input amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
1920.0 ... 1980.0 MHz		-1.0	—	1.2	dB
Input phase balance ($\phi(S_{31}) - \phi(S_{21})+180^\circ$)					
1920.0 ... 1980.0 MHz		-10	—	10	°
Attenuation	α				
0.3 ... 1570.0 MHz		24	45	—	dB
1570.0 ... 1580.0 MHz		40	45	—	dB
1730.0 ... 1790.0 MHz		35	45	—	dB
2110.0 ... 2170.0 MHz		33	40	—	dB
2250.0 ... 2400.0 MHz		30	40	—	dB
2400.0 ... 2500.0 MHz		35	46	—	dB
2500.0 ... 6000.0 MHz		30	38	—	dB

[1)] 2.7 dB for T = –30 ˚C to +85 ˚C

Transfer function



Transfer function (wideband)



Smith charts

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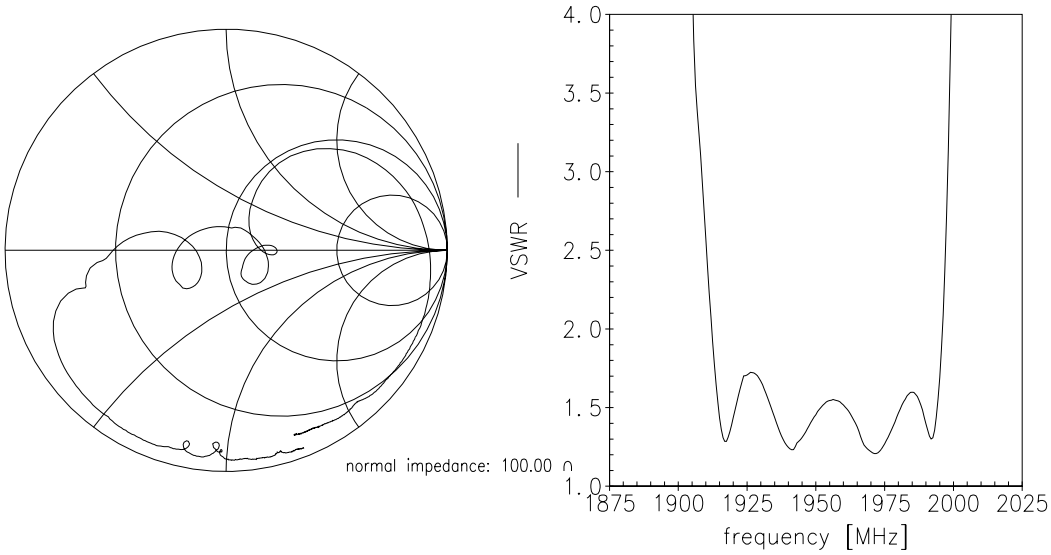
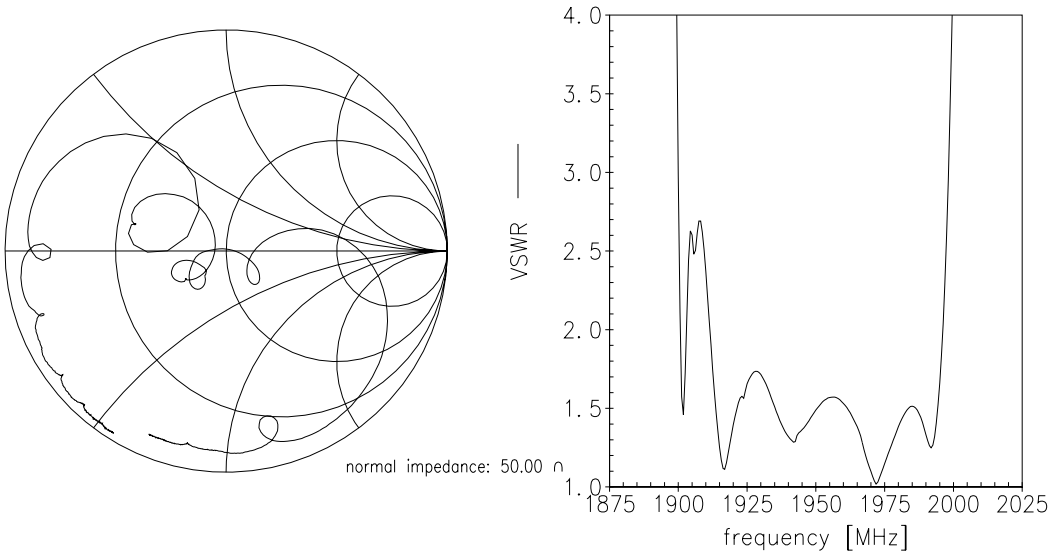


S_{22} function



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}	50[1)]	V	Machine model, 10 pulses
Input power at				
WCDMA Band I	P_{IN}	10	dBm	continuous wave
				@ +55˚C ambient
Tx band				

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

References

Type	B9315
Ordering code	B39202B9315N410
Marking and package	C61157-A7-A1
Packaging	F61074-V8152-Z000
Date codes	L_1126
S-parameters	B9315_LB_NB.s3p B9315_LB_WB.s3p B9315_UB_NB.s3p B9315_UB_WB.s3p
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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