



# SAW Components

Data Sheet B9309

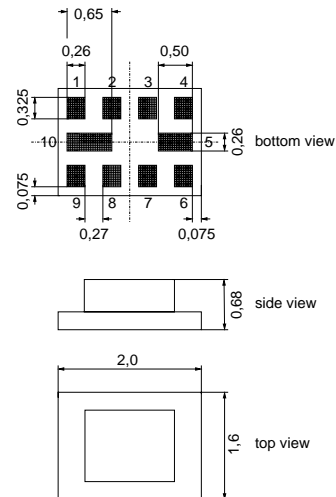




Chip Sized Saw Package QCS10H

Features

- Low-loss 2in1 RF filter for mobile telephone GSM850/1900 systems, receive path
- Usable passband:  
Filter 1 (GSM850): 25 MHz  
Filter 2 (GSM1900): 60 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 150 Ω for both filters
- Suitable for GPRS Class 1 to 12
- Ceramic package for Surface Mounted Technology (SMT)
- Pb-free

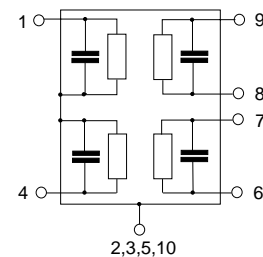


Terminals

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

Dimensions in mm, approx. weight 0,008g.



Type	Ordering code	Marking and Package according to	Packing according to
B9309	B39192-B9309-G110	C61157-A7-A141	F61074-V8152-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	$V_{DC}$	5	V	
ESD voltage	$V_{ESD}$	50*	V	
Input power at GSM850, GSM900, GSM1800, GSM1900 Tx bands:				
Filter 1 (GSM850)	$P_{IN}$	15	dBm	effective power in the on-state, duty cycle 4:8
Filter 2 (GSM1900)	$P_{IN}$	15	dBm	

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



**Characteristics Filter 1 ( GSM850 )**

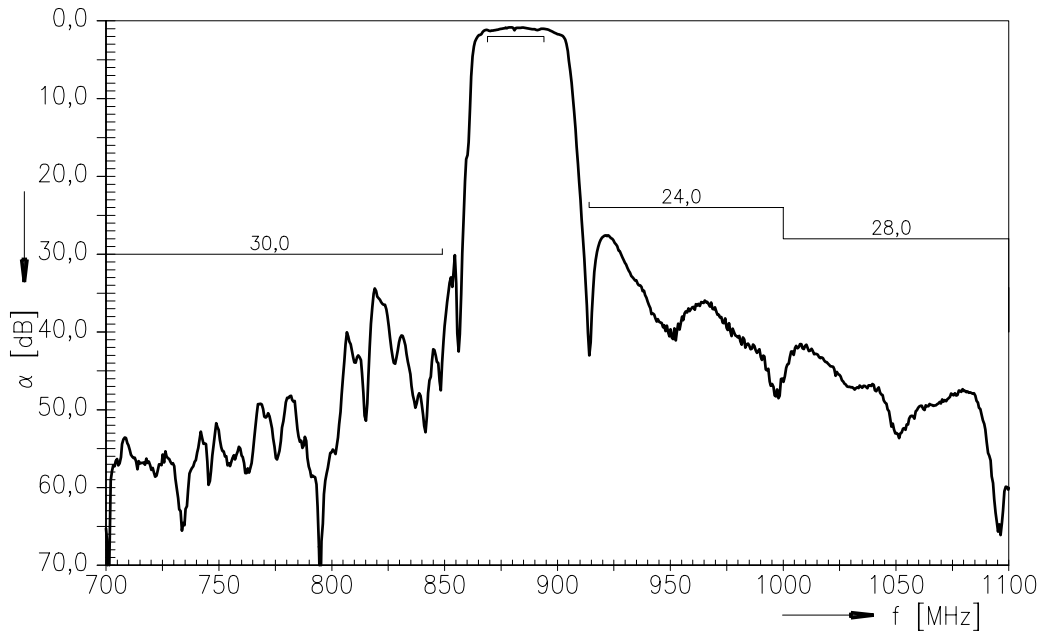
Operating temperature range:  $T = -20$  to  $+75^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 150\ \Omega \parallel 82\text{nH}$  (balanced)

			min.	typ.	max.	
<b>Center frequency</b>	$f_c$		—	881,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$	869,0 ... 894,0 MHz	—	1,6	1,8	dB
		869,0 ... 894,0 MHz 1)	—	1,5	1,7	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	869,0 ... 894,0 MHz	—	0,7	1,0	dB
<b>Input VSWR</b>		869,0 ... 894,0 MHz	—	2,0	2,2	
<b>Output VSWR</b>		869,0 ... 894,0 MHz	—	2,0	2,2	
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>		869,0 ... 894,0 MHz	-1,0	-0,7/+0,2	1,0	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^{\circ}</math>)</b>		869,0 ... 894,0 MHz	-10	-3 /+3	10	degree
<b>Attenuation</b>	$\alpha_{\text{min}}$	10,0 ... 447,0 MHz	45	50	—	dB
		447,0 ... 849,0 MHz	30	34	—	dB
		914,0 ... 1000,0 MHz	24	26	—	dB
		1000,0 ... 1738,0 MHz	28	38	—	dB
		1738,0 ... 1788,0 MHz	40	50	—	dB
		1788,0 ... 6000,0 MHz	35	44	—	dB

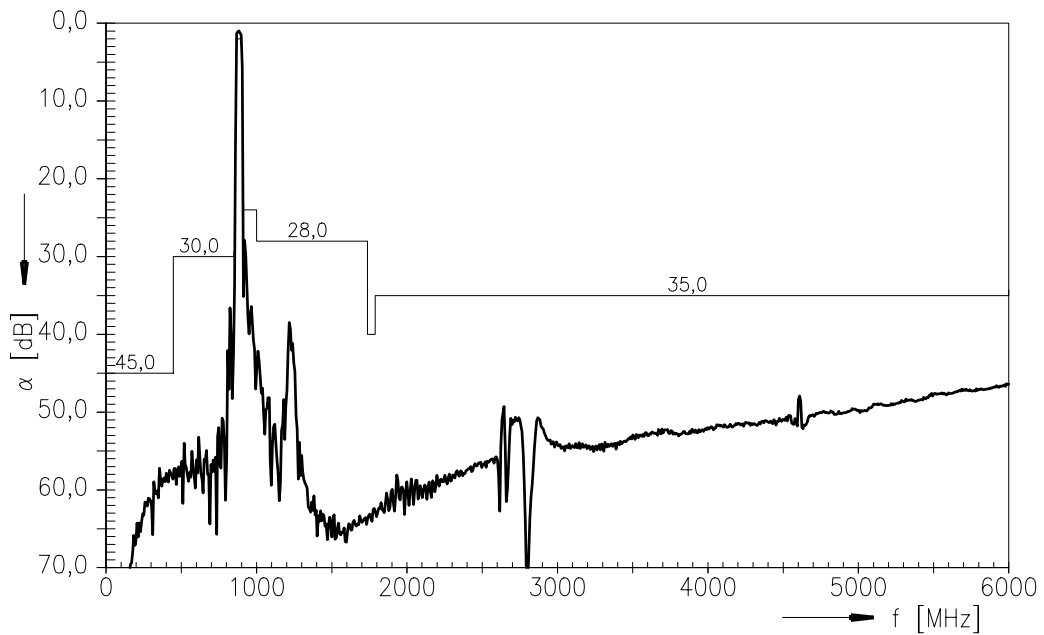
1)  $T = +25 \pm 2^{\circ}\text{C}$



Transfer Function Filter 1 ( GSM850 )



Transfer Function Filter 1 ( GSM850 ) - wideband





**Characteristics Filter 2 ( GSM1900 )**

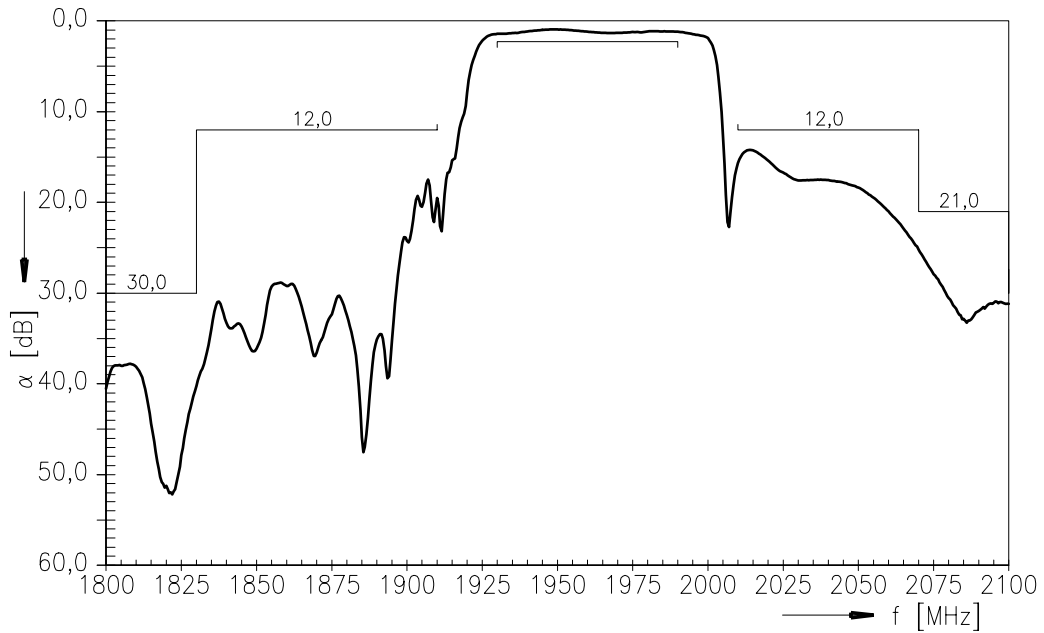
Operating temperature range:  $T = -20$  to  $+75^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 150 \Omega \parallel 18\text{nH}$  (balanced)

		min.	typ.	max.	
<b>Center frequency</b>	$f_C$	—	1960,0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$				
	1930,0 ... 1990,0 MHz	—	1,7	2,3	dB
	1930,0 ... 1990,0 MHz 1)	—	1,6	2,1	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
	1930,0 ... 1990,0 MHz	—	0,5	1,0	dB
<b>Input VSWR</b>					
	1930,0 ... 1990,0 MHz	—	1,7	2,0	
<b>Output VSWR</b>					
	1930,0 ... 1990,0 MHz	—	1,7	2,0	
<b>Output amplitude balance (<math> S_{31} / S_{21} </math>)</b>					
	1930,0 ... 1990,0 MHz	-1,0	-0,6/+0,6	+1,0	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^{\circ}</math>)</b>					
	1930,0 ... 1990,0 MHz	-10	-2/+4	+10	°
<b>Attenuation</b>	$\alpha$				
	10,0 ... 1830,0 MHz	30	36	—	dB
	1830,0 ... 1910,0 MHz	12	16	—	dB
	2010,0 ... 2070,0 MHz	12	16	—	dB
	2070,0 ... 2400,0 MHz	21	24	—	dB
	2400,0 ... 2500,0 MHz	30	34	—	dB
	2500,0 ... 4000,0 MHz	28	34	—	dB
4000,0 ... 6000,0 MHz	28	34	—	dB	

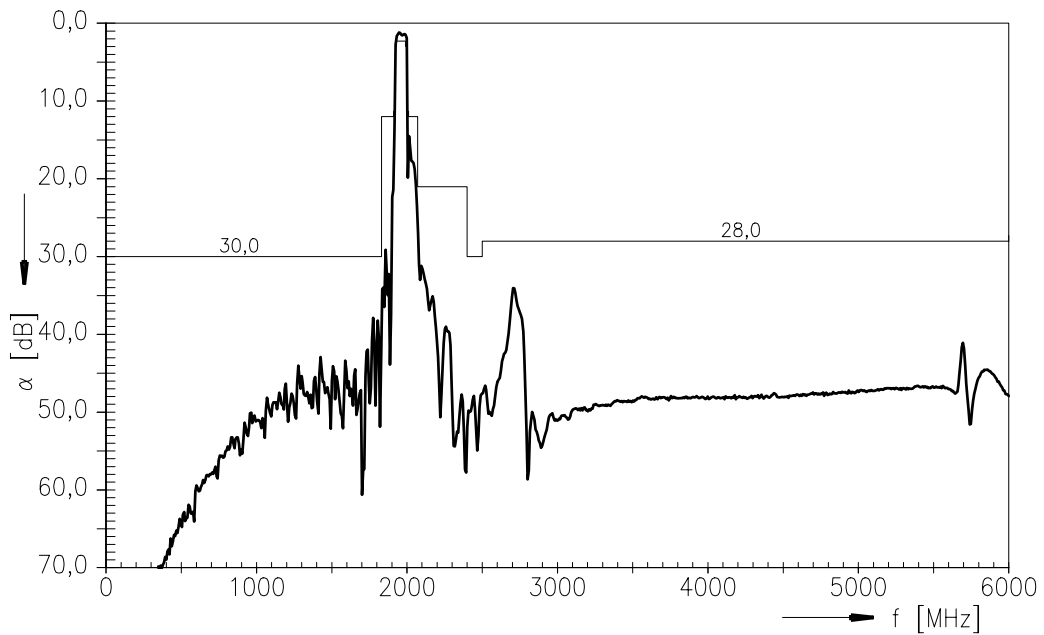
1)  $T = +25 \pm 2^{\circ}\text{C}$



Transfer Function Filter 2 ( GSM1900 )



Transfer Function Filter 2 ( GSM1900 ) - wideband





**SAW Components**

**B9309**

**Low-Loss Dual Band Filter for Mobile Communication**

**881,5 / 1960,0 MHz**

Data Sheet



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