



# SAW Components

Data Sheet B7652





**SAW Components**

**B7652**

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

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

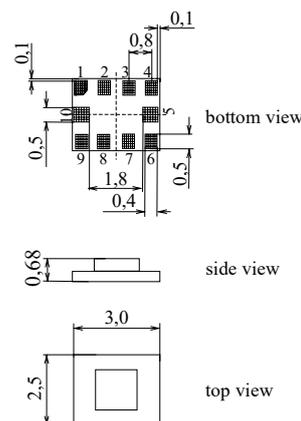
**Data Sheet**



Chip sized saw package **QCS10C**

**Features**

- Low-loss RF filter for mobile telephone EGSM and PCN system , receive path
- Usable passband:  
Filter 1 (EGSM): 35 MHz  
Filter 2 (PCN): 75 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 200 Ω for EGSM filter
- Suitable for GPRS Class 1 to 12
- Ceramic package for **Surface Mounted Technology (SMT)**



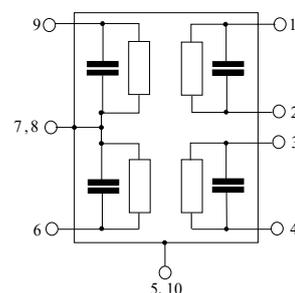
**Terminals**

- Ni, gold-plated

Dimensions in mm, approx. weight 0,015g

**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



Type	Ordering code	Marking and Package according to	Packing according to
B7652	B39182-B7652-G210	C61157-A7-A129	F61074-V8156-Z000

**Electrostatic Sensitive Device (ESD)**

**Maximum ratings**

Operable temperature range	$T$	- 20 / + 70	°C	
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 (EGSM-Rx)	$P_{IN}$	15	dBm	peak power of GSM signal, duty cycle 4:8
Filter 2 (PCN-Rx)	$P_{IN}$	12	dBm	



**Characteristics Filter 1 ( EGSM )**

Operating temperature range:  $T = 25 \pm 2^\circ\text{C}$   
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 200 \Omega \parallel 68\text{nH}$

			min.	typ.	max.	
<b>Center frequency</b>	$f_c$		—	942,50	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\max}$	925,0 ... 960,0 MHz	—	2,3	2,8	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	925,0 ... 960,0 MHz	—	1,1	1,6	dB
<b>Input return loss</b>		925,0 ... 960,0 MHz	8,0	10,0	—	dB
<b>Output return loss</b>		925,0 ... 960,0 MHz	8,0	12,0	—	dB
<b>Output phase balance</b> ( $\varphi(S_{31}) - \varphi(S_{21}) + 180^\circ$ )		925,0 ... 960,0 MHz	-10,0	0	10,0	degree
<b>Output amplitude balance</b> ( $ S_{31}/S_{21} $ )		925,0 ... 960,0 MHz	-1,0	0	1,0	dB
<b>Attenuation</b>	$\alpha_{\min}$	10,0 ... 880,0 MHz	45,0	49,0	—	dB
		880,0 ... 905,0 MHz	32,0	37,0	—	dB
		905,0 ... 915,0 MHz	20,0	28,0	—	dB
		980,0 ... 1050,0 MHz	24,0	26,0	—	dB
		1050,0 ... 1920,0 MHz	40,0	44,0	—	dB
		1920,0 ... 3840,0 MHz	38,0	43,0	—	dB
		3840,0 ... 6000,0 MHz	30,0	35,0	—	dB



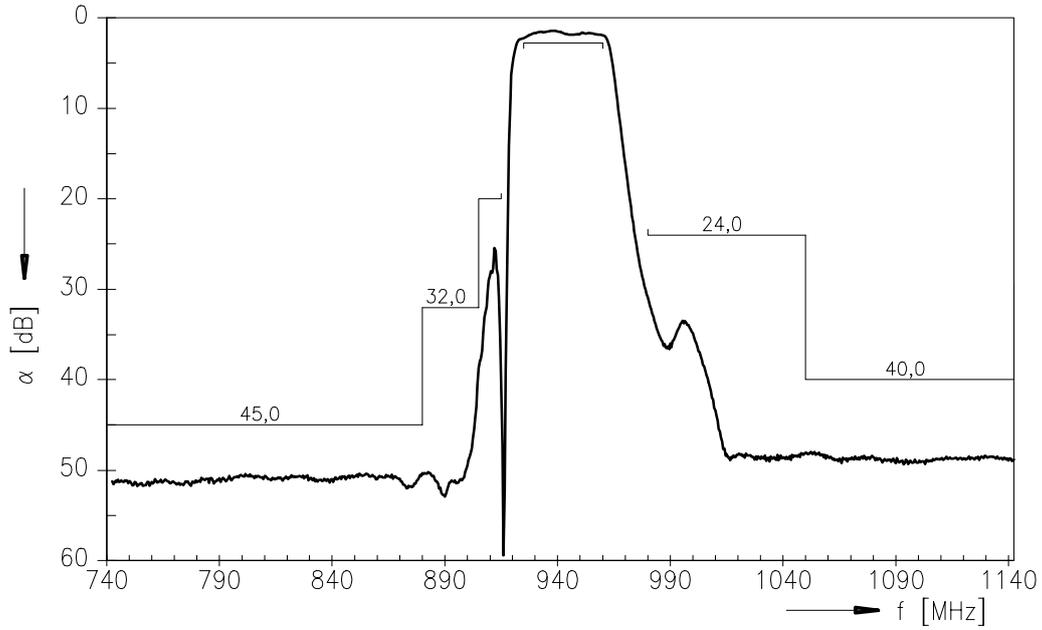
**Characteristics Filter 1 ( EGSM )**

Operating temperature range:  $T = -20$  to  $+70^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 200\ \Omega \parallel 68\text{nH}$

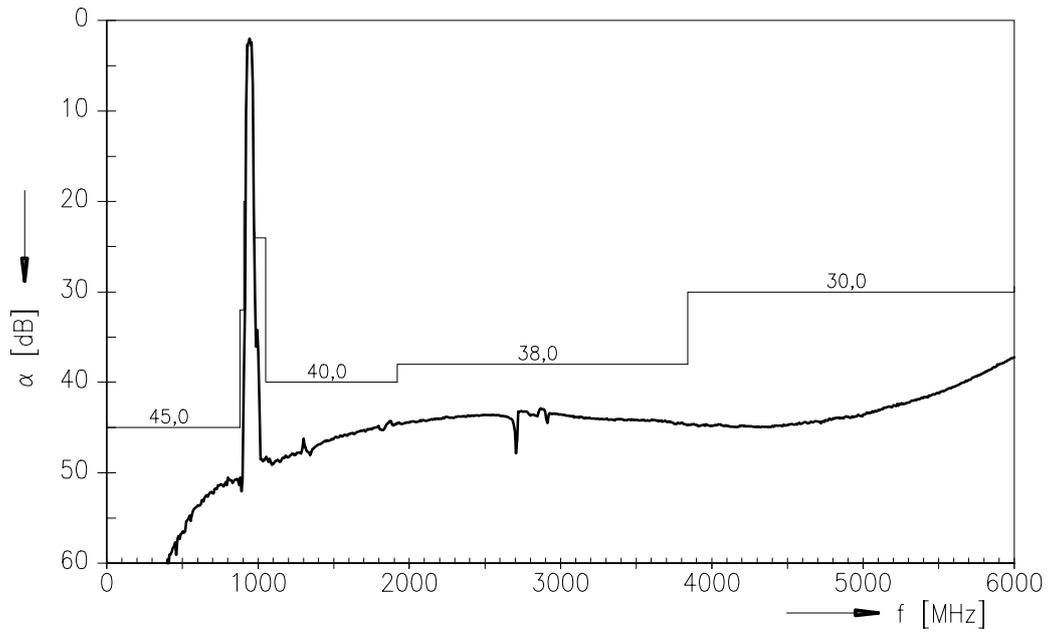
			min.	typ.	max.	
<b>Center frequency</b>	$f_c$		—	942,50	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$					
		925,0 ... 960,0 MHz	—	2,6	3,3	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$					
		925,0 ... 960,0 MHz	—	1,3	2,0	dB
<b>Input return loss</b>		925,0 ... 960,0 MHz	8,0	9,5	—	
<b>Output return loss</b>		925,0 ... 960,0 MHz	8,0	11,0	—	
<b>Output phase balance (<math>\varphi(S_{31})-\varphi(S_{21})+180^{\circ}</math>)</b>		925,0 ... 960,0 MHz	-10,0	0	10,0	degree
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>		925,0 ... 960,0 MHz	-1,0	0	1,0	dB
<b>Attenuation</b>	$\alpha_{\text{min}}$					
		10,0 ... 880,0 MHz	45,0	49,0	—	dB
		880,0 ... 905,0 MHz	30,0	35,0	—	dB
		905,0 ... 915,0 MHz	18,0	25,0	—	dB
		980,0 ... 1050,0 MHz	23,0	25,0	—	dB
		1050,0 ... 1920,0 MHz	40,0	44,0	—	dB
		1920,0 ... 3840,0 MHz	38,0	43,0	—	dB
		3840,0 ... 6000,0 MHz	30,0	35,0	—	dB



Transfer function Filter 1 ( EGSM )



Transfer function Filter 1 ( EGSM ) - wideband





**Characteristics Filter 2 ( PCN )**

Operating temperature range:  $T = 25 \pm 2^\circ\text{C}$   
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 50 \Omega \parallel 18\text{nH}$

			min.	typ.	max.	
<b>Center frequency</b>	$f_c$		—	1842,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$	1805,0 ... 1880,0 MHz	—	2,3	3,0	dB
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	1805,0 ... 1880,0 MHz	—	0,7	1,4	dB
<b>Input return loss</b>		1805,0 ... 1880,0 MHz	8,0	9,0	—	
<b>Output return loss</b>		1805,0 ... 1880,0 MHz	8,0	10,0	—	
<b>Output phase balance (<math>\varphi(S_{31}) - \varphi(S_{21}) + 180^\circ</math>)</b>		1805,0 ... 1880,0 MHz	-13,0	0	13,0	degree
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>		1805,0 ... 1880,0 MHz	-1,5	0	1,9	dB
<b>Attenuation</b>	$\alpha_{\text{min}}$	10,0 ... 1000,0 MHz	35,0	38,0	—	dB
		1000,0 ... 1710,0 MHz	30,0	35,0	—	dB
		1710,0 ... 1750,0 MHz	26,0	30,0	—	dB
		1750,0 ... 1765,0 MHz	19,0	22,0	—	dB
		1765,0 ... 1785,0 MHz	12,0	14,0	—	dB
		1920,0 ... 1980,0 MHz	18,0	20,0	—	dB
		1980,0 ... 2100,0 MHz	20,0	25,0	—	dB
		2100,0 ... 2800,0 MHz	26,0	29,0	—	dB
		2800,0 ... 6000,0 MHz	30,0	32,0	—	dB



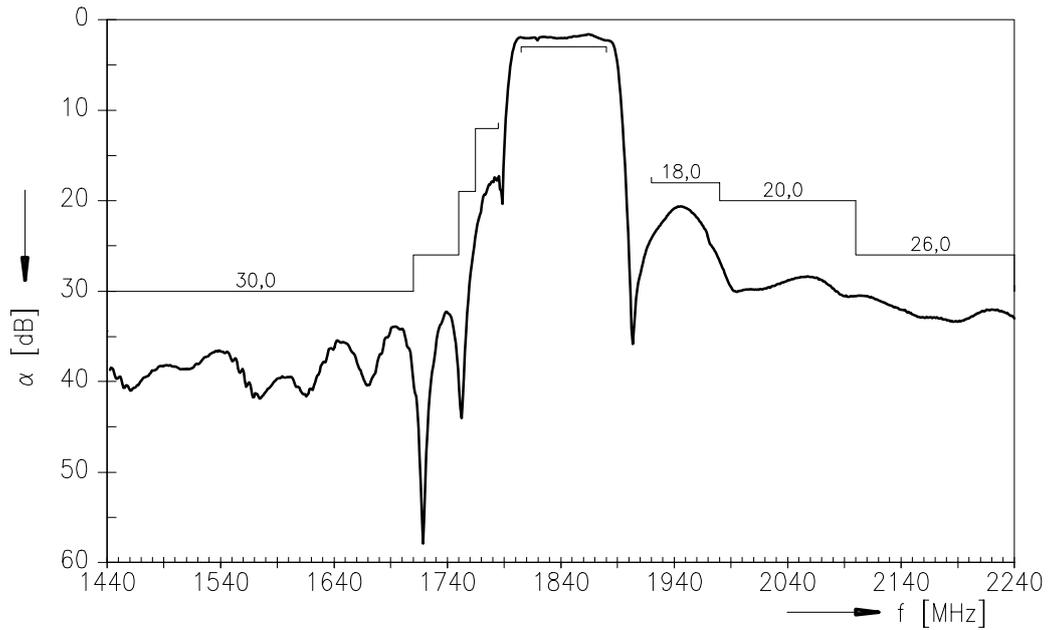
**Characteristics Filter 2 ( PCN )**

Operating temperature range:  $T = -20$  to  $+70^{\circ}\text{C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega \parallel 18\text{nH}$

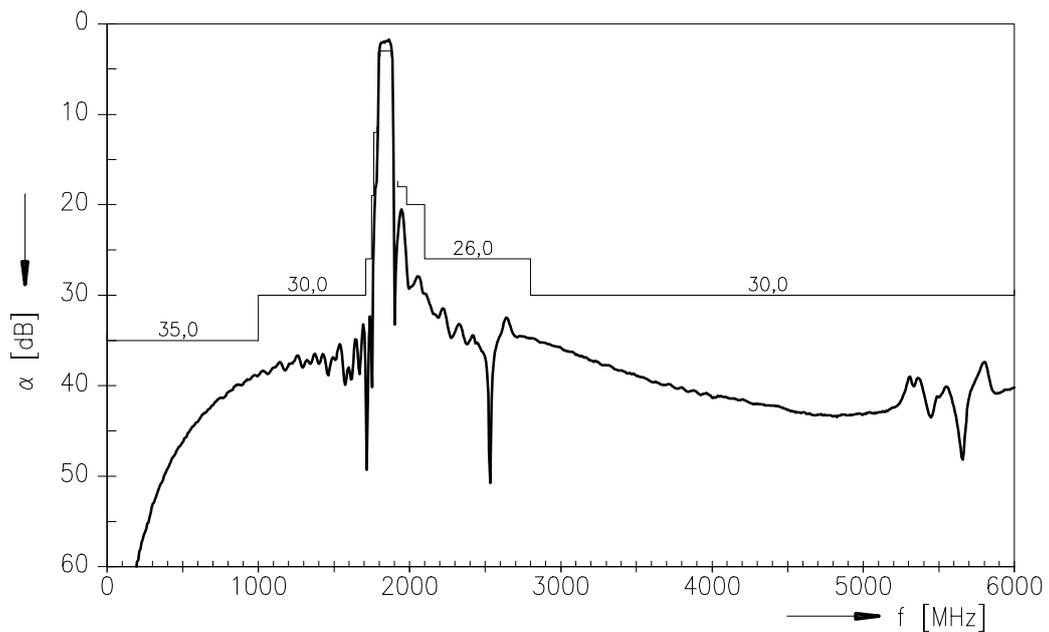
			min.	typ.	max.	
<b>Center frequency</b>	$f_c$		—	1842,5	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$		—	2,6	3,4	dB
		1805,0 ... 1880,0 MHz				
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$		—	1,0	1,8	dB
		1805,0 ... 1880,0 MHz				
<b>Input return loss</b>			8,0	9,0	—	
		1805,0 ... 1880,0 MHz				
<b>Output VSWR</b>			8,0	10,0	—	
		1805,0 ... 1880,0 MHz				
<b>Output phase balance (<math>\varphi(S_{31}) - \varphi(S_{21}) + 180^{\circ}</math>)</b>			-13,0	0	13,0	degree
		1805,0 ... 1880,0 MHz				
<b>Output amplitude balance (<math> S_{31}/S_{21} </math>)</b>			-1,5	0	2,0	dB
		1805,0 ... 1880,0 MHz				
<b>Attenuation</b>	$\alpha_{\text{min}}$		35,0	38,0	—	dB
		10,0 ... 1000,0 MHz				
		1000,0 ... 1710,0 MHz	30,0	35,0	—	
		1710,0 ... 1750,0 MHz	23,0	27,0	—	
		1750,0 ... 1765,0 MHz	18,0	20,0	—	
		1765,0 ... 1785,0 MHz	8,0	12,0	—	
		1920,0 ... 1980,0 MHz	18,0	20,0	—	
		1980,0 ... 2100,0 MHz	20,0	25,0	—	
		2100,0 ... 2800,0 MHz	26,0	29,0	—	
		2800,0 ... 6000,0 MHz	30,0	32,0	—	



Transfer function Filter 2 ( PCN )



Transfer function Filter 2 ( PCN ) - wideband





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