EPCOS

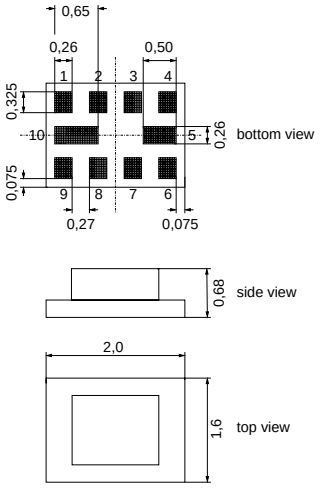
SAW Components

Data Sheet B9300

Chip Sized Saw Package **QCS10H**

Features

- Low-loss 2-in-1 RF filter for mobile telephone GSM1800 and GSM1900 systems, receive path
- Usable passband:
  Filter 1 (GSM 1900): 60 MHz
  Filter 2 (GSM 1800): 75 MHz
- Unbalanced to balanced operation for both filters
- Impedance transformation from 50 Ω to 150 Ω for both filters
- Suitable for GPRS class 1 to 12
- Package for **S**urface **M**ounted **T**echnology (**SMT**)
- Pb-free



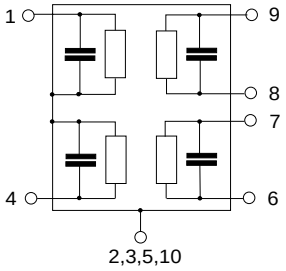
Dimensions in mm, approx. weight t.b.d.

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
B9300	B39202-B9300-G110	C61157-A7-A141	F61074-V8152-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}	5	V	
ESD voltage	V_{ESD}	50	V	machine model, 10 pulses[1)]
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

Characteristics of Filter 1 (GSM 1900)

Operating temperature range: T = 25 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 18nH (balanced)

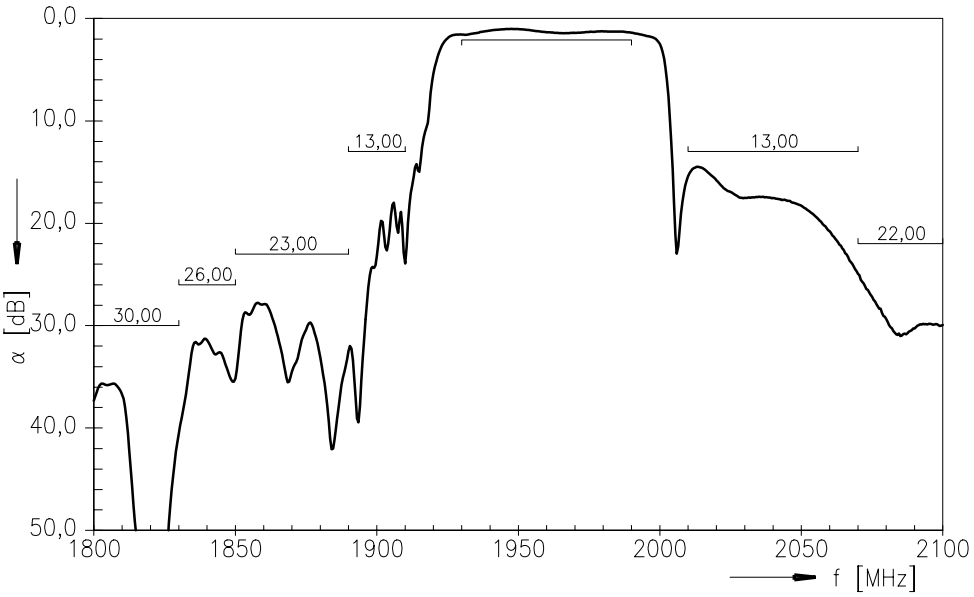
		min.	typ.	max.	
Center frequency	f_c	—	1960,0	—	MHz
Maximum insertion attenuation	α_{max}				
1930,0 ...1990,0MHz		—	1,6	2,1	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930,0 ...1990,0MHz		—	0,5	1,0	dB
Input VSWR					
1930,0 ...1990,0MHz		—	1,7	2,0	
Output VSWR					
1930,0 ...1990,0MHz		—	1,7	2,0	
Output phase balance ($\Phi(S_{31}) - \Phi(S_{21}) + 180°$)					
1930,0 ...1990,0MHz		-10	-2/+4	+10	degree
Output amplitude balance ($\lvert S_{31}/S_{21} \rvert$)					
1930,0 ...1990,0MHz		-1,2	-0,6/+0,6	+1,2	dB
Attenuation	α_{min}				
10,0 ...1510,0MHz		40,0	43	—	dB
1510,0 ...1830,0MHz		30,0	36	—	dB
1830,0 ...1850,0MHz		26,0	32	—	dB
1850,0 ...1890,0MHz		23,0	28	—	dB
1890,0 ...1910,0MHz		13,0	18	—	dB
2010,0 ...2070,0MHz		13,0	15	—	dB
2070,0 ...2400,0MHz		22,0	26	—	dB
2400,0 ...6000,0MHz		30,0	34	—	dB

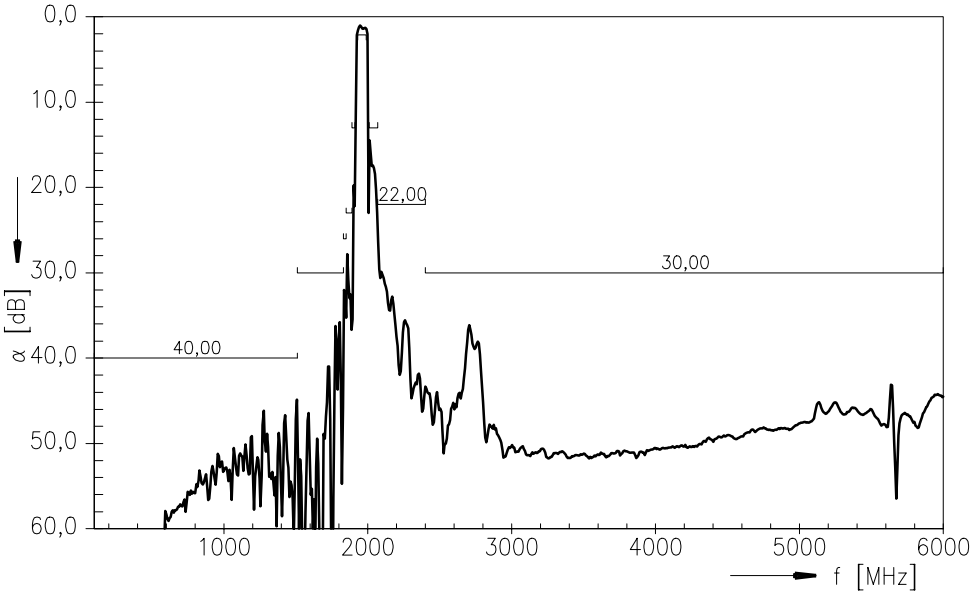
Characteristics of Filter 1 (GSM 1900)

Operating temperature range: T = -20 to + 75 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 18nH (balanced)

		min.	typ.	max.	
Center frequency	f_c	—	1960,0	—	MHz
Maximum insertion attenuation	α_{max}				
1930,0 ...1990,0MHz		—	1,7	2,3	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930,0 ...1990,0MHz		—	0,6	1,3	dB
Input VSWR					
1930,0 ...1990,0MHz		—	1,7	2,0	
Output VSWR					
1930,0 ...1990,0MHz		—	1,7	2,0	
Output phase balance ($\Phi(S_{31}) - \Phi(S_{21}) + 180°$)					
1930,0 ...1990,0MHz		-10	-3/+5	+10	degree
Output amplitude balance ($\lvert S_{31}/S_{21} \rvert$)					
1930,0 ...1990,0MHz		-1,2	-0,7/+0,7	+1,2	dB
Attenuation	α_{min}				
10,0 ...1510,0MHz		40,0	43	—	dB
1510,0 ...1830,0MHz		30,0	35	—	dB
1830,0 ...1850,0MHz		26,0	32	—	dB
1850,0 ...1890,0MHz		23,0	27	—	dB
1890,0 ...1910,0MHz		12,0	16	—	dB
2010,0 ...2070,0MHz		12,0	15	—	dB
2070,0 ...2400,0MHz		21,0	24	—	dB
2400,0 ...6000,0MHz		30,0	34	—	dB

Transfer Function of Filter 1 (GSM 1900)





Characteristics of Filter 2 (GSM1800)

Operating temperature range: T = 25 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 15nH (balanced)

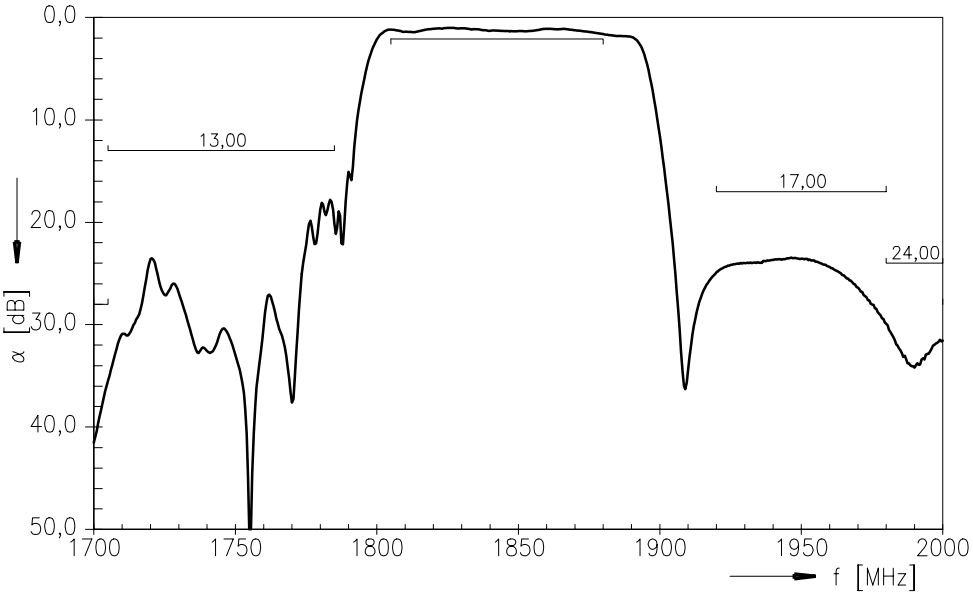
		min.	typ.	max.	
Center frequency	f_c	—	1842,5	—	MHz
Maximum insertion attenuation	α_{max}				
1805,0 ... 1880,0MHz		—	1,6	2,1	dB
Amplitude ripple	$\Delta\alpha$				
1805,0 ... 1880,0MHz		—	0,5	1,0	dB
Input VSWR					
1805,0 ... 1880,0MHz		—	1,8	2,2	
Output VSWR					
1805,0 ... 1880,0MHz		—	1,7	2,2	
Output phase balance ($\Phi(S_{31}) - \Phi(S_{21}) + 180°$)					
1805,0 ... 1880,0MHz		- 10	-3/+3	+10	degree
Output amplitude balance ($\lvert S_{31}/S_{21} \rvert$)					
1805,0 ... 1880,0MHz		-1,0	-0,6/+0,4	+1,0	dB
Attenuation	α_{min}				
10,0 ... 902,0MHz		30,0	52	—	dB
902,0 ... 940,0MHz		45,0	52	—	dB
940,0 ...1705,0MHz		28,0	42	—	dB
1705,0 ...1785,0MHz		13,0	18	—	dB
1920,0 ...1980,0MHz		17,0	23	—	dB
1980,0 ...2030,0MHz		24,0	28	—	dB
2030,0 ...2400,0MHz		28,0	34	—	dB
2400,0 ...6000,0MHz		28,0	32	—	dB

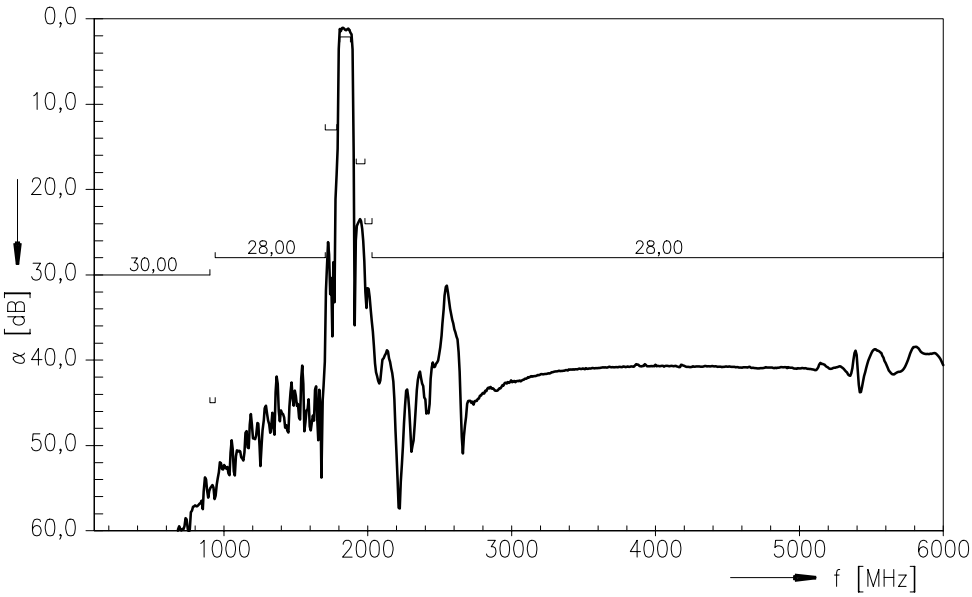
Characteristics of Filter 2 (GSM1800)

Operating temperature range: T = - 20 to + 75 °C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 150 Ω || 15nH (balanced)

		min.	typ.	max.	
Center frequency	f_c	—	1842,5	—	MHz
Maximum insertion attenuation	α_{max}				
1805,0 ... 1880,0MHz		—	1,8	2,3	dB
Amplitude ripple	$\Delta\alpha$				
1805,0 ... 1880,0MHz		—	0,7	1,3	dB
Input VSWR					
1805,0 ... 1880,0MHz		—	1,8	2,2	
Output VSWR					
1805,0 ... 1880,0MHz		—	1,7	2,2	
Output phase balance ($\Phi(S_{31}) - \Phi(S_{21}) + 180°$)					
1805,0 ... 1880,0MHz		- 10	-3/+3	+10	degree
Output amplitude balance ($\lvert S_{31}/S_{21} \rvert$)					
1805,0 ... 1880,0MHz		-1,0	-0,7/+0,5	+1,0	dB
Attenuation	α_{min}				
10,0 ... 902,0MHz		30,0	52	—	dB
902,0 ... 940,0MHz		45,0	52	—	dB
940,0 ...1705,0MHz		28,0	42	—	dB
1705,0 ...1785,0MHz		12,0	15	—	dB
1920,0 ...1980,0MHz		17,0	23	—	dB
1980,0 ...2030,0MHz		24,0	28	—	dB
2030,0 ...2400,0MHz		28,0	34	—	dB
2400,0 ...6000,0MHz		28,0	32	—	dB

Transfer Function of Filter 2 (GSM 1800)





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