



SAW Components

Data Sheet B3551

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	B3551
Low-loss Filter	315,00 MHz

Data Sheet

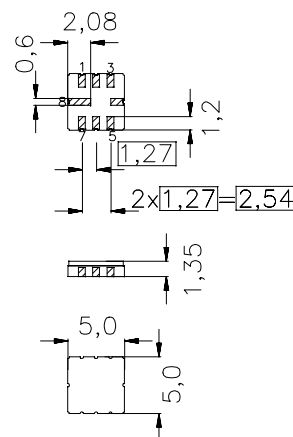
Features

- RF low-loss filter for remote control receivers
- Package for **Surface Mounted Technology (SMT)**

Terminals

- Ni, gold plated

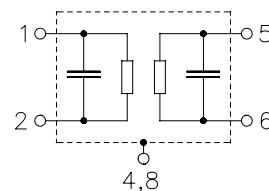
Ceramic package **QCC8C**



typ. dimensions in mm, approx. weight 0,1 g

Pin configuration

- | | |
|-----|----------------|
| 1 | Input |
| 2 | Input Ground |
| 5 | Output |
| 6 | Output Ground |
| 4,8 | Case - Ground |
| 3,7 | to be grounded |



Type	Ordering code	Marking and package according to	Packing according to
B3551	B39321-B3551-U310	C61157-A7-A356	F61074-V8070-Z000

Electrostatic Sensitive Device (ESD)

Maximum ratings

Operable temperature range	T_A	- 45/+120	°C	
Storage temperature range	T_{stg}	- 45/+120	°C	
DC voltage	V_{DC}	0	V	
Source power	P_S	10	dBm	source impedance 50 Ω



SAW Components	B3551
Low-loss Filter	315,00 MHz

Data Sheet

Characteristics

Reference temperature:	$T_A = 25\text{ °C}$
Terminating source impedance:	$Z_S = 50\ \Omega$ and matching network
Terminating load impedance:	$Z_L = 50\ \Omega$ and matching network

		min.	typ.	max.	
Center frequency (center frequency between 3 dB points)	f_C	—	315,02	—	MHz
Minimum insertion attenuation 314,82 ... 315,22 MHz	$\alpha_{\min}$	—	3,0	4,5	dB
Pass band (relative to $\alpha_{\min}$) 314,77 ... 315,26 MHz		—	1,5	3,0	dB
314,71 ... 315,32 MHz		—	2,0	6,0	dB
Relative attenuation (relative to $\alpha_{\min}$)	α_{rel}				
10,00 ... 270,00 MHz		45	50	—	dB
270,00 ... 309,00 MHz		35	40	—	dB
309,00 ... 314,00 MHz		15	20	—	dB
316,00 ... 335,00 MHz		10	15	—	dB
335,00 ... 400,00 MHz		35	40	—	dB
400,00 ... 1000,00 MHz		45	50	—	dB
Impedance for pass band matching ²⁾					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	950 $\parallel$ 3,18	—	$\Omega \parallel \text{pF}$
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	960 $\parallel$ 3,14	—	$\Omega \parallel \text{pF}$
Temperature coefficient of frequency ¹⁾	TC_f	—	-0,03	—	ppm/K ²
Frequency inversion point	T_0	5	—	35	°C

¹⁾Temperature dependence of f_C : $f_C(T_A) = f_C(T_0) (1 + TC_f(T_A - T_0)^2)$

²⁾ Impedance for passband matching bases on an ideal, perfect matching of the SAW filter to source- and to load impedance (here 50 Ohm). After the SAW filter is removed and input impedance into the input matching / output matching network is calculated.

The conjugate complex value of these characteristic impedances are the input and output impedances for flat passband. For more details, we refer to EPCOS application note #4.



SAW Components	B3551
Low-loss Filter	315,00 MHz

Data Sheet

Characteristics

Reference temperature:	$T_A = -45 \dots 95^\circ \text{C}$
Terminating source impedance:	$Z_S = 50 \Omega$ and matching network
Terminating load impedance:	$Z_L = 50 \Omega$ and matching network

		min.	typ.	max.	
Center frequency	f_c	—	315,00	—	MHz
(center frequency between 3 dB points)					
Minimum insertion attenuation	$\alpha_{\min}$	—	3,0	5,0	dB
	314,82 ... 315,22 MHz				
Pass band (relative to $\alpha_{\min}$)					
	314,77 ... 315,20 MHz	—	1,5	3,0	dB
	314,71 ... 315,26 MHz	—	2,0	6,0	dB
Pass bandwidth	$\alpha_{\text{rel}} \leq 3 \text{ dB}$	0,80	0,86	0,92	MHz
Relative attenuation (relative to $\alpha_{\min}$)	α_{rel}				
	10,00 ... 270,00 MHz	45	50	—	dB
	270,00 ... 309,00 MHz	35	40	—	dB
	309,00 ... 313,94 MHz	15	20	—	dB
	316,00 ... 335,00 MHz	10	15	—	dB
	335,00 ... 400,00 MHz	35	40	—	dB
	400,00 ... 1000,00 MHz	45	50	—	dB
Impedance for pass band matching ²⁾					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	950 $\parallel$ 3,18	—	$\Omega \parallel \text{pF}$
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	960 $\parallel$ 3,14	—	$\Omega \parallel \text{pF}$

²⁾ Impedance for passband matching bases on an ideal, perfect matching of the SAW filter to source- and to load impedance (here 50 Ohm). After the SAW filter is removed and input impedance into the input matching / output matching network is calculated.

The conjugate complex value of these characteristic impedances are the input and output impedances for flat passband. For more details, we refer to EPCOS application note #4.



SAW Components

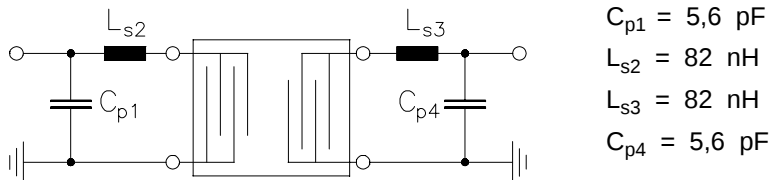
B3551

Low-loss Filter

315,00 MHz

Data Sheet

Matching network to 50 Ω (element values depend on pcb layout and equivalent circuit)



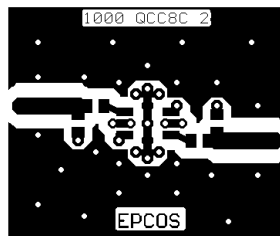
Minimising the crosstalk

For a good ultimate rejection a low crosstalk is necessary. Low crosstalk can be realised with a good RF layout. The major crosstalk mechanism is caused by the "ground-loop" problem.

Grounding loops are created if input-and output transducer GND are connected on the top-side of the PCB and fed to the system grounding plane by a common via hole. To avoid the common ground path, the ground pin of the input- and output transducer are fed to the system ground plane (bottom PCB plane) by their own via hole. The transducers' grounding pins should be isolated from the upper grounding plane.

A common GND inductivity of 0.5nH degrades the ultimate rejection (crosstalk) by 20dB.

The optimised PCB layout, including matching network for transformation to 50 Ohm, is shown here. In this PCB layout the grounding loops are minimised to realise good ultimate rejection.



Optimised PCB layout for SAW filters in QCC8C package, pinning 1,5 (top side, scale 1:1)

The bottom side is a copper plane (system ground area). The input and output grounding pins are isolated and connected to the common ground by separated via holes.

For good contact of the upper grounding area with the lower side it is necessary to place enough via holes.



SAW Components

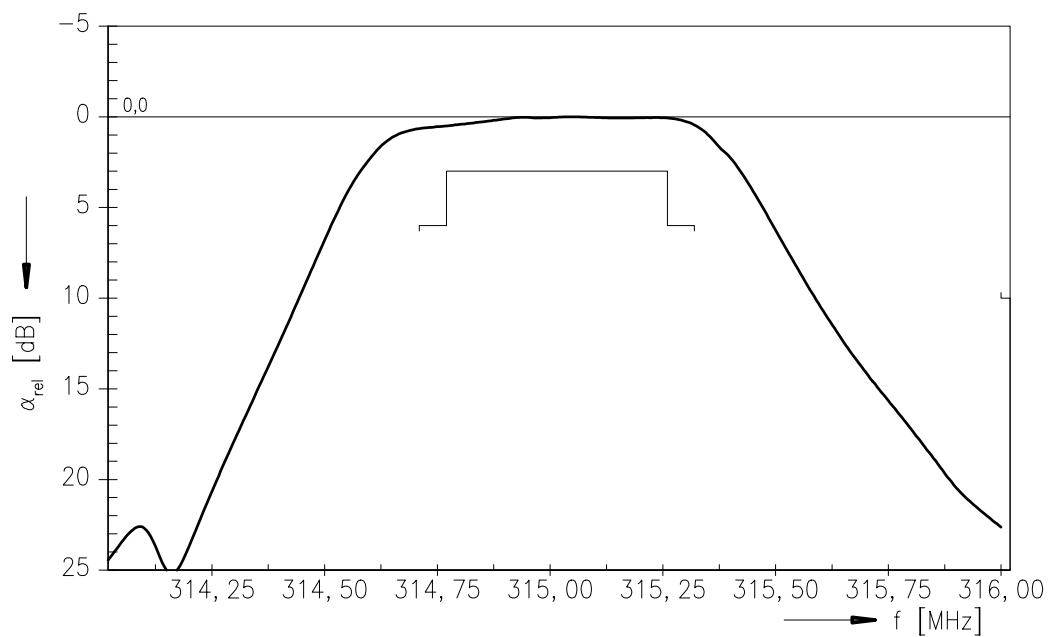
B3551

Low-loss Filter

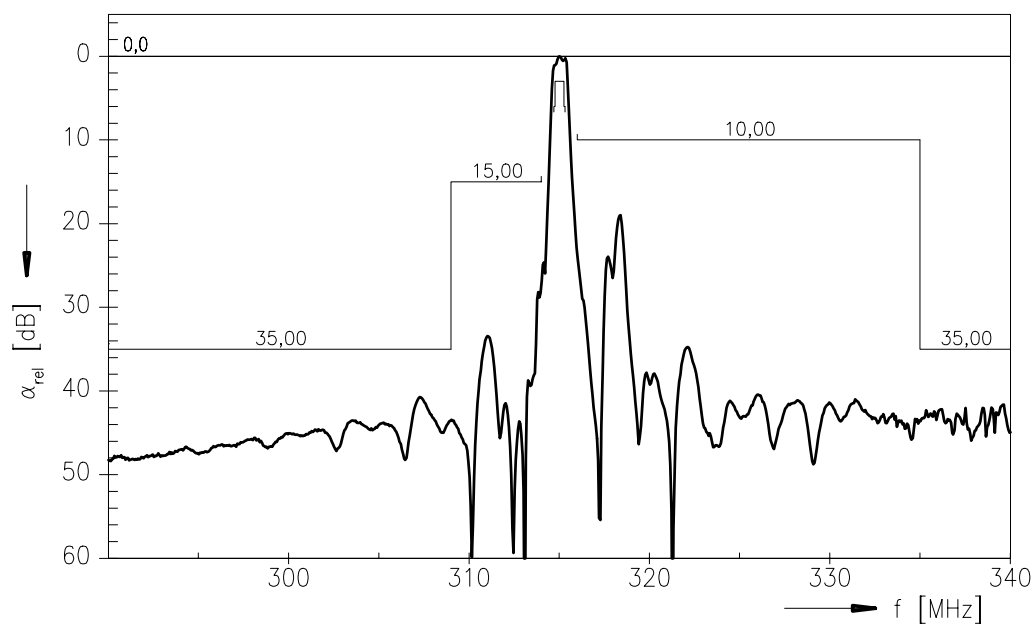
315,00 MHz

Data Sheet

Normalized frequency response



Normalized frequency response (wideband)





SAW Components	B3551
Low-loss Filter	315,00 MHz

Data Sheet

Published by EPCOS AG

Surface Acoustic Wave Components Division, SAW CE AE PD

P.O. Box 80 17 09, D-81617 München

© EPCOS AG 2001. All Rights Reserved.

As far as patents or other rights of third parties are concerned, liability is only assumed for components per se, not for applications, processes and circuits implemented within components or assemblies.

The information describes the type of component and shall not be considered as assured characteristics.

Terms of delivery and rights to change design reserved.

For questions on technology, prices and delivery please contact the sales offices of EPCOS AG or the international representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our sales offices.