EPCOS

SAW Components

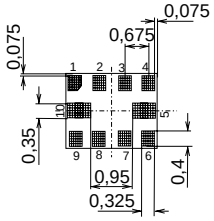
Data Sheet B9203

Data Sheet

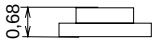
Chip sized SAW package **QCS10F**

Features

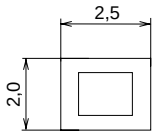
- Low-loss 2-in-1 RF filter for mobile telephone GSM850 and GSM1900 bands, receive path
- Usable passband:
  Filter 1 (GSM1900): 60 MHz
  Filter 2 (GSM850): 25 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 150 Ω of both filters
- Suitable for GPRS class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



bottom view



side view



top view

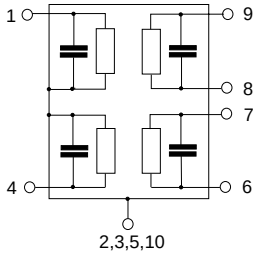
Dimensions in mm, approx weight tbd.

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 **S**ensitive **D**evice (**ESD)**

Maximum ratings

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

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

Characteristics of Filter 1 (GSM1900)

Operating temperature range: T = 25 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 12nH

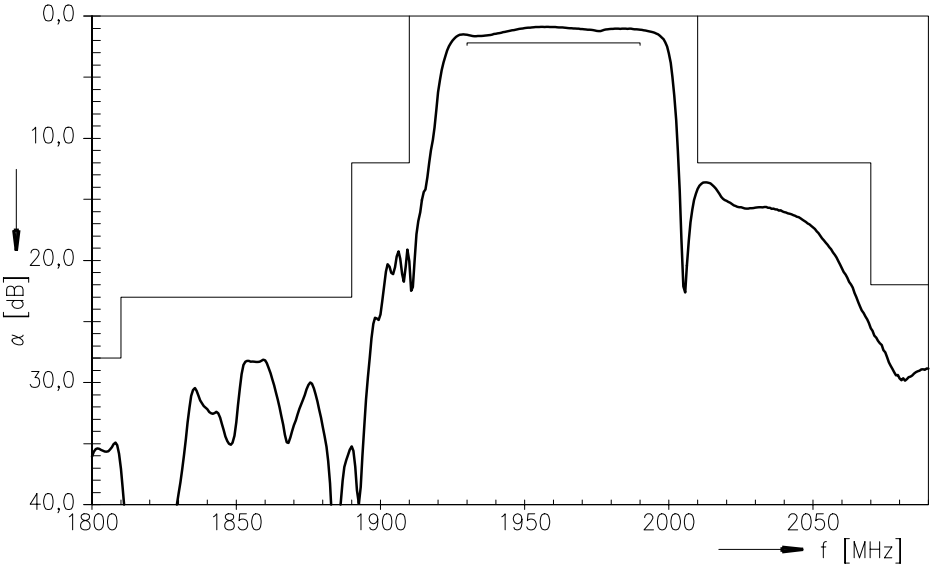
		min.	typ.	max.	
Center frequency	f_C	—	1960,0	—	MHz
Maximum insertion attenuation	α_{max}				
1930,0 ... 1990,0 MHz		—	1,5	1,9	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930,0 ... 1990,0 MHz		—	0,7	1,0	dB
Input VSWR					
1930,0 ...1990,0 MHz		—	1,8	2,2	
Output VSWR					
1930,0 ...1990,0 MHz		—	1,9	2,2	
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)					
1930,0 ... 1990,0 MHz		-10	-3 / 1	10	degree
Output amplitude balance ($\|S_{31}/S_{21}\|$)					
1930,0 ... 1990,0 MHz		-1,0	-0,5 / 0,2	1,0	dB
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

Characteristics of Filter 1 (GSM1900)

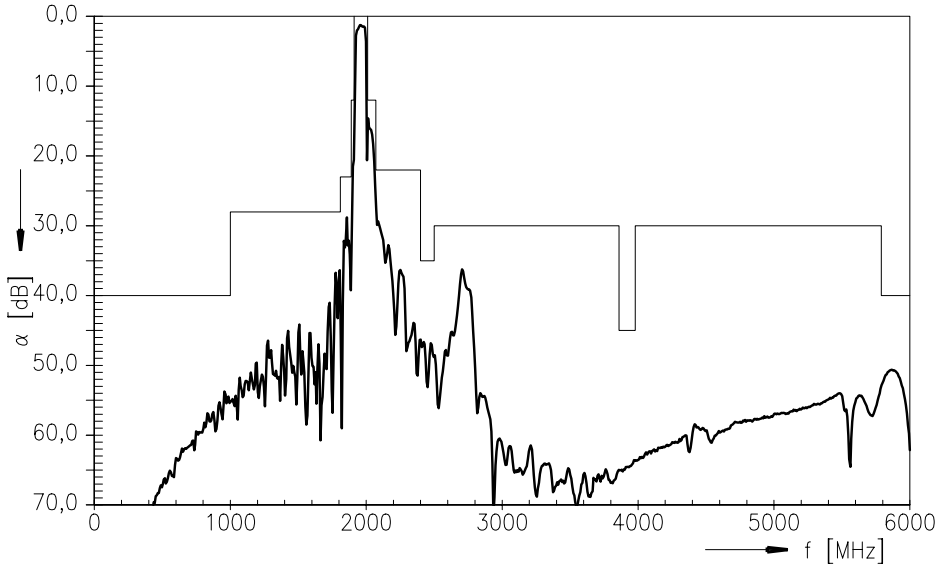
Operating temperature range: T = -20 to + 75 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 12nH

		min.	typ.	max.	
Center frequency	f_C	—	1960,0	—	MHz
Maximum insertion attenuation	α_{max}				
1930,0 ... 1990,0 MHz		—	1,5	2,2	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930,0 ... 1990,0 MHz		—	0,7	1,3	dB
Input VSWR					
1930,0 ...1990,0 MHz		—	1,8	2,2	
Output VSWR					
1930,0 ...1990,0 MHz		—	1,9	2,2	
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)					
1930,0 ... 1990,0 MHz		-10	-3 / 1	10	degree
Output amplitude balance ($\|S_{31}/S_{21}\|$)					
1930,0 ... 1990,0 MHz		-1,0	-0,5 / 0,2	1,0	dB
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 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 82nH

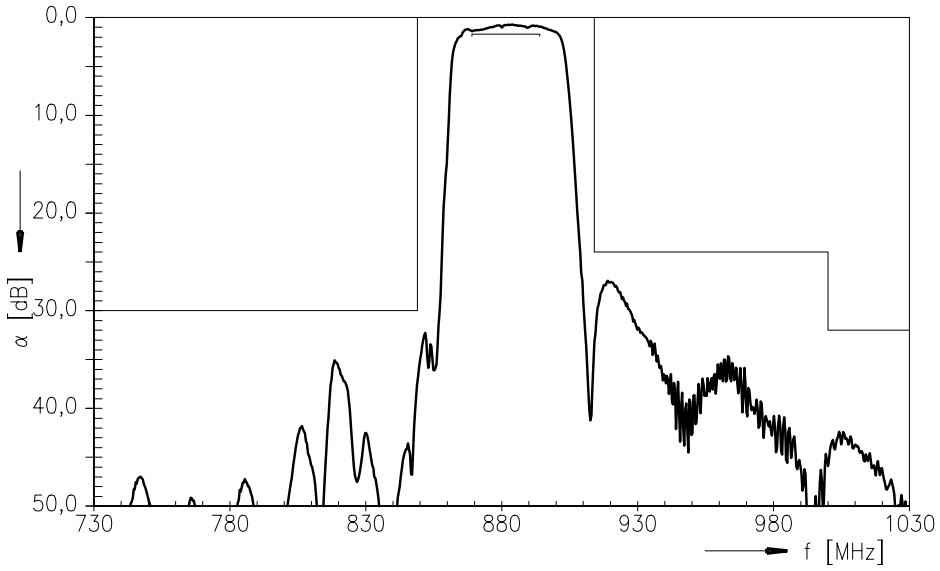
		min.	typ.	max.	
Center frequency	f_C	—	881,5	—	MHz
Maximum insertion attenuation	α_{max}				
869,0 ... 894,0 MHz		—	1,4	1,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
869,0 ... 894,0 MHz		—	0,6	0,9	dB
Input VSWR					
869,0 ... 894,0 MHz		—	1,8	2,1	
Output VSWR					
869,0 ... 894,0 MHz		—	1,8	2,1	
Output phase balance $(\phi(S_{31})-\phi(S_{21})+180^\circ)$					
869,0 ... 894,0 MHz		-10	-3 / 2	10	degree
Output amplitude balance $(\lvert S_{31}/S_{21}\rvert)$					
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)

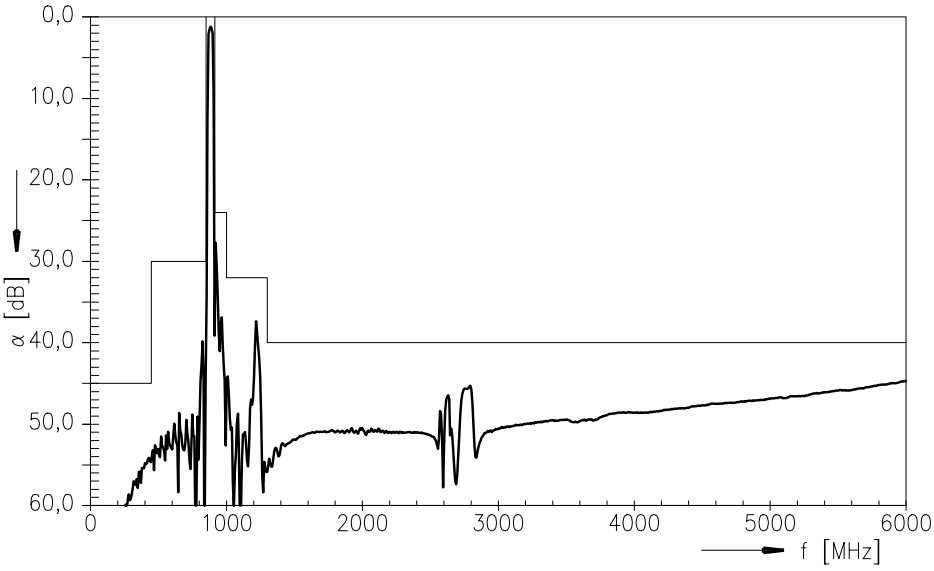
Operating temperature range: T = -20 to + 75 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 82nH

		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 $(\lvert S_{31}/S_{21}\rvert)$					
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):



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SAW MC WT, P.O. Box 80 17 09, 81617 Munich, GERMANY
TEL +49 89 636 09, FAX +49 89 636 2 26 89

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