SAW Components

SAW Rx 2in1 filter

Cellular + PCS / WCDMA band V + WCDMA band II

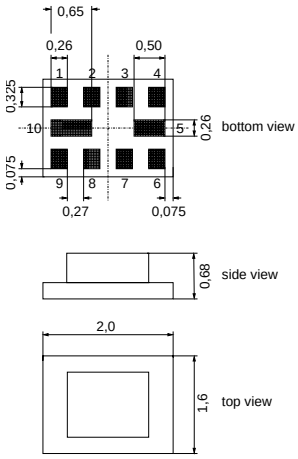
Series/type:	**B9318**
Ordering code:	**B39202B9318G110**
Date:	March 08, 2007
Version:	2.0

Application

- Low-loss RF filter for mobile telephone CDMA systems, receive path (Rx) of Cellular and PCS
- Also applicable for mobile phone WCDMA systems, receive path of Band V and BAND II
- Bandwidth
  Filter 1 (Cellular): 25 MHz
  Filter 2 (PCS): 60 MHz
- Impedance transformation from:
  Filter 1 (Cellular): 50 Ω to 100 Ω
  Filter 2 (PCS): 50 Ω to 100 Ω
- Unbalanced to balanced operation

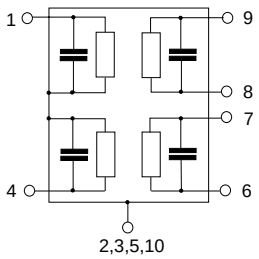
Features

- Package size 2.0 x1.6 x 0.68 mm^3
- Package code QCS10H
- RoHS compatible
- Approximate weight 0.008 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 [Filter 1: Cellular]
- 4 Input [Filter 2: PCS]
- 6,7 Output balanced [Filter 2: PCS]
- 8,9 Output balanced [Filter 1: Cellular]
- 2,3,5,10 Case ground



Characteristics filter 1 (Cellular)

Temperature range for specification: T = –30 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 100 Ω (balanced)

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	881.5	—	MHz
Maximum insertion attenuation	α_{max}				
869.0 ... 894.0 MHz		—	1.7	2.4 [1]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
869.0 ... 894.0 MHz		—	0.5	1.2	dB
Amplit. ripple over any 5MHz channel	$\Delta\alpha$				
869.0 ... 894.0 MHz		—	0.4	0.7	dB
Group delay over any 5MHz channel					
869.0 ... 894.0 MHz		—	15	40	ns
Input VSWR					
869.0 ... 894.0 MHz		—	1.6	2.0	
Output VSWR					
869.0 ... 894.0 MHz		—	1.7	2.0	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
869.0 ... 894.0 MHz			-0.1/0.7	-1.0/1.0	dB
Output phase balance ($\phi(S_{31}) - \phi(S_{21})+180^\circ$)					
869.0 ... 894.0 MHz			-3/2	-5/+5	˚
Attenuation	α				
0.0 ... 820.0 MHz		47	55	—	dB
820.0 ... 835.0 MHz		45	48	—	dB
835.0 ... 849.0 MHz		47	52	—	dB
914.0 ... 950.0 MHz		24	30	—	dB
950.0 ... 2000.0 MHz		45	52	—	dB
2000.0 ... 3000.0 MHz		40	47	—	dB
3000.0 ... 6000.0 MHz		40	45	—	dB

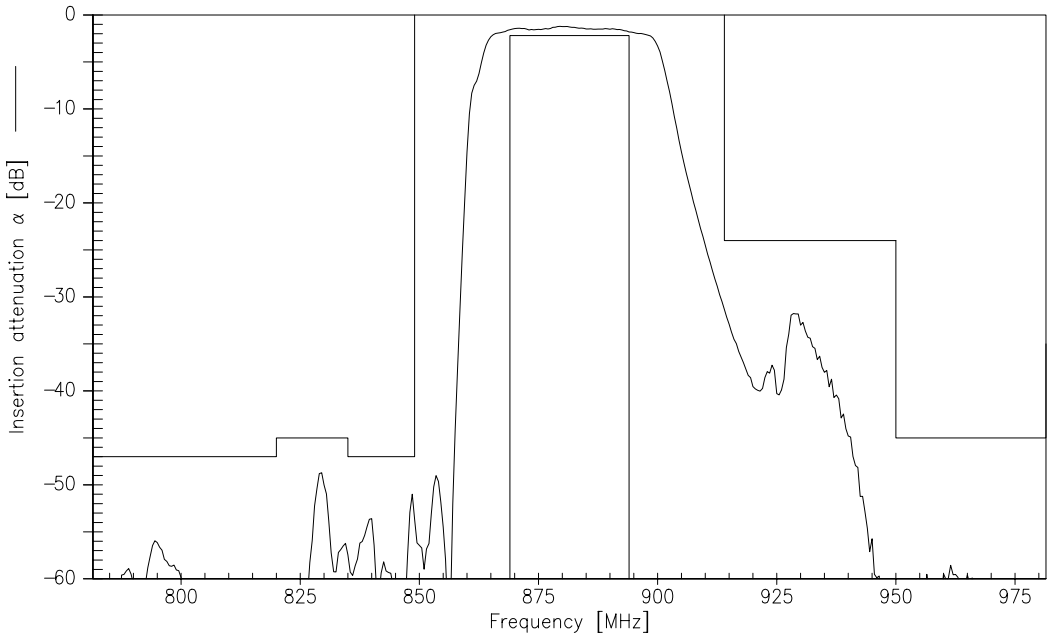
[1] pcb loss of 0.1dB extracted

Maximum ratings

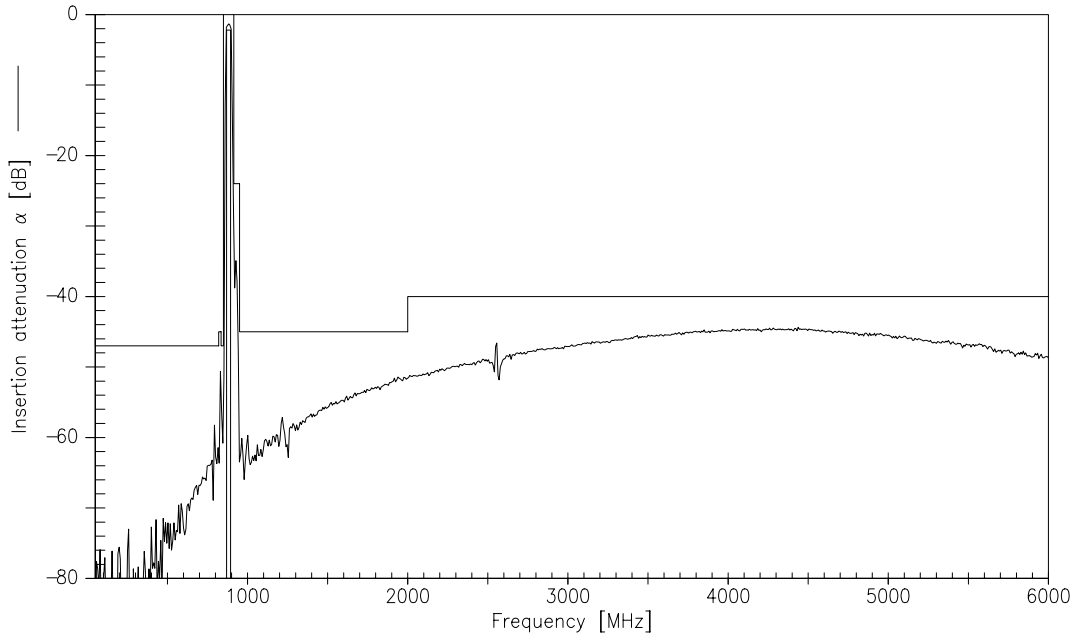
Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 10 pulses
Input power at WCDMA band V Tx band	P_{IN}	10	dBm	continuous wave @ +55˚C ambient

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

Transfer function filter 1 (Cellular)

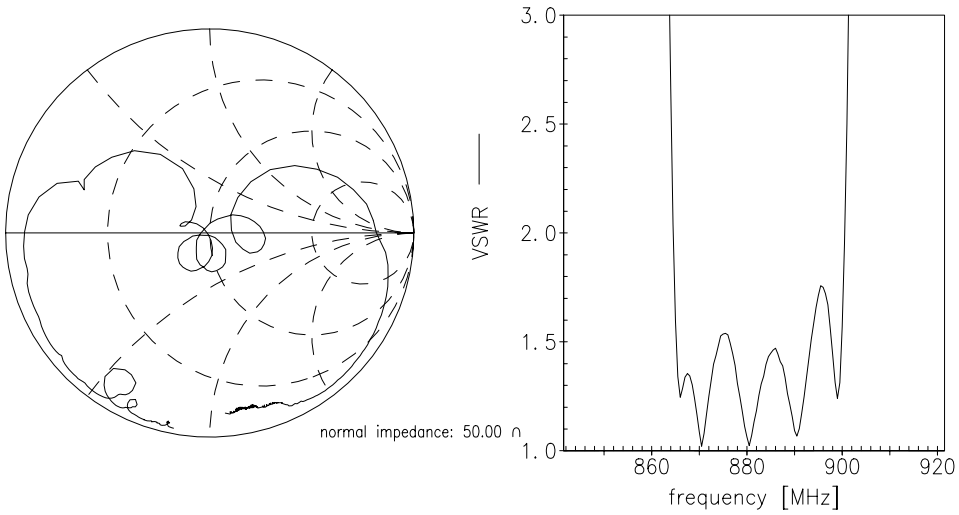


Transfer function filter 1 (Cellular) - wideband

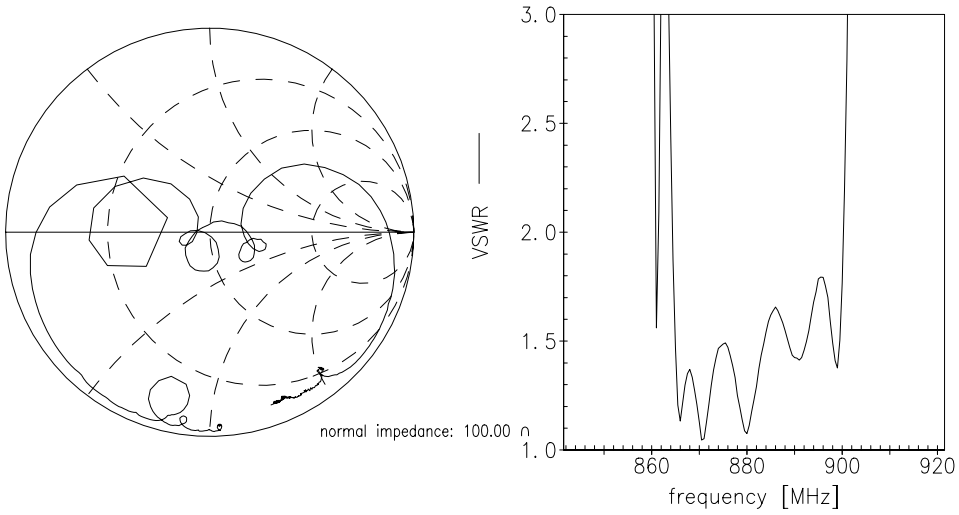


Smith charts filter 1 (Cellular)

S_{11} function



S_{22} function



Characteristics filter 1(PCS)

Temperature range for specification: T = –30 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 100 Ω || 13 nH (balanced)

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1960.0	—	MHz
Maximum insertion attenuation	α_{max}				
1930.6 ... 1989.4 MHz		—	1.8	2.6 [1]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930.6 ... 1989.4 MHz		—	0.8	1.6 [2]	dB
Amplit. ripple over any 5MHz channel	$\Delta\alpha$				
1930.6 ... 1989.4 MHz		—	0.4	0.9 [3]	dB
Group delay over any 5MHz channel					
1930.6 ... 1989.4 MHz		—	23	30	ns
Input VSWR					
1930.6 ... 1989.4 MHz		—	1.5	2.1	
Output VSWR					
1930.6 ... 1989.4 MHz		—	1.5	2.1	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
1930.6 ... 1989.4 MHz		–1.0	-0.5/0.3	1.0	dB
Output phase balance ($\phi(S_{31}) - \phi(S_{21})+180^\circ$)					
1930.6 ... 1989.4 MHz		–10	-4/4	10	°
Attenuation	α				
DC ... 1600.0 MHz		40	45	—	dB
1600.0 ... 1850.0 MHz		30	35	—	dB
1850.0 ... 1910.0 MHz		20	24	—	dB
2040.0 ... 2200.0 MHz		25	35	—	dB
2200.0 ... 2800.0 MHz		30	36	—	dB
2800.0 ... 3400.0 MHz		40	43	—	dB
3400.0 ... 6000.0 MHz		30	41	—	dB

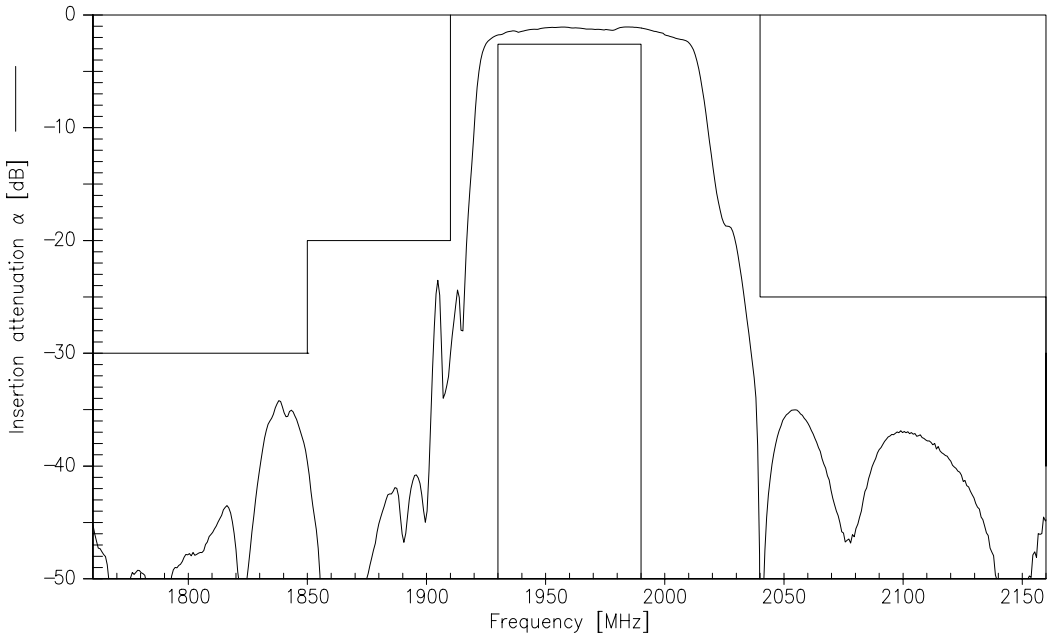
1) Valid in temperature range -10 ... 80˚C. Guaranteed for -30˚C: 3.2 dB
pcb loss of 0.2dB extracted.
2) Valid in temperature range -10 ... 80˚C. Guaranteed for -30˚C: 2.2 dB
3) Valid in temperature range -10 ... 80˚C. Guaranteed for -30˚C: 1.1 dB

Maximum ratings

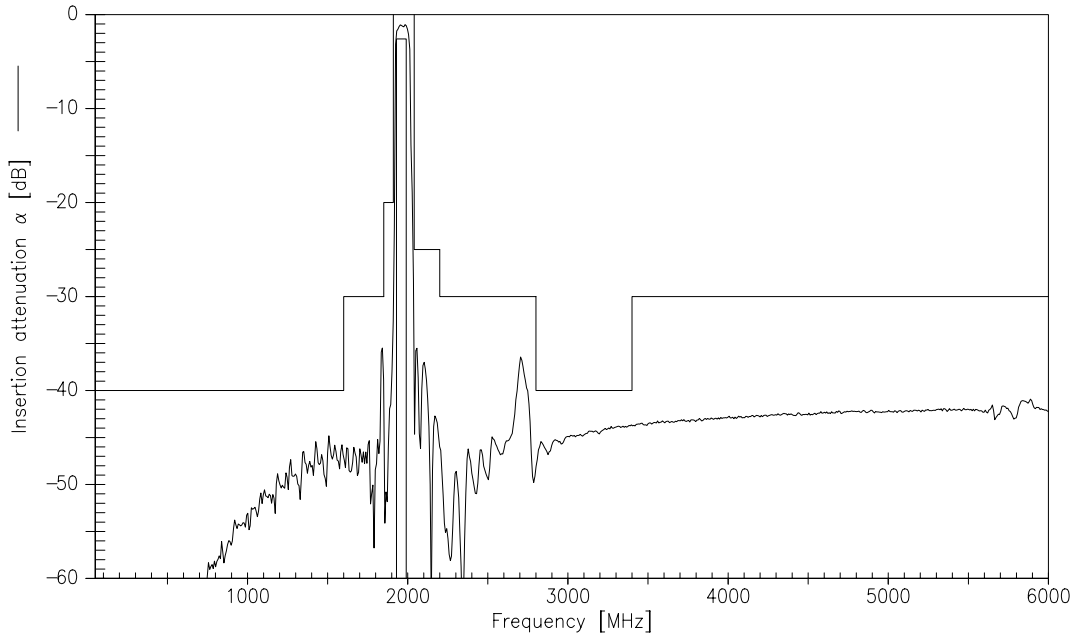
Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 10 pulses
Input power at WCDMA band II Tx band	P_{IN}	10	dBm	continuous wave @ +55˚C ambient

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

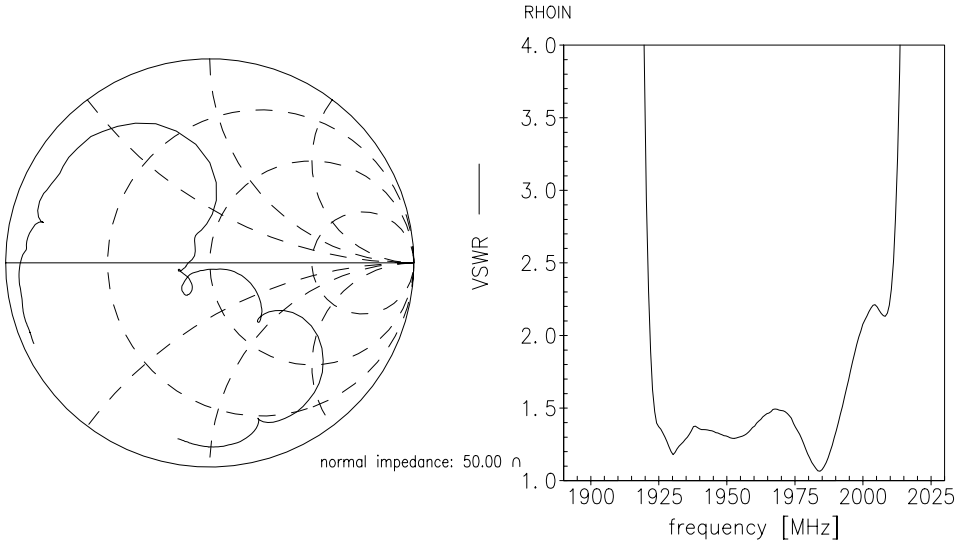
Transfer function filter 2 (PCS)

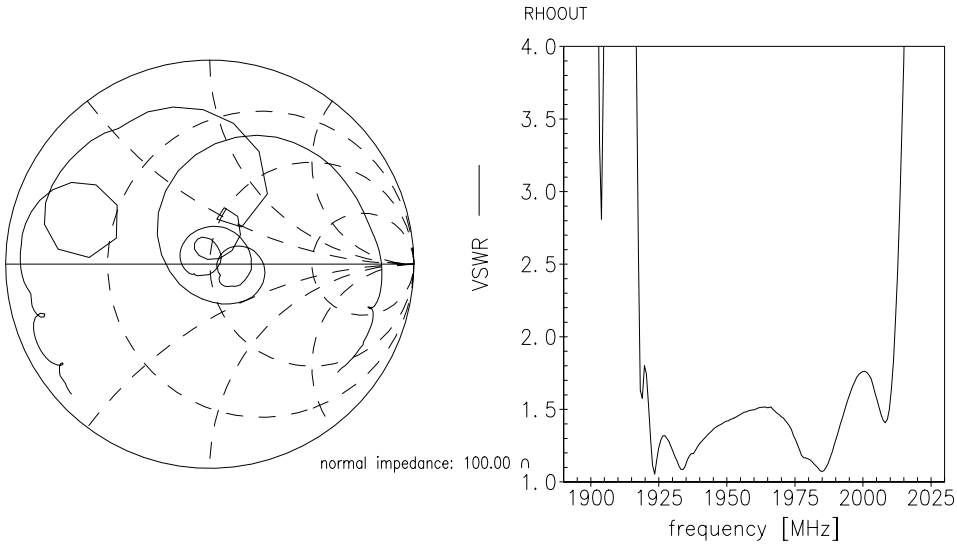


Transfer function filter 2 (PCS) - wideband



Smith charts filter 2 (PCS)
S_{11} function





References

Type	B9318
Ordering code	B39202B9318G110
Marking and package	C61157-A7-A141
Packaging	F61074-V8152-Z000
Date codes	L_1126
S-parameters	Cellular: B9318_LB_NB.s3p, B9318_LB_WB.s3p PCS: B9318_UB_NB.s3p, B9318_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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Surface Acoustic Wave Components Division
P.O. Box 80 17 09, 81617 Munich, GERMANY

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