SAW Components

SAW RF filter

Automotive telematics

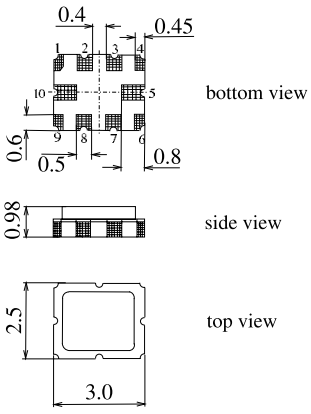
Series/type:	**B4234**
Ordering code:	**B39202B4234H910**
Date:	February 10, 2009
Version:	2.1

Application

- Low-loss RF filter for automotive telematics GSM 850/1900 system, receive path
- Usable passband:
  Filter 1 (GSM850): 25MHz
  Filter 2 (GSM1900): 60MHz
- Unbalanced and balanced operation of both filters possible
- Impedance transformation from 50 Ω to 150 Ω for both filters
- Suitable for GPRS class 1 to 12

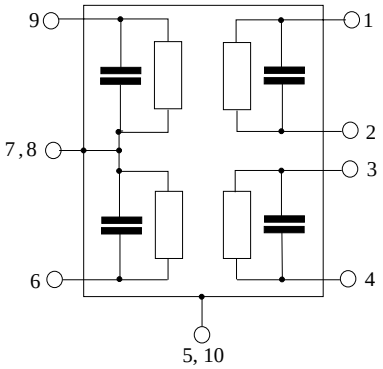
Features

- Package size 3.0 x 2.5 x 0.98 mm³
- Package code QCC10G
- RoHS compatible
- Approximate weight 0.027 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- AEC-Q200 qualified component family
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

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

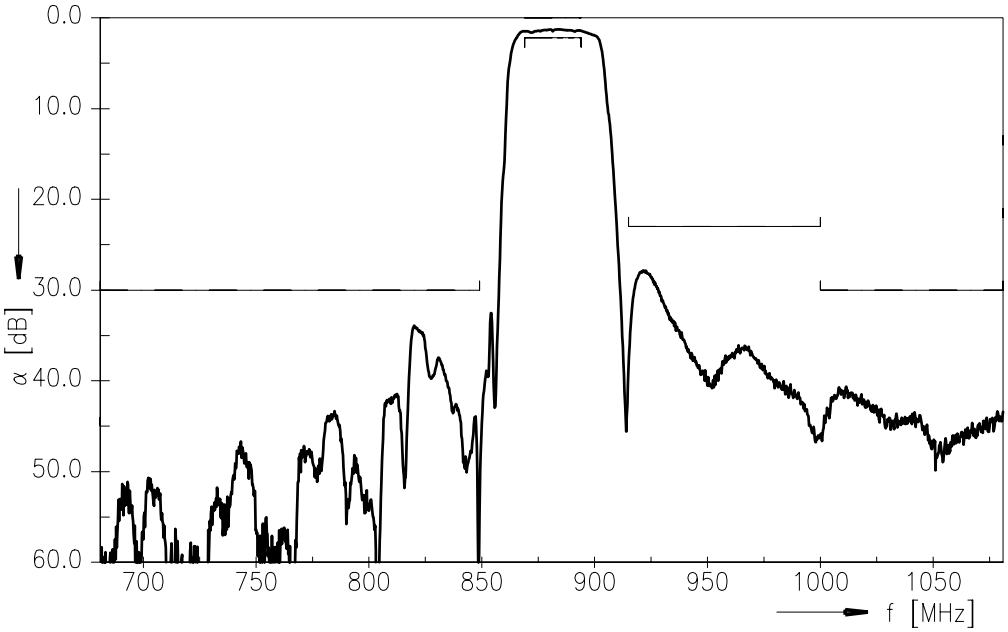


Characteristics Filter 1 (GSM850)

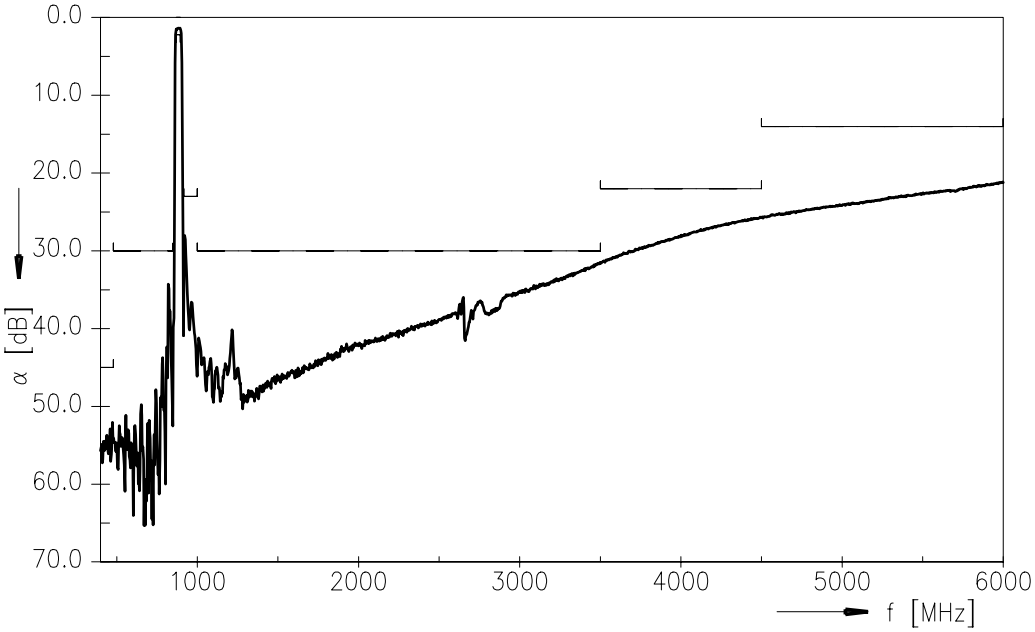
Temperature range for specification: T = –20 ˚C to +75 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 56 nH

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	881.50	—	MHz
Maximum insertion attenuation	α_{max}				
869.00 ... 894.00 MHz		—	1.8	2.2	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
869.00 ... 894.00 MHz		—	0.6	1.0	dB
Input VSWR					
869.00 ... 894.00 MHz		—	1.8	2.1	
Output VSWR					
869.00 ... 894.00 MHz		—	1.8	2.1	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
869.00 ... 894.00 MHz		–1.5		1.0	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180^\circ$)					
869.00 ... 894.00 MHz		–10.0		12.0	degree
Attenuation	α				
10.00 ... 480.00 MHz		45	50	—	dB
480.00 ... 849.00 MHz		30	34	—	dB
915.00 ... 1000.00 MHz		23	27	—	dB
1000.00 ... 3500.00 MHz		30	34	—	dB
3500.00 ... 4500.00 MHz		22	26	—	dB
4500.00 ... 6000.00 MHz		14	17	—	dB

Transfer function of filter 1 (narrow band)



Transfer function of filter 1 (wide band)



Characteristics Filter 2 (GSM1900)

Operating temperature range: T = +25 °C ± 2°C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 12 nH

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	1960.00	—	MHz
Maximum insertion attenuation	α_{max}				
1930.00 ... 1990.00 MHz		—	2.2	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930.00 ... 1990.00 MHz		—	0.6	1.0	dB
Input VSWR					
1930.00 ... 1990.00 MHz		—	1.7	2.0	
Output VSWR					
1930.00 ... 1990.00 MHz		—	1.7	2.0	
Output amplitude balance ($\|S_{31}/S_{21}\|$)					
1930.00 ... 1990.00 MHz		–1.3		1.3	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180°$)					
1930.00 ... 1990.00 MHz		–12.0		8.0	degree
Attenuation	α				
10.00 ... 1510.00 MHz		40	43	—	dB
1510.00 ... 1820.00 MHz		30	34	—	dB
1820.00 ... 1880.00 MHz		26	30	—	dB
1880.00 ... 1910.00 MHz		12	16	—	dB
2020.00 ... 2080.00 MHz		12	17	—	dB
2080.00 ... 2400.00 MHz		24	29	—	dB
2400.00 ... 4500.00 MHz		30	32	—	dB
4500.00 ... 6000.00 MHz		22	25	—	dB

Characteristics Filter 2 (GSM850)

Temperature range for specification: T = –20 ˚C to +75 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 150 Ω (balanced) || 12 nH

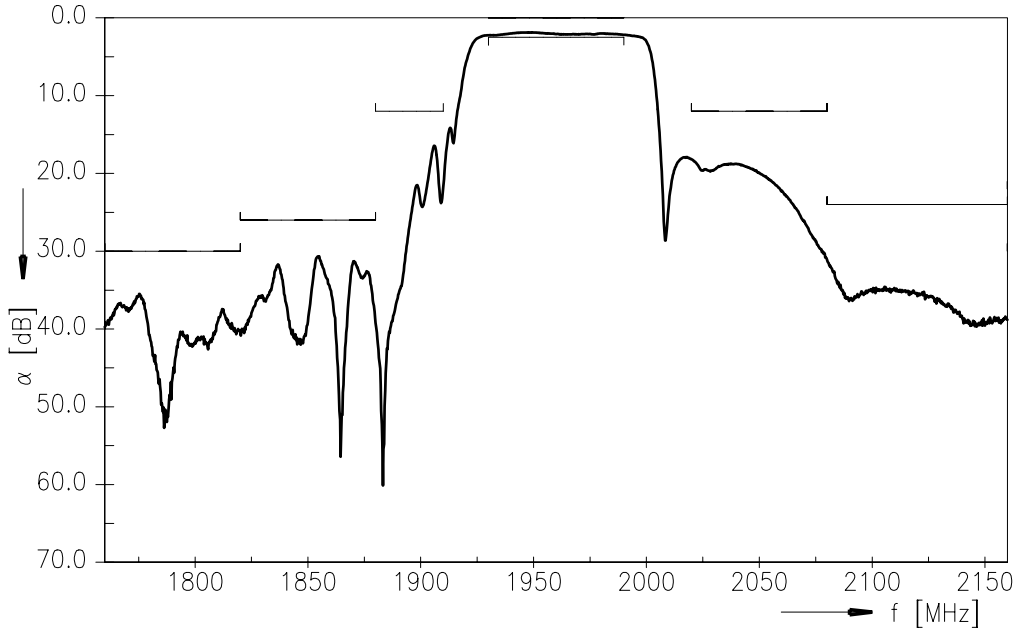
		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1960.00	—	MHz
Maximum insertion attenuation	α_{max}				
1930.00 ... 1990.00 MHz		—	2.3	2.7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1930.00 ... 1990.00 MHz		—	0.6	1.0	dB
Input VSWR					
1930.00 ... 1990.00 MHz		—	1.9	2.2	
Output VSWR					
1930.00 ... 1990.00 MHz		—	1.9	2.2	
Output amplitude balance ($\lvert S_{31}/S_{21}\rvert$)					
1930.00 ... 1990.00 MHz		–1.3		1.3	dB
Output phase balance ($\phi(S_{31})-\phi(S_{21})+180^\circ$)					
1930.00 ... 1990.00 MHz		–12.0		8.0	degree
Attenuation	α				
10.00 ... 1510.00 MHz		40	43	—	dB
1510.00 ... 1820.00 MHz		30	34	—	dB
1820.00 ... 1880.00 MHz		26	30	—	dB
1880.00 ... 1910.00 MHz		10	13	—	dB
2020.00 ... 2080.00 MHz		12	17	—	dB
2080.00 ... 2400.00 MHz		24	29	—	dB
2400.00 ... 4500.00 MHz		30	32	—	dB
4500.00 ... 6000.00 MHz		22	25	—	dB

Maximum ratings

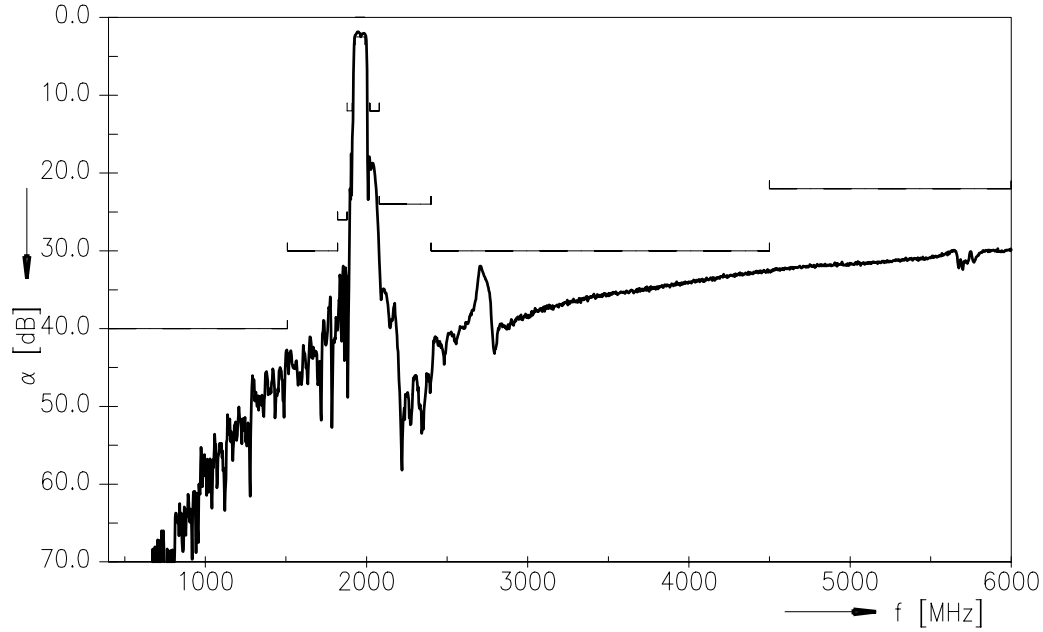
Operable temperature range	T	–45/+125	˚C	
Storage temperature range	T_{stg}	–45/+125	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD} [1)]	50	V	Machine Model, 10 pulses
Imput power at Tx band: GSM850, GSM900 GSM1800, GSM1900	P_{IN}	15	dBm	peak power of GSM signal duty cycle 4:8

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

Transfer function of filter 2 (narrow band)



Transfer function of filter 2 (wide band)



References

Type	B4234
Ordering code	B39202B4234H910
Marking and package	C61157-A7-A142
Packaging	F61074-V8174-Z000
Date codes	L_1126
S-parameters	B4234_NB.s2p B4234_WB.s2p See file header for port/pin assignment table.
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."

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