EPCOS

SAW Components

Data Sheet B4235

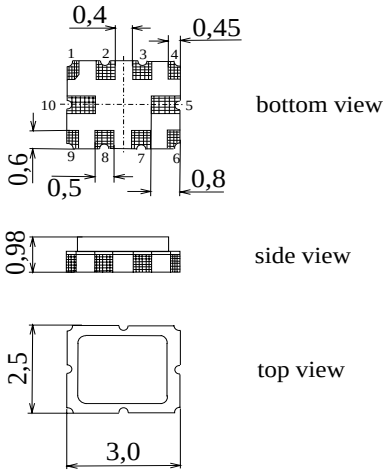
Low-Loss Dual Band Filter for Mobile Communication 942,5/1842,5 MHz

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 **S**urface **M**ounted **T**echnology (**SMT**)
- RoHS compliant



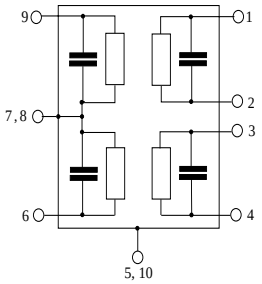
Dimensions in mm, approx. weight **27 mg**

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



Type	Ordering code	Marking and Package according to	Packing according to
B4235	B39182-B4235-H910	C61157-A7-A142	F61074-V8174-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
Input power at Tx bands: GSM850, GSM900 GSM1800, GSM1900	P_{IN}	15	dBm	peak power of GSM signal, duty cycle 4:8

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

Characteristics Filter 1 (GSM900)

Operating temperature range: T = +25 ± 2 °C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 68 nH

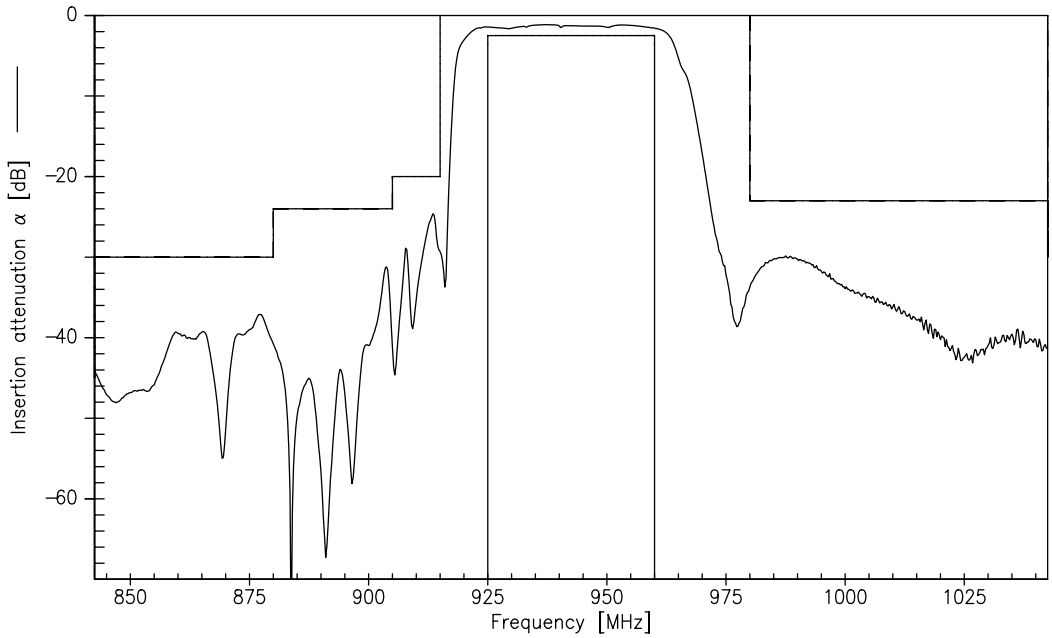
		min.	typ.	max.	
Center frequency	f_c	—	942,5	—	MHz
Maximum insertion attenuation	α_{max}				
925,0 ... 960,0 MHz		—	1,8	2,2	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
925,0 ... 960,0 MHz		—	0,6	1,2	dB
Input VSWR					
925,0 ... 960,0 MHz		—	1,9	2,1	
Output VSWR					
925,0 ... 960,0 MHz		—	1,9	2,1	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
925,0 ... 960,0 MHz		-2,0	—	2,0	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)					
925,0 ... 960,0 MHz		-10,0	—	10,0	degree
Absolute attenuation	α_{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)

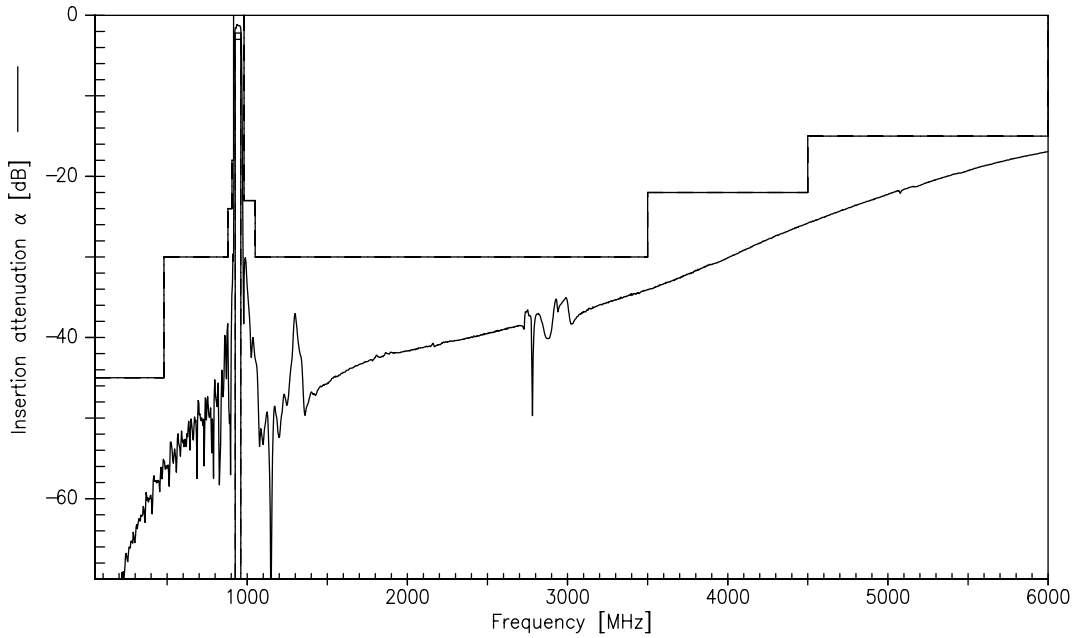
Operating temperature range: T = -20 to +75˚ C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 68 nH

		min.	typ.	max.	
Center frequency	f_c	—	942,5	—	MHz
Maximum insertion attenuation	α_{max}				
925,0 ... 960,0 MHz		—	1,8	2,5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
925,0 ... 960,0 MHz		—	0,9	1,5	dB
Input VSWR					
925,0 ... 960,0 MHz		—	1,9	2,1	
Output VSWR					
925,0 ... 960,0 MHz		—	1,9	2,1	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
925,0 ... 960,0 MHz		-2,5	—	2,5	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180^\circ$)					
925,0 ... 960,0 MHz		-12,0	—	12,0	degree
Absolute attenuation	α_{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 ± 2 °C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 12.0 nH

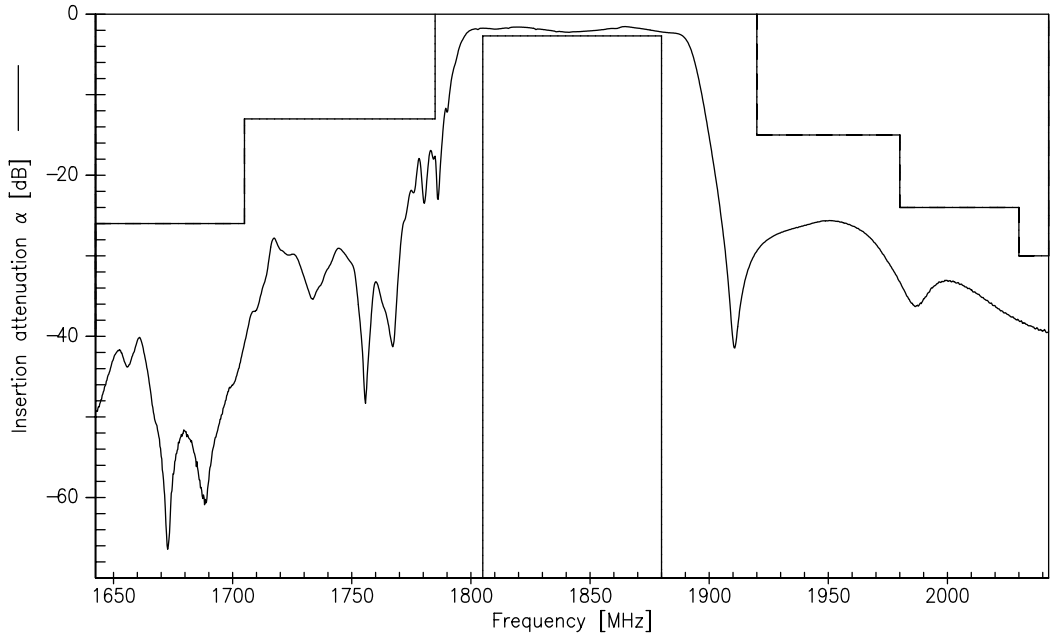
		min.	typ.	max.	
Center frequency	f_c	—	1842,5	—	MHz
Maximum insertion attenuation	α_{max}				
1805,0 ...1880,0 MHz		—	2,4	2,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1805,0 ...1880,0 MHz		—	1,2	1,5	dB
Input VSWR					
1805,0 ...1880,0 MHz		—	2,4	2,6	
Output VSWR					
1805,0 ...1880,0 MHz		—	2,2	2,4	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
1805,0 ...1880,0 MHz		-1,5	—	1,5	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)					
1805,0 ...1880,0 MHz		-10,0	—	10,0	degree
Absolute attenuation	α_{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)

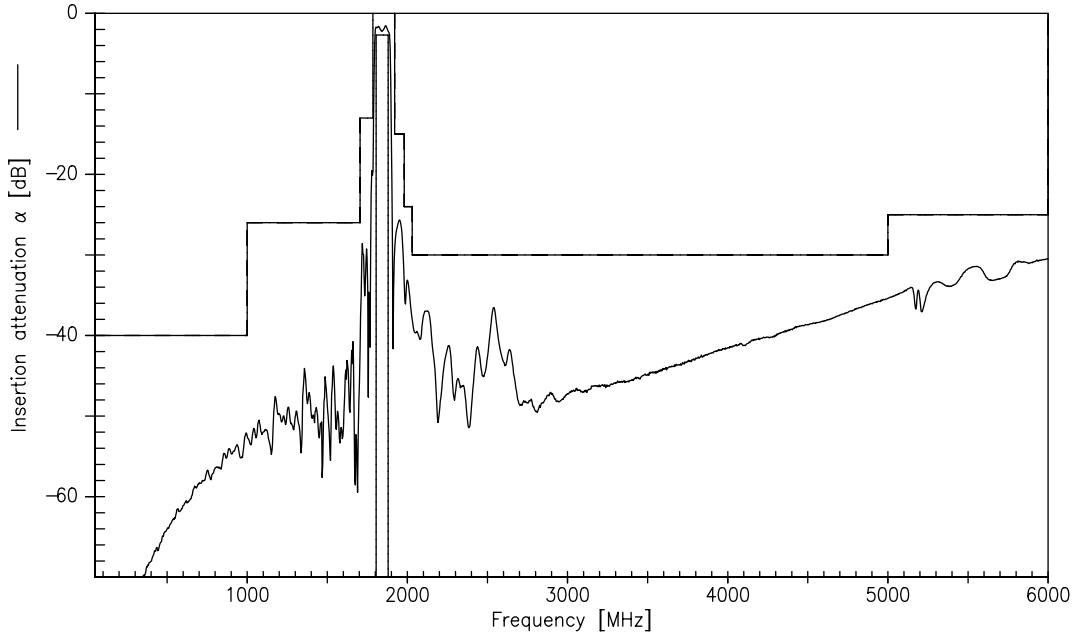
Operating temperature range: T = -20 to +75˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 12.0 nH

		min.	typ.	max.	
Center frequency	f_c	—	1842,5	—	MHz
Maximum insertion attenuation	α_{max}				
1805,0 ...1880,0 MHz		—	2,4	2,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1805,0 ...1880,0 MHz		—	1,5	1,8	dB
Input VSWR					
1805,0 ...1880,0 MHz		—	2,4	2,6	
Output VSWR					
1805,0 ...1880,0 MHz		—	2,2	2,4	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
1805,0 ...1880,0 MHz		-1,5	—	1,5	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180^\circ$)					
1805,0 ...1880,0 MHz		-10,0	—	10,0	degree
Absolute attenuation	α_{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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