![EPCOS logo]

SAW Components

SAW Rx 2in1 Filter

GSM1800 / GSM1900

|	
Series/type:	**B9305**
Ordering code:	**B39202B9305G110**
Date:	October 16, 2006
Version:	2.3

Application

- Low-loss 2in1 RF filter for mobile telephone GSM1800 and GSM1900 bands, receive path
- Usable passband:
  Filter 1 (GSM1800): 75 MHz
  Filter 2 (GSM1900): 60 MHz
- Unbalanced to balanced operation for both filters
- Impedance transformation from 50 Ω to 100 Ω for both filters
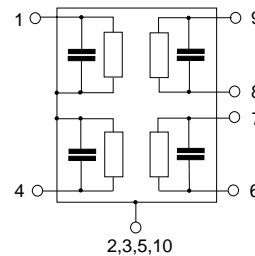- Suitable for GPRS class 1 to 12

Features

- Package size 2.0 x 1.6 x 0.68 mm^3
- Package code QCS10H
- RoHS compatible
- Approximate weight 0.012 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD)**
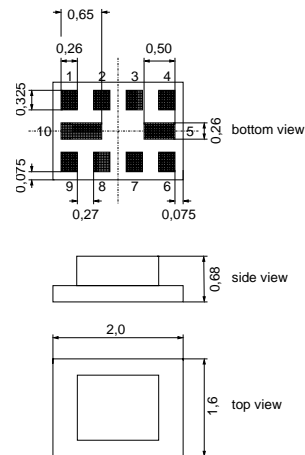
Pin configuration

- 1　　　　　Input [Filter 1]
- 4　　　　　Input [Filter 2]
- 6,7　　　　Output balanced [Filter 2]
- 8,9　　　　Output balanced [Filter 1]
- 2,3,5,10　Case ground

Characteristics filter 1 (GSM1800)

Temperature range for specification: T = −10 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 100 Ω (balanced) || 10nH

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1842.5	—	MHz
Maximum insertion attenuation	α_{max}				
1805.0 ... 1880.0 MHz		—	1.7	2.4[1]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1805.0 ... 1880.0 MHz		—	0.6	1.3	dB
Input VSWR					
1805.0 ... 1880.0 MHz		—	1.6	2.0	
Output VSWR					
1805.0 ... 1880.0 MHz		—	1.6	2.0	
Common mode suppression	S_{cs12}				
1805.0 ... 1880.0 MHz		20.0	28.0	—	dB
824.0 ... 995.0 MHz		20.0	44.0	—	dB
1648.0 ... 1990.0 MHz		20.0	26.0	—	dB
3296.0 ... 3980.0 MHz		20.0	30.0	—	dB
Attenuation	α				
0.3 ... 1000.0 MHz		40.0	57.0	—	dB
1000.0 ... 1705.0 MHz		35.0	39.0	—	dB
1705.0 ... 1785.0 MHz		12.0[2]	17.0	—	dB
1920.0 ... 1980.0 MHz		24.0[3]	27.0	—	dB
1980.0 ... 2400.0 MHz		30.0	34.0	—	dB
2400.0 ... 2500.0 MHz		35.0	43.0	—	dB
2500.0 ... 4000.0 MHz		35.0	46.0	—	dB
4000.0 ... 6000.0 MHz		35.0	44.0	—	dB
6000.0 ... 12750.0 MHz		20.0	35.0	—	dB

[1] -30 ˚C to +95 ˚C: 5.0 dB
[2] -30 ˚C to +95 ˚C: 10.0 dB
[3] -30 ˚C to +95 ˚C: 10.0 dB

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

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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 GSM850, GSM900, GSM1800, GSM1900 Tx bands	P_{IN}	15	dBm	effective power in the on-state, duty cycle 4:8

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

SAW Components	**B9305**
SAW Rx 2in1 Filter	**1842.5 / 1960.0 MHz**

Data Sheet   SMD

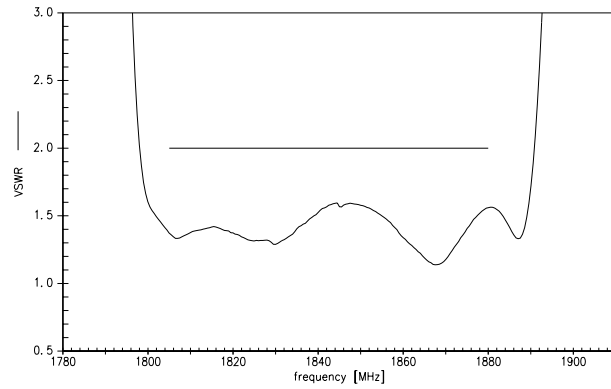### Transfer function filter 1 (GSM1800)

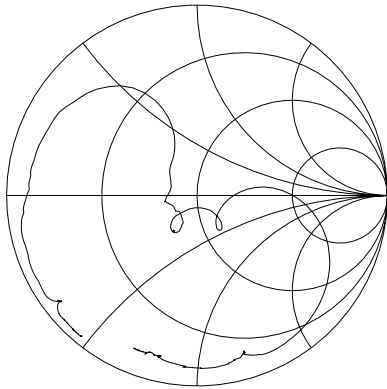
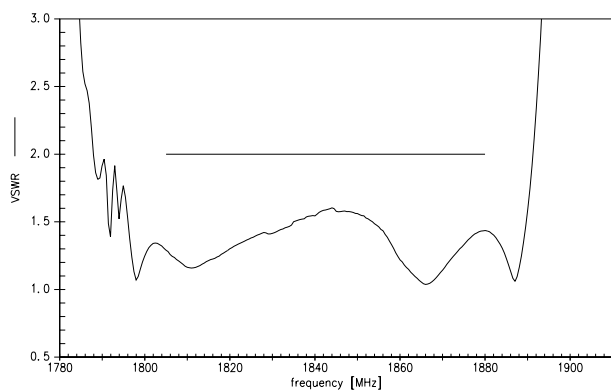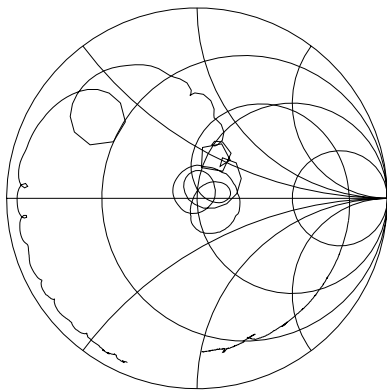### Transfer function filter 1 (GSM1800) - wideband
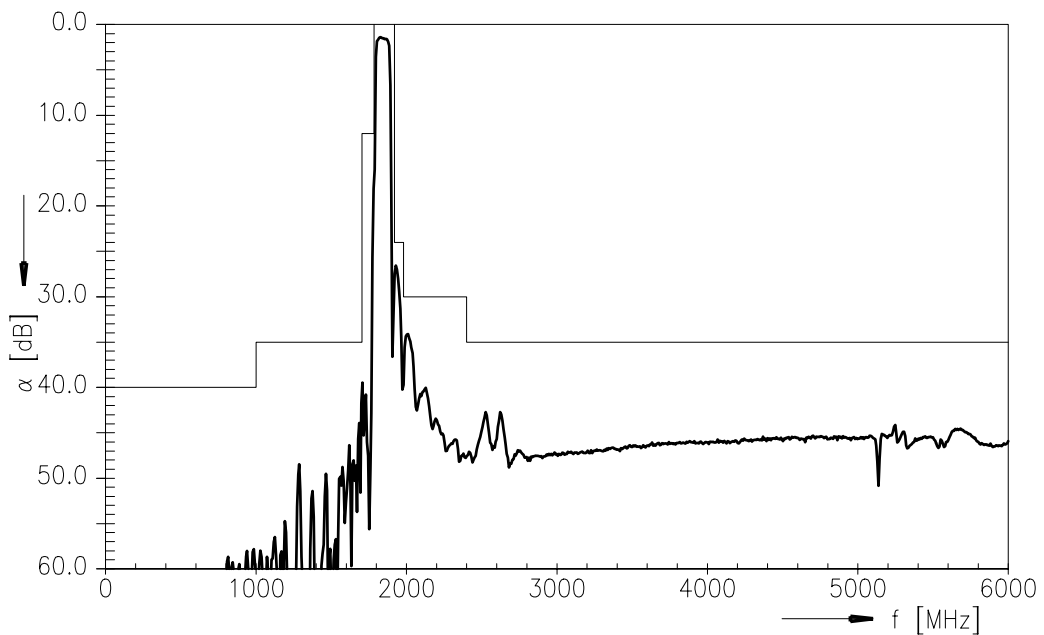
Smith charts filter 1 (GSM1800)

S_{11} function

S_{22} function

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Characteristics filter 2 (GSM1900)

Temperature range for specification: T   =   −10 ˚C to +85 ˚C
Terminating source impedance: Z_S =   50 Ω (unbalanced)
Terminating load impedance: Z_L =   100 Ω (balanced) ∥ 12nH

			min.	typ. @ 25 ˚C	max.	
Center frequency		f_C	—	1960.0	—	MHz
Maximum insertion attenuation		α_{max}				
1930.0 ... 1990.0	MHz		—	1.5	2.5[1]	dB
Amplitude ripple (p-p)		$\Delta\alpha$				
1930.0 ... 1990.0	MHz		—	0.6	1.5	dB
Input VSWR						
1930.0 ... 1990.0	MHz		—	1.5	2.0	
Output VSWR						
1930.0 ... 1990.0	MHz		—	1.6	2.0	
Common mode suppression		S_{cs12}				
1930.0 ... 1990.0	MHz		20.0	27.0	—	dB
824.0 ... 995.0	MHz		20.0	39.0	—	dB
1648.0 ... 1990.0	MHz		20.0	27.0	—	dB
3296.0 ... 3980.0	MHz		20.0	36.0	—	dB
Attenuation		α				
0.3 ... 1000.0	MHz		40.0	50.0	—	dB
1000.0 ... 1830.0	MHz		30.0	34.0	—	dB
1830.0 ... 1910.0	MHz		12.0	16.0	—	dB
2010.0 ... 2070.0	MHz		10.0[2]	19.0	—	dB
2070.0 ... 2400.0	MHz		25.0	30.0	—	dB
2400.0 ... 2500.0	MHz		35.0	45.0	—	dB
2500.0 ... 4000.0	MHz		30.0	32.0	—	dB
4000.0 ... 6000.0	MHz		30.0	40.0	—	dB
6000.0 ...12750.0	MHz		20.0	28.0	—	dB

[1] -30 ˚C to +95 ˚C: 5.0 dB
[2] +15 ˚C to +65 ˚C: 12.0 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 GSM850, GSM900, GSM1800, GSM1900 Tx bands	P_{IN}	15	dBm	effective power in the on-state, duty cycle 4:8

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

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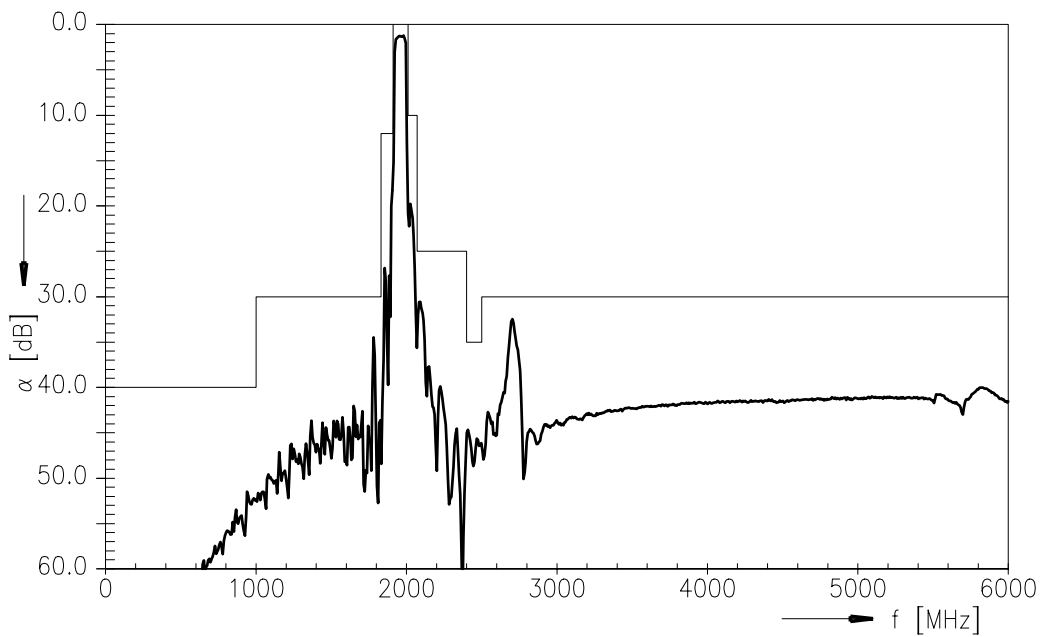
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Transfer function filter 2 (GSM1900)

Transfer function filter 2 (GSM1900) - wideband

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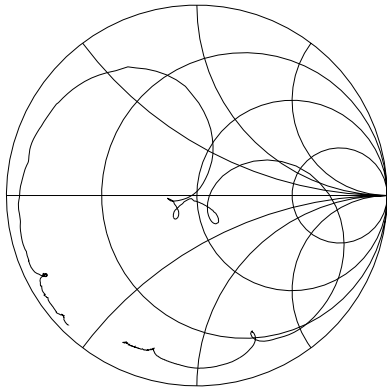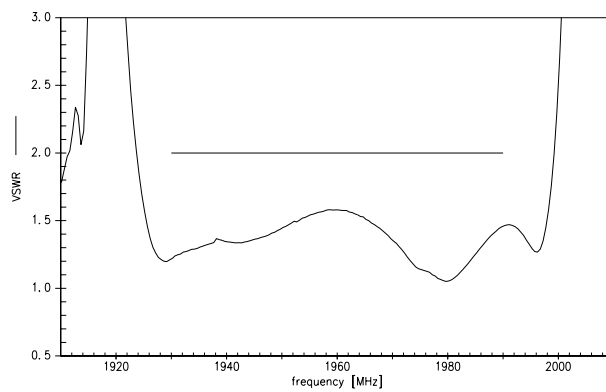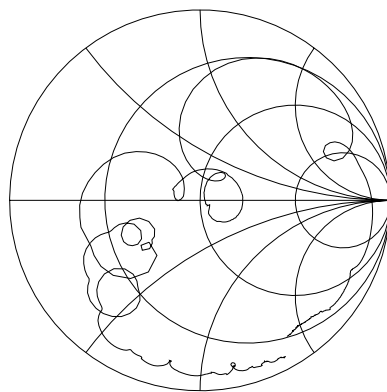**Smith charts filter 2 (GSM1900)**

S$_{11}$ function

S$_{22}$ function

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References

Type	B9305
Ordering code	B39202B9305G110
Marking and package	C61157-A7-A141
Packaging	F61074-V8152-Z000
Date codes	L_1126
S-parameters	B9305_LB_NB.s3p, B9305_LB_WB.s3p B9305_UB_NB.s3p, B9305_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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