



# SAW Components

Data Sheet B4235





**SAW Components**

**B4235**

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

**942,5/1842,5 MHz**

**Data Sheet**



Ceramic package **QCC10G**

**Features**

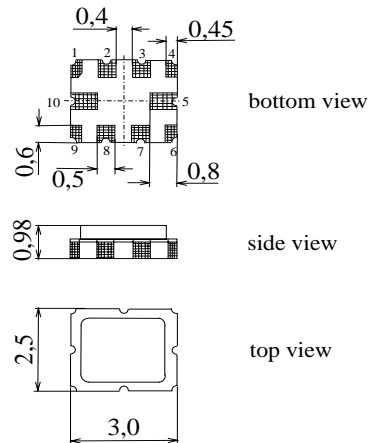
- Low-loss RF filter for mobile telephone GSM 900/1800 system , receive path
- Usable passband:  
Filter 1 (GSM900): 35 MHz  
Filter 2 (GSM1800): 75 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 150 Ω for both filters
- Suitable for GPRS class 1 to 12
- Ceramic package for **Surface Mounted Technology (SMT)**
- RoHS compliant

**Terminals**

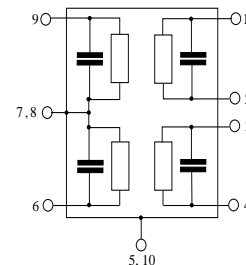
- Ni, gold-plated

**Pin configuration**

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



Dimensions in mm, approx. weight **27 mg**



Type	Ordering code	Marking and Package according to	Packing according to
B4235	B39182-B4235-H910	C61157-A7-A142	F61074-V8174-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 Tx bands: GSM850, GSM900 GSM1800, GSM1900	$P_{IN}$	15	dBm	

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



**Characteristics Filter 1 ( GSM900 )**

Operating temperature range:  $T = +25 \pm 2 \text{ }^\circ\text{C}$   
 Terminating source impedance:  $Z_S = 50 \text{ } \Omega$  (unbalanced)  
 Terminating load impedance:  $Z_L = 150 \text{ } \Omega$  (balanced) || 68 nH

		min.	typ.	max.	
<b>Center frequency</b>	$f_c$	—	942,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$				
925,0 ... 960,0 MHz		—	1,8	2,2	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
925,0 ... 960,0 MHz		—	0,6	1,2	dB
<b>Input VSWR</b>					
925,0 ... 960,0 MHz		—	1,9	2,1	
<b>Output VSWR</b>					
925,0 ... 960,0 MHz		—	1,9	2,1	
<b>Output amplitude balance (<math> S_{31} / S_{21} </math>)</b>					
925,0 ... 960,0 MHz		-2,0	—	2,0	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^\circ</math>)</b>					
925,0 ... 960,0 MHz		-10,0	—	10,0	degree
<b>Absolute attenuation</b>	$\alpha_{abs}$				
10,0 ... 480,0 MHz		45,0	53,0	—	dB
480,0 ... 880,0 MHz		30,0	38,0	—	dB
880,0 ... 905,0 MHz		24,0	27,0	—	dB
905,0 ... 915,0 MHz		20,0	25,0	—	dB
980,0 ... 1050,0 MHz		23,0	30,0	—	dB
1050,0 ... 3500,0 MHz		30,0	34,0	—	dB
3500,0 ... 4500,0 MHz		22,0	26,0	—	dB
4500,0 ... 6000,0 MHz		15,0	17,0	—	dB



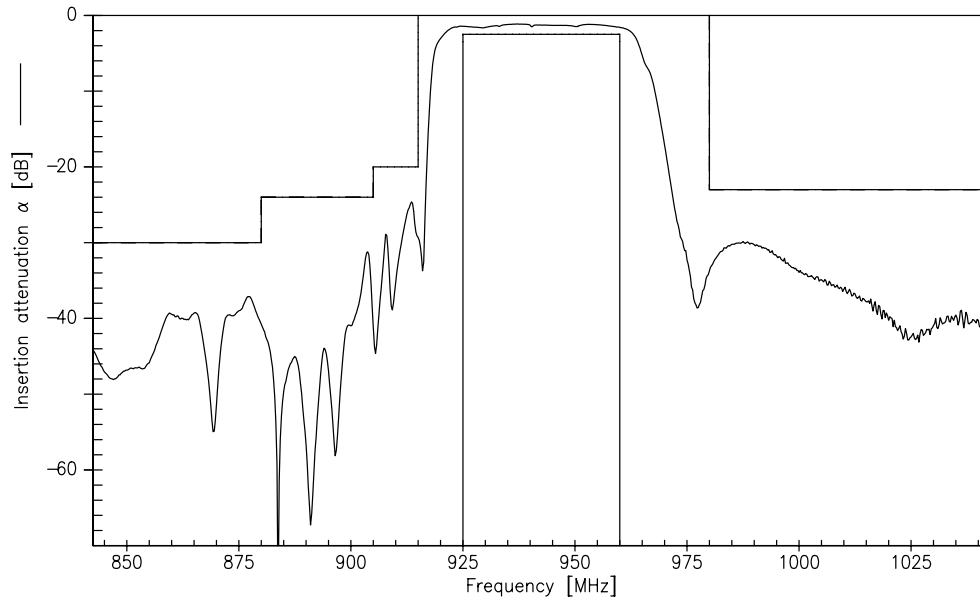
**Characteristics Filter 1 ( GSM900 )**

Operating temperature range:  $T = -20$  to  $+75^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$  (unbalanced)  
 Terminating load impedance:  $Z_L = 150\ \Omega$  (balanced) ||  $68\ \text{nH}$

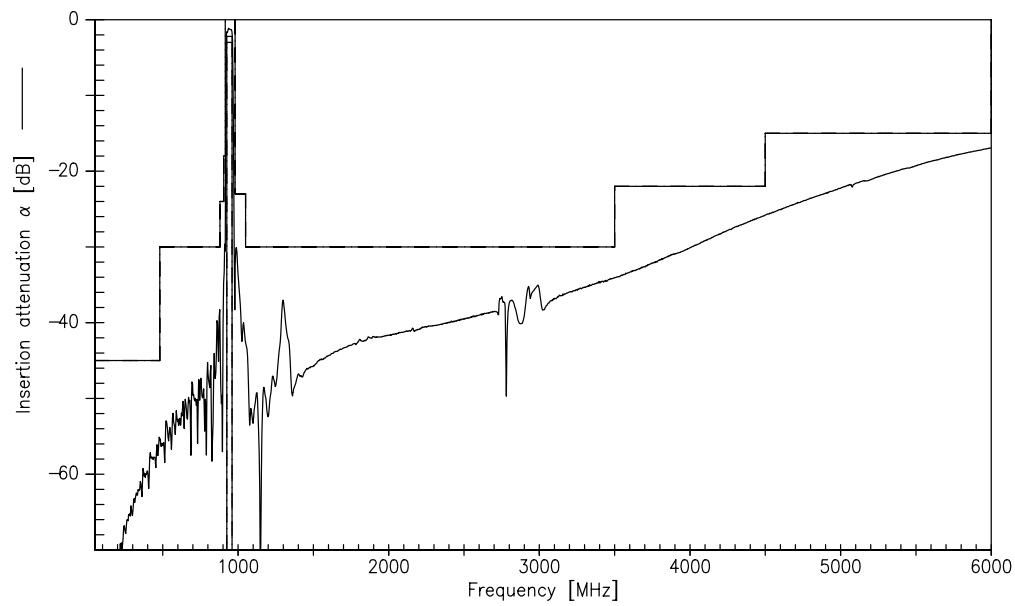
		min.	typ.	max.	
<b>Center frequency</b>	$f_c$	—	942,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$				
925,0 ... 960,0 MHz		—	1,8	2,5	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
925,0 ... 960,0 MHz		—	0,9	1,5	dB
<b>Input VSWR</b>					
925,0 ... 960,0 MHz		—	1,9	2,1	
<b>Output VSWR</b>					
925,0 ... 960,0 MHz		—	1,9	2,1	
<b>Output amplitude balance (<math> S_{31} / S_{21} </math>)</b>					
925,0 ... 960,0 MHz		-2,5	—	2,5	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^{\circ}</math>)</b>					
925,0 ... 960,0 MHz		-12,0	—	12,0	degree
<b>Absolute attenuation</b>	$\alpha_{\text{abs}}$				
10,0 ... 480,0 MHz		45,0	50,0	—	dB
480,0 ... 880,0 MHz		30,0	38,0	—	dB
880,0 ... 905,0 MHz		24,0	27,0	—	dB
905,0 ... 915,0 MHz		11,0	18,0	—	dB
980,0 ... 1050,0 MHz		23,0	30,0	—	dB
1050,0 ... 3500,0 MHz		30,0	34,0	—	dB
3500,0 ... 4500,0 MHz		22,0	26,0	—	dB
4500,0 ... 6000,0 MHz		15,0	17,0	—	dB



Transfer function of filter 1 (Narrow Band)



Transfer function of filter 1 (Wide Band)





**Characteristics Filter 2 ( GSM1800 )**

Operating temperature range:  $T = +25 \pm 2 \text{ }^\circ\text{C}$   
 Terminating source impedance:  $Z_S = 50 \text{ } \Omega$  (unbalanced)  
 Terminating load impedance:  $Z_L = 150 \text{ } \Omega$  (balanced) || 12.0 nH

		min.	typ.	max.	
<b>Center frequency</b>	$f_c$	—	1842,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{max}$				
1805,0 ... 1880,0 MHz		—	2,4	2,7	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
1805,0 ... 1880,0 MHz		—	1,2	1,5	dB
<b>Input VSWR</b>					
1805,0 ... 1880,0 MHz		—	2,4	2,6	
<b>Output VSWR</b>					
1805,0 ... 1880,0 MHz		—	2,2	2,4	
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>					
1805,0 ... 1880,0 MHz		-1,5	—	1,5	dB
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^\circ</math>)</b>					
1805,0 ... 1880,0 MHz		-10,0	—	10,0	degree
<b>Absolute attenuation</b>	$\alpha_{abs}$				
10,0 ... 1000,0 MHz		40,0	50,0	—	dB
1000,0 ... 1705,0 MHz		26,0	28,0	—	dB
1705,0 ... 1785,0 MHz		13,0	17,0	—	dB
1920,0 ... 1980,0 MHz		15,0	24,0	—	dB
1980,0 ... 2030,0 MHz		24,0	28,0	—	dB
2030,0 ... 5000,0 MHz		30,0	34,0	—	dB
5000,0 ... 6000,0 MHz		25,0	30,0	—	dB



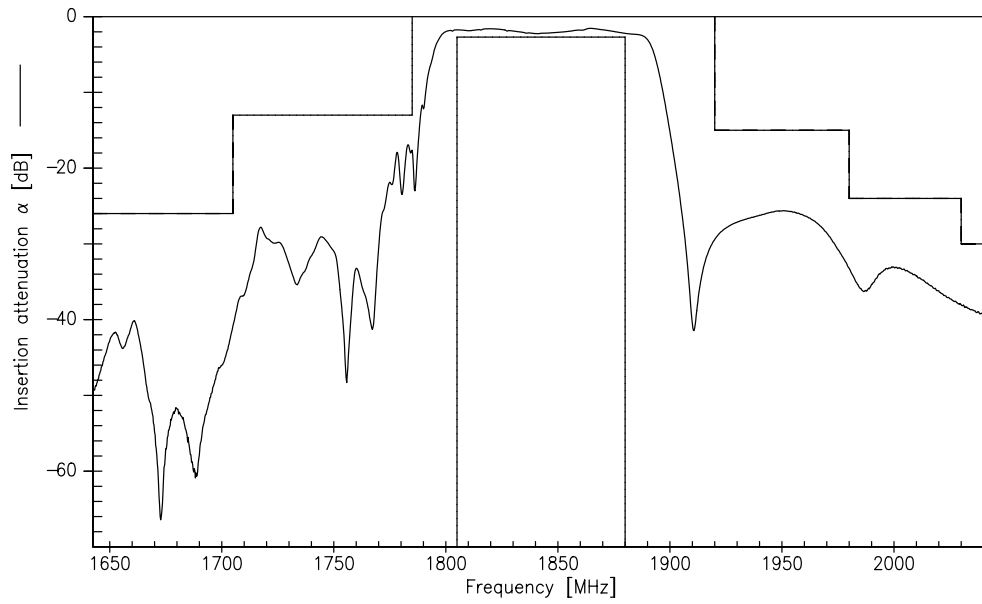
**Characteristics Filter 2 ( GSM1800 )**

Operating temperature range:  $T = -20$  to  $+75^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$  (unbalanced)  
 Terminating load impedance:  $Z_L = 150\ \Omega$  (balanced) || 12.0 nH

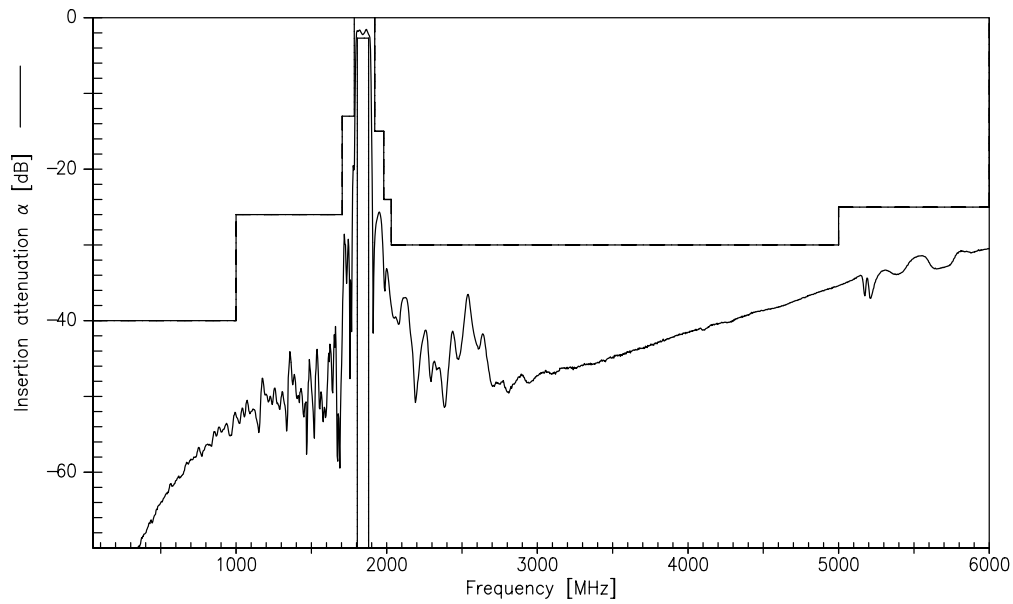
		min.	typ.	max.	
<b>Center frequency</b>	$f_c$	—	1842,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	—	2,4	2,7	dB
1805,0 ... 1880,0 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	1,5	1,8	dB
1805,0 ... 1880,0 MHz					
<b>Input VSWR</b>		—	2,4	2,6	
1805,0 ... 1880,0 MHz					
<b>Output VSWR</b>		—	2,2	2,4	
1805,0 ... 1880,0 MHz					
<b>Output amplitude balance (<math> S_{31} / S_{21} </math>)</b>		-1,5	—	1,5	dB
1805,0 ... 1880,0 MHz					
<b>Output phase balance (<math>\phi(S_{31})-\phi(S_{21})+180^{\circ}</math>)</b>		-10,0	—	10,0	degree
1805,0 ... 1880,0 MHz					
<b>Absolute attenuation</b>	$\alpha_{\text{abs}}$				
10,0 ... 1000,0 MHz		40,0	50,0	—	dB
1000,0 ... 1705,0 MHz		26,0	28,0	—	dB
1705,0 ... 1785,0 MHz		10,0	17,0	—	dB
1920,0 ... 1980,0 MHz		15,0	24,0	—	dB
1980,0 ... 2030,0 MHz		24,0	28,0	—	dB
2030,0 ... 5000,0 MHz		30,0	34,0	—	dB
5000,0 ... 6000,0 MHz		25,0	30,0	—	dB



Transfer function of filter 2 (Narrow Band)



Transfer function of filter 2 (Wide Band)







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**B4235**

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**942,5/1842,5 MHz**

Data Sheet



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