



SAW Components

Data Sheet B9203

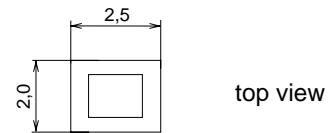
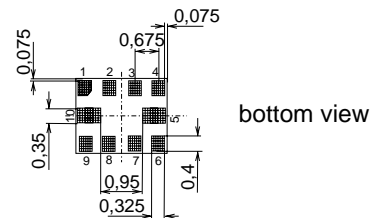




Chip sized SAW package **QCS10F**

Features

- Low-loss 2-in-1 RF filter for mobile telephone GSM850 and GSM1900 bands, receive path
- Usable passband:
Filter 1 (GSM1900): 60 MHz
Filter 2 (GSM850): 25 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 150 Ω of both filters
- Suitable for GPRS class 1 to 12
- Package for **Surface Mounted Technology (SMT)**



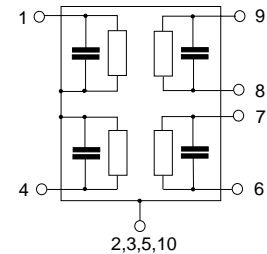
Dimensions in mm, approx weight tbd.

Terminals

- Ni, gold-plated

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 |



Type	Ordering code	Marking and Package according to	Packing according to
B9203	B39202-B9203-G810	C61157-A7-A133	F61074-V8153-Z000

Electrostatic Sensitive Device (ESD)

Maximum ratings

Operable temperature range	T	- 40 / + 85	°C	Machine Model, 10 pulses
Storage temperature range	T_{stg}	- 40 / + 85	°C	
DC voltage	V_{DC}	3	V	
ESD voltage	V_{ESD}^*	50*	V	
Input power at GSM850, GSM900, GSM1800, GSM1900 Tx bands:				peak power of GSM signal, duty cycle 4:8
Filter 1 (GSM1900-Rx)	P_{IN}	15	dBm	
Filter 2 (GSM850-Rx)	P_{IN}	15	dBm	

* - acc. to JESD22-A115A (Machine Model), 10 negative & 10 positive pulses



Data Sheet



Characteristics of Filter 1 (GSM1900)

Operating temperature range: $T = 25\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 150\ \Omega \parallel 12\text{nH}$

		min.	typ.	max.	
Center frequency	f_C	—	1960,0	—	MHz
Maximum insertion attenuation	α_{\max}	—	1,5	1,9	dB
1930,0 ... 1990,0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0,7	1,0	dB
1930,0 ... 1990,0 MHz					
Input VSWR		—	1,8	2,2	
1930,0 ... 1990,0 MHz					
Output VSWR		—	1,9	2,2	
1930,0 ... 1990,0 MHz					
Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$)		-10	-3 / 1	10	degree
1930,0 ... 1990,0 MHz					
Output amplitude balance (S_{31}/S_{21})		-1,0	-0,5 / 0,2	1,0	dB
1930,0 ... 1990,0 MHz					
Attenuation	α				
0,0 ... 1000,0 MHz		40	54	—	dB
1000,0 ... 1810,0 MHz		28	35	—	dB
1810,0 ... 1890,0 MHz		23	29	—	dB
1890,0 ... 1910,0 MHz		12	18	—	dB
2010,0 ... 2070,0 MHz		12	14	—	dB
2070,0 ... 2400,0 MHz		22	29	—	dB
2400,0 ... 2500,0 MHz		35	45	—	dB
2500,0 ... 3860,0 MHz		30	36	—	dB
3860,0 ... 3980,0 MHz		45	62	—	dB
3980,0 ... 5790,0 MHz		30	52	—	dB
5790,0 ... 6000,0 MHz		40	50	—	dB



Data Sheet



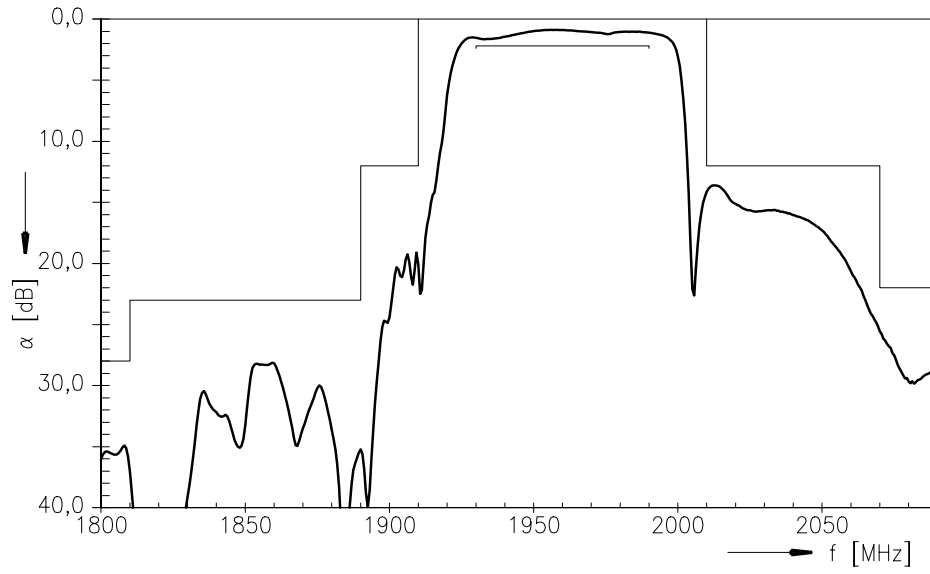
Characteristics of Filter 1 (GSM1900)

Operating temperature range: $T = -20$ to $+75$ °C
 Terminating source impedance: $Z_S = 50 \Omega$
 Terminating load impedance: $Z_L = 150 \Omega \parallel 12\text{nH}$

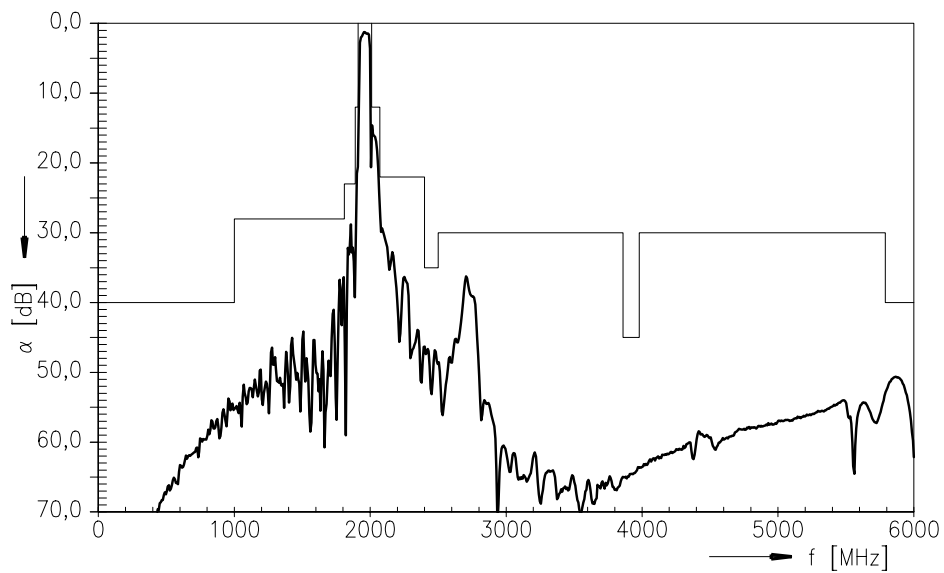
		min.	typ.	max.	
Center frequency	f_C	—	1960,0	—	MHz
Maximum insertion attenuation	α_{max}	—	1,5	2,2	dB
1930,0 ... 1990,0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0,7	1,3	dB
1930,0 ... 1990,0 MHz					
Input VSWR		—	1,8	2,2	
1930,0 ... 1990,0 MHz					
Output VSWR		—	1,9	2,2	
1930,0 ... 1990,0 MHz					
Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$)		-10	-3 / 1	10	degree
1930,0 ... 1990,0 MHz					
Output amplitude balance (S_{31}/S_{21})		-1,0	-0,5 / 0,2	1,0	dB
1930,0 ... 1990,0 MHz					
Attenuation	α				
0,0 ... 1000,0 MHz		40	54	—	dB
1000,0 ... 1810,0 MHz		28	35	—	dB
1810,0 ... 1890,0 MHz		23	29	—	dB
1890,0 ... 1910,0 MHz		12	18	—	dB
2010,0 ... 2070,0 MHz		12	14	—	dB
2070,0 ... 2400,0 MHz		22	29	—	dB
2400,0 ... 2500,0 MHz		35	45	—	dB
2500,0 ... 3860,0 MHz		30	36	—	dB
3860,0 ... 3980,0 MHz		45	62	—	dB
3980,0 ... 5790,0 MHz		30	52	—	dB
5790,0 ... 6000,0 MHz		40	50	—	dB



Transfer function of filter 1 (measured at room temperature):



Transfer function of filter 1 (wideband, measured at room temperature):





Characteristics of Filter 2 (GSM850)

Operating temperature range: $T = 25\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 150\ \Omega \parallel 82\text{nH}$

		min.	typ.	max.	
Center frequency	f_C	—	881,5	—	MHz
Maximum insertion attenuation	α_{max}				
	869,0 ... 894,0 MHz	—	1,4	1,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
	869,0 ... 894,0 MHz	—	0,6	0,9	dB
Input VSWR					
	869,0 ... 894,0 MHz	—	1,8	2,1	
Output VSWR					
	869,0 ... 894,0 MHz	—	1,8	2,1	
Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$)					
	869,0 ... 894,0 MHz	-10	-3 / 2	10	degree
Output amplitude balance ($ S_{31}/S_{21} $)					
	869,0 ... 894,0 MHz	-1,0	-0,5 / 0,1	1,0	dB
Attenuation					
	0,0 ... 434,0 MHz	45	54	—	dB
	434,0 ... 447,0 MHz	45	54	—	dB
	447,0 ... 849,0 MHz	30	36	—	dB
	914,0 ... 1000,0 MHz	24	27	—	dB
	1000,0 ... 1300,0 MHz	32	37	—	dB
	1300,0 ... 6000,0 MHz	40	45	—	dB



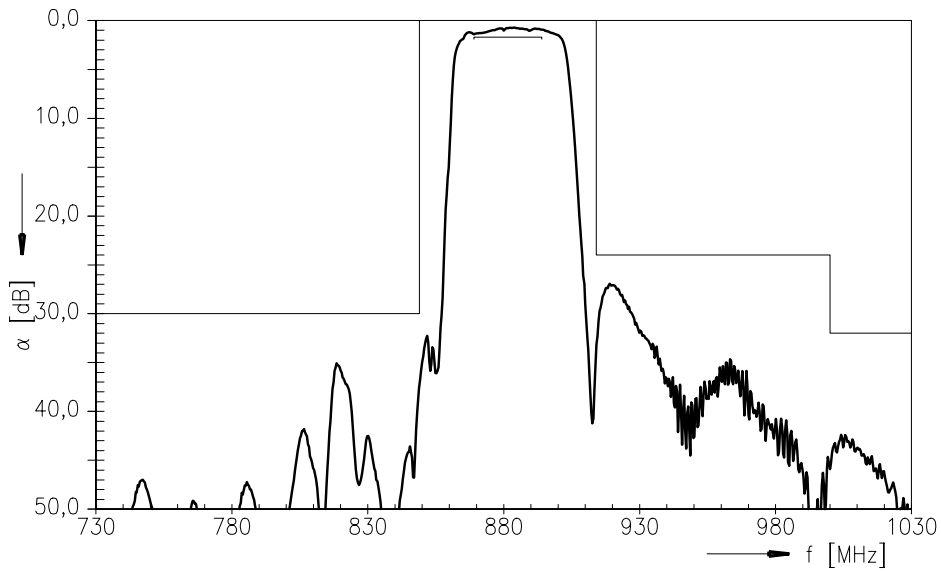
Characteristics of Filter 2 (GSM850)

Operating temperature range: $T = -20$ to $+75$ °C
 Terminating source impedance: $Z_S = 50$ Ω
 Terminating load impedance: $Z_L = 150$ Ω || 82nH

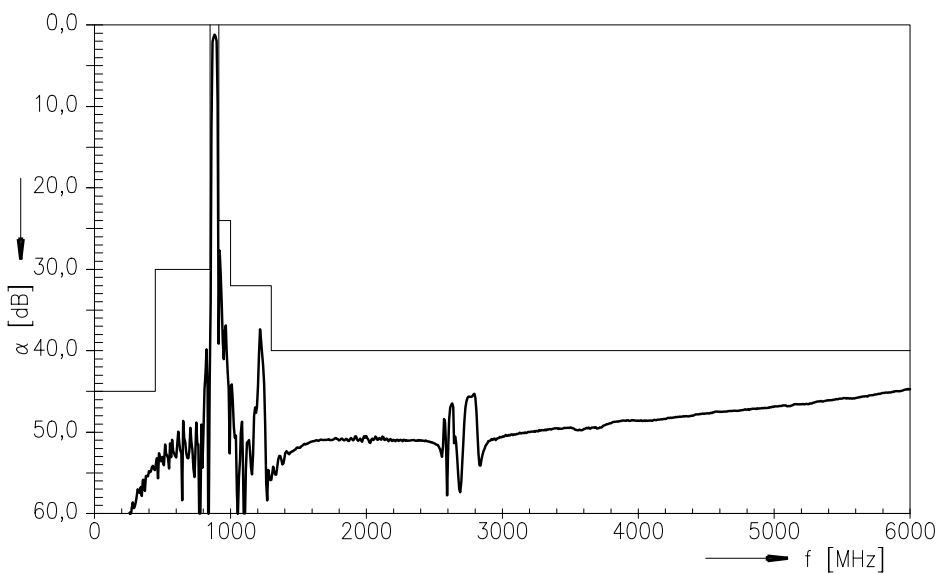
		min.	typ.	max.	
Center frequency	f_C	—	881,5	—	MHz
Maximum insertion attenuation	α_{max}				
	869,0 ... 894,0 MHz	—	1,4	1,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
	869,0 ... 894,0 MHz	—	0,6	0,9	dB
Input VSWR					
	869,0 ... 894,0 MHz	—	1,8	2,1	
Output VSWR					
	869,0 ... 894,0 MHz	—	1,8	2,1	
Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$)					
	869,0 ... 894,0 MHz	-10	-3 / 2	10	degree
Output amplitude balance ($ S_{31}/S_{21} $)					
	869,0 ... 894,0 MHz	-1,0	-0,5 / 0,1	1,0	dB
Attenuation					
	0,0 ... 434,0 MHz	45	54	—	dB
	434,0 ... 447,0 MHz	45	54	—	dB
	447,0 ... 849,0 MHz	30	36	—	dB
	914,0 ... 1000,0 MHz	24	27	—	dB
	1000,0 ... 1300,0 MHz	32	37	—	dB
	1300,0 ... 6000,0 MHz	40	45	—	dB



Transfer function of filter 2 (measured at room temperature):



Transfer function of filter 2 (wideband, measured at room temperature):





SAW Components

B9203

Low-Loss Dual Band Filter for Mobile Communication

1960 / 881,5 MHz

Data Sheet



Published by EPCOS AG

SAW MC WT, P.O. Box 80 17 09, 81617 Munich, GERMANY

TEL +49 89 636 09, FAX +49 89 636 2 26 89

© EPCOS AG 2005. Reproduction, publication and dissemination of this brochure and the information contained therein without EPCOS' prior express consent is prohibited.

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.