



SAW Components

Data Sheet B7820

Data Sheet

An abstract graphic featuring the word "EPCOS" in large, glowing, 3D letters. The letters are white with a blue glow and are positioned diagonally across the frame. In the background, there is a faint, stylized globe with circuitry patterns, suggesting a global network or technological theme. The overall color scheme is dark with blue and white highlights.



SAW Components

B7820

Low-Loss Filter for Mobile Communication

942,5 MHz

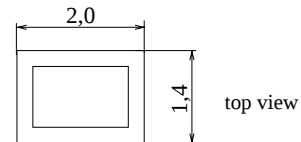
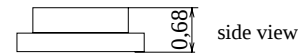
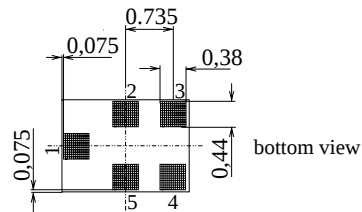
Data Sheet



Features

- Low-loss RF filter for mobile telephone EGSM system, receive path
- Low amplitude ripple
- Usable passband 35 MHz
- Unbalanced to balanced operation
- Excellent symmetry
- Impedance transformation from 50 Ω to 150 Ω
- Suitable for GPRS class 1 to 12
- Ceramic package for Surface Mounted Technology (SMT)

Chip sized SAW package QCS5C



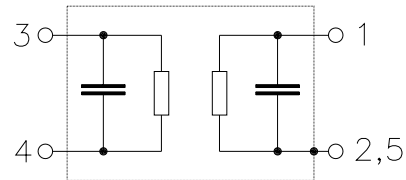
Terminals

- Ni, gold-plated

Dimensions in mm, approx. weight 0,007 g

Pin configuration

- | | |
|------|-------------------|
| 1 | Input, unbalanced |
| 3, 4 | Output, balanced |
| 2, 5 | Case ground |



Type	Ordering code	Marking and Package according to	Packing according to
B7820	B39941-B7820-C710	C61157-A7-A111	F61074-V8151-Z000

Electrostatic Sensitive Device (ESD)

Maximum ratings

Operable temperature range	T	- 30 / + 85	$^{\circ}\text{C}$	human body model
Storage temperature range	T_{stg}	- 40 / + 85	$^{\circ}\text{C}$	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	250	V	
Input power at GSM850, GSM900, GSM1800, GSM1900 Tx bands	P_{IN}	15	dBm	peak power of GSM signal, duty cycle 4:8



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Characteristics

Operating temperature range: $T = +25\text{ °C}$

Terminating source impedance: $Z_S = 50\ \Omega$

Terminating load impedance: $Z_L = 150\ \Omega$

			min.	typ.	max.	
Center frequency	f_C		—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$					
	925,0 ... 960,0 MHz		—	1,9	2,3	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	925,0 ... 960,0 MHz		—	0,8	1,4	dB
Input VSWR						
	925,0 ... 960,0 MHz		—	2,0	2,3	
Output VSWR						
	925,0 ... 960,0 MHz		—	2,1	2,3	
Output phase balance $\phi(S_{31}) - \phi(S_{21})$						
	925,0 ... 960,0 MHz		-5	0	5	degree
Output amplitude balance (S_{31}/S_{21})						
	925,0 ... 960,0 MHz		-0,5	0	0,5	dB
Attenuation	α					
	0,0 ... 880,0 MHz		50	65	—	dB
	880,0 ... 905,0 MHz		30	41	—	dB
	905,0 ... 915,0 MHz		22	26	—	dB
	980,0 ... 1050,0 MHz		27	31	—	dB
	1050,0 ... 2775,0 MHz		50	64	—	dB
	2775,0 ... 2880,0 MHz		54	62	—	dB
	2880,0 ... 6000,0 MHz		50	60	—	dB



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Characteristics

Operating temperature range: $T = -10$ to $+80$ °C

Terminating source impedance: $Z_S = 50 \Omega$

Terminating load impedance: $Z_L = 150 \Omega$

			min.	typ.	max.	
Center frequency	f_C		—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$					
	925,0 ... 960,0 MHz		—	1,9	2,7	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	925,0 ... 960,0 MHz		—	0,8	1,8	dB
Input VSWR						
	925,0 ... 960,0 MHz		—	2,0	2,3	
Output VSWR						
	925,0 ... 960,0 MHz		—	2,1	2,3	
Output phase balance $\phi(S_{31}) - \phi(S_{21})$						
	925,0 ... 960,0 MHz		-5	0	5	degree
Output amplitude balance (S_{31}/S_{21})						
	925,0 ... 960,0 MHz		-0,5	0	0,5	dB
Attenuation	α					
	0,0 ... 880,0 MHz		50	65	—	dB
	880,0 ... 905,0 MHz		30	38	—	dB
	905,0 ... 915,0 MHz		20	26	—	dB
	980,0 ... 1050,0 MHz		26	29	—	dB
	1050,0 ... 2775,0 MHz		50	64	—	dB
	2775,0 ... 2880,0 MHz		54	62	—	dB
	2880,0 ... 6000,0 MHz		50	60	—	dB



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Low-Loss Filter for Mobile Communication

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Characteristics

Operating temperature range: $T = -20$ to $+85$ °C

Terminating source impedance: $Z_S = 50 \Omega$

Terminating load impedance: $Z_L = 150 \Omega$

			min.	typ.	max.	
Center frequency	f_C		—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$					
	925,0 ... 960,0 MHz		—	1,9	2,8	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	925,0 ... 960,0 MHz		—	0,8	1,8	dB
Input VSWR						
	925,0 ... 960,0 MHz		—	2,0	2,3	
Output VSWR						
	925,0 ... 960,0 MHz		—	2,1	2,3	
Output phase balance $\phi(S_{31}) - \phi(S_{21})$						
	925,0 ... 960,0 MHz		-5	0	5	degree
Output amplitude balance (S_{31}/S_{21})						
	925,0 ... 960,0 MHz		-0,5	0	0,5	dB
Attenuation	α					
	0,0 ... 880,0 MHz		50	65	—	dB
	880,0 ... 905,0 MHz		30	38	—	dB
	905,0 ... 915,0 MHz		20	26	—	dB
	980,0 ... 1050,0 MHz		25	29	—	dB
	1050,0 ... 2775,0 MHz		50	64	—	dB
	2775,0 ... 2880,0 MHz		54	62	—	dB
	2880,0 ... 6000,0 MHz		50	60	—	dB



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Characteristics

Operating temperature range: $T = -30$ to $+80$ °C

Terminating source impedance: $Z_S = 50 \Omega$

Terminating load impedance: $Z_L = 150 \Omega$

			min.	typ.	max.	
Center frequency	f_C		—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$					
	925,0 ... 960,0 MHz		—	1,9	3,0	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	925,0 ... 960,0 MHz		—	0,8	2,1	dB
Input VSWR						
	925,0 ... 960,0 MHz		—	2,0	2,3	
Output VSWR						
	925,0 ... 960,0 MHz		—	2,1	2,3	
Output phase balance $\phi(S_{31}) - \phi(S_{21})$						
	925,0 ... 960,0 MHz		-5	0	5	degree
Output amplitude balance (S_{31}/S_{21})						
	925,0 ... 960,0 MHz		-0,5	0	0,5	dB
Attenuation	α					
	0,0 ... 880,0 MHz		50	65	—	dB
	880,0 ... 905,0 MHz		30	38	—	dB
	905,0 ... 915,0 MHz		20	26	—	dB
	980,0 ... 1050,0 MHz		25	27	—	dB
	1050,0 ... 2775,0 MHz		50	64	—	dB
	2775,0 ... 2880,0 MHz		54	62	—	dB
	2880,0 ... 6000,0 MHz		50	60	—	dB



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Characteristics

Operating temperature range: $T = +25\text{ }^{\circ}\text{C}$
Terminating source impedance: $Z_S = 50\text{ }\Omega$
Terminating load impedance: $Z_L = 200\text{ }\Omega$ and $200\text{ }\Omega \parallel 100\text{ nH}$

			min.	typ.	max.	
Center frequency	f_C		—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$					
	925,0 ... 960,0 MHz		—	1,8	2,3	dB
Amplitude ripple (p-p)	$\Delta\alpha$					
	925,0 ... 960,0 MHz		—	0,8	1,4	dB
Input VSWR						
	925,0 ... 960,0 MHz		—	1,8	2,3	
Output VSWR						
	925,0 ... 960,0 MHz		—	1,8	2,3	
Output phase balance $\phi(S_{31}) - \phi(S_{21})$						
	925,0 ... 960,0 MHz		-5	0	5	degree
Output amplitude balance (S_{31}/S_{21})						
	925,0 ... 960,0 MHz		-0,5	0	0,5	dB
Attenuation	α					
	0,0 ... 880,0 MHz		50	65	—	dB
	880,0 ... 905,0 MHz		30	41	—	dB
	905,0 ... 915,0 MHz		22	26	—	dB
	980,0 ... 1050,0 MHz		27	30	—	dB
	1050,0 ... 2775,0 MHz		50	64	—	dB
	2775,0 ... 2880,0 MHz		54	62	—	dB
	2880,0 ... 6000,0 MHz		50	60	—	dB



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Characteristics

Operating temperature range: $T = -10$ to $+80$ °C
Terminating source impedance: $Z_S = 50 \Omega$
Terminating load impedance: $Z_L = 200 \Omega$

		min.	typ.	max.	
Center frequency	f_C	—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$	—	1,9	2,7	dB
925,0 ... 960,0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0,8	1,8	dB
925,0 ... 960,0 MHz					
Input VSWR		—	1,8	2,3	
925,0 ... 960,0 MHz					
Output VSWR		—	1,8	2,3	
925,0 ... 960,0 MHz					
Output phase balance $\phi(S_{31}) - \phi(S_{21})$		-5	0	5	degree
925,0 ... 960,0 MHz					
Output amplitude balance (S_{31} / S_{21})		-0,5	0	0,5	dB
925,0 ... 960,0 MHz					
Attenuation	α				
0,0 ... 880,0 MHz		50	65	—	dB
880,0 ... 905,0 MHz		30	38	—	dB
905,0 ... 915,0 MHz		20	26	—	dB
980,0 ... 1050,0 MHz		26	28	—	dB
1050,0 ... 2775,0 MHz		50	64	—	dB
2775,0 ... 2880,0 MHz		54	62	—	dB
2880,0 ... 6000,0 MHz		50	60	—	dB



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Characteristics

Operating temperature range: $T = -20$ to $+85$ °C
Terminating source impedance: $Z_S = 50 \Omega$
Terminating load impedance: $Z_L = 200 \Omega \parallel 100 \text{ nH}$

		min.	typ.	max.	
Center frequency	f_C	—	942,5	—	MHz
Maximum insertion attenuation	$\alpha_{\max}$	—	2,1	3,1	dB
925,0 ... 960,0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	1,1	2,2	dB
925,0 ... 960,0 MHz					
Input VSWR		—	1,8	2,3	
925,0 ... 960,0 MHz					
Output VSWR		—	1,8	2,3	
925,0 ... 960,0 MHz					
Output phase balance $\phi(S_{31}) - \phi(S_{21})$		-5	0	5	degree
925,0 ... 960,0 MHz					
Output amplitude balance (S_{31}/S_{21})		-0,5	0	0,5	dB
925,0 ... 960,0 MHz					
Attenuation	α				
0,0 ... 880,0 MHz		50	65	—	dB
880,0 ... 905,0 MHz		30	38	—	dB
905,0 ... 915,0 MHz		20	26	—	dB
980,0 ... 1050,0 MHz		25	28	—	dB
1050,0 ... 2775,0 MHz		50	64	—	dB
2775,0 ... 2880,0 MHz		54	62	—	dB
2880,0 ... 6000,0 MHz		50	60	—	dB



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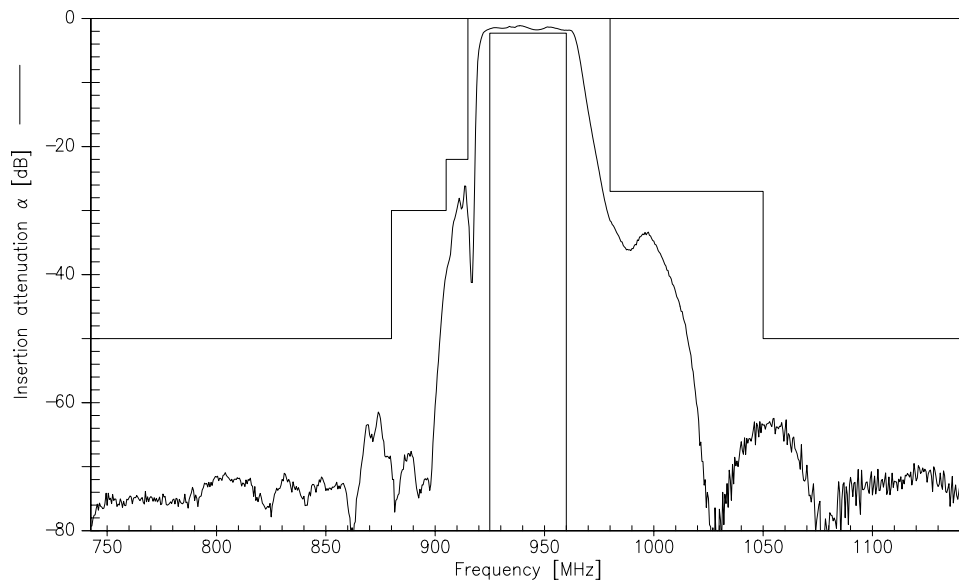
Low-Loss Filter for Mobile Communication

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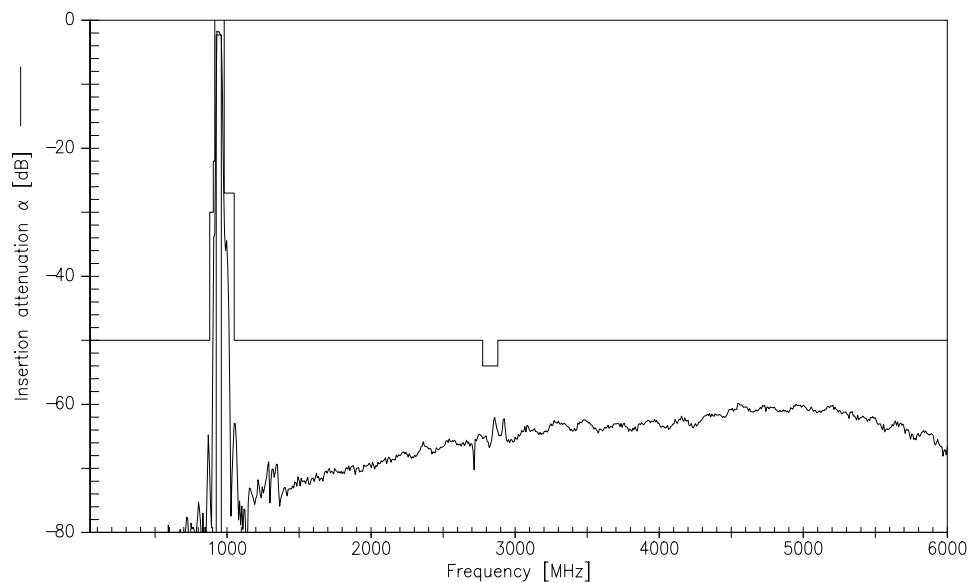
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Transfer function



Transfer function (wideband)





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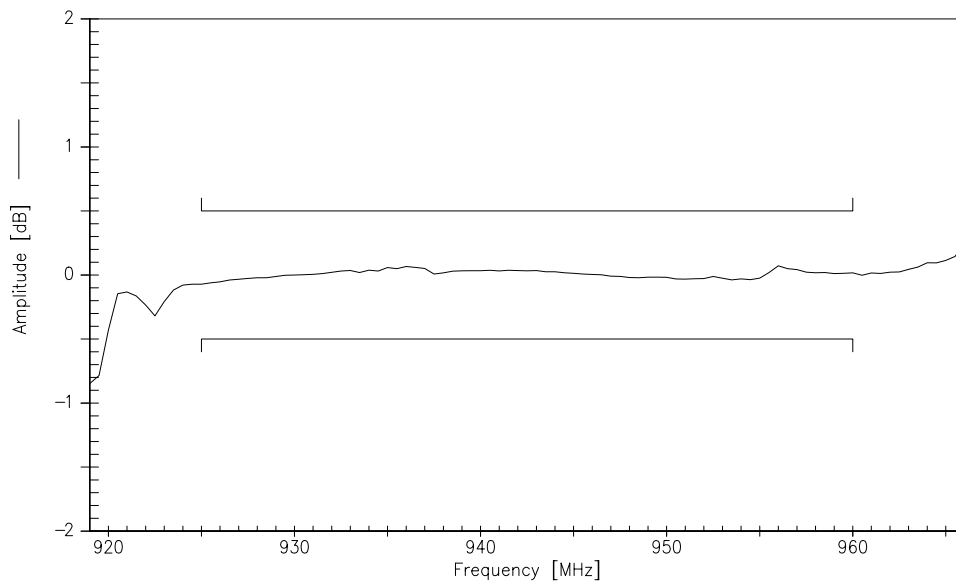
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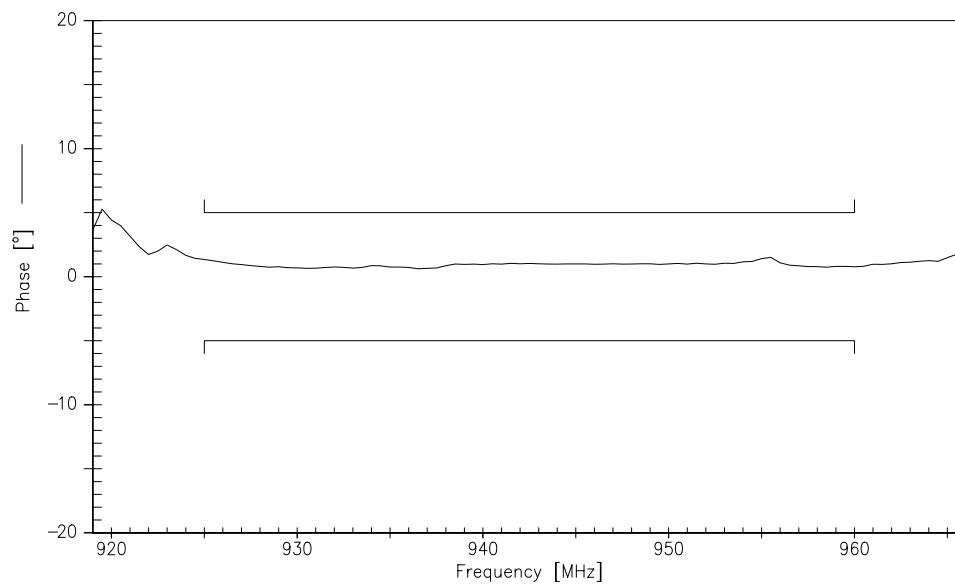
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Output amplitude balance ($|S_{31}|/|S_{21}|$)



Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$)





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Low-Loss Filter for Mobile Communication	942,5 MHz
Data Sheet	SMD

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