



# SAW Components

Data Sheet B3577





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B3577

Low-loss Filter

311,06 MHz

Data Sheet

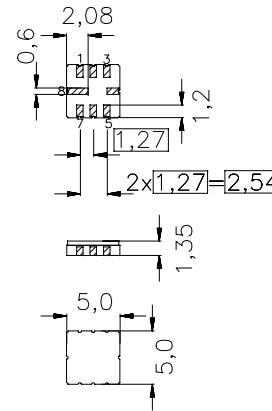
**Features**

- RF low-loss filter for remote control receivers
- Package for **S**urface **M**ounted **T**echnology (**SMT**)
- Balanced and unbalanced operation possible
- Passivation layer: Protec
- AEC-Q200 qualified component family
- Compliant to EU RoHs Directive (2002/95/EC)
- Lead free soldering compatible with J - STD20C

**Terminals**

- Ni, gold plated

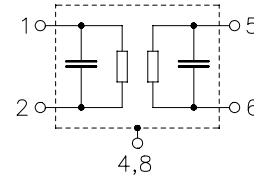
Ceramic package QCC8C



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

**Pin configuration**

- 1 Input Ground
- 2 Input
- 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
B3577	B39311-B3577-U310	C61157-A7-A56	F61074-V8169-Z000

Electrostatic Sensitive Device (ESD)

**Maximum ratings**

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


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**Characteristics**

Reference temperature:

$T_A = -40 \dots 95 \text{ }^\circ\text{C}$

Terminating source impedance:

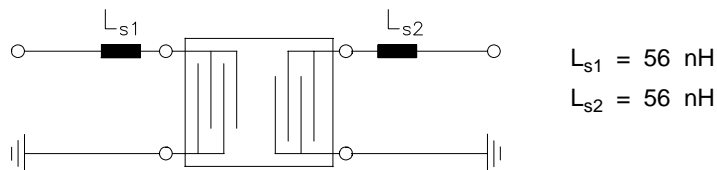
$Z_S = 50 \text{ } \Omega \text{ and matching network}$

Terminating load impedance:

$Z_L = 50 \text{ } \Omega \text{ and matching network}$

		min.	typ.	max.	
<b>Center frequency</b> (center frequency between 3 dB points)	$f_C$	—	311,06	—	MHz
<b>Minimum insertion attenuation</b> 310,94 ... 311,18 MHz	$\alpha_{\min}$	—	2,0	3,0	dB
<b>Pass band</b> (relative to $\alpha_{\min}$ ) 310,94 ... 311,18 MHz		—	1,0	2,0	dB
310,91 ... 311,21 MHz		—	2,0	3,0	dB
<b>Relative attenuation</b> (relative to $\alpha_{\min}$ )	$\alpha_{\text{rel}}$				
10,00 ... 290,00 MHz		40	45	—	dB
290,00 ... 306,00 MHz		35	40	—	dB
306,00 ... 310,10 MHz		20	26	—	dB
312,00 ... 313,50 MHz		15	21	—	dB
320,00 ... 396,00 MHz		35	40	—	dB
550,00 ... 1000,00 MHz		45	60	—	dB
<b>Impedance</b> for pass band matching					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	353 $\parallel$ 3,30	—	$\Omega \parallel \text{pF}$
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	343 $\parallel$ 3,30	—	$\Omega \parallel \text{pF}$
<b>Temperature coefficient of frequency</b> <sup>1)</sup>	$TC_f$	—	-0,03	—	ppm/K <sup>2</sup>
<b>Frequency inversion point</b>	$T_0$	10	—	30	$^\circ\text{C}$

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

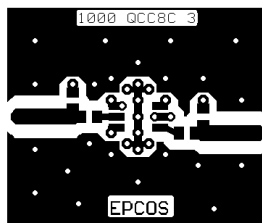
**Data Sheet**
**Matching network to 50  $\Omega$**  (element values depend on pcb layout and equivalent circuit)

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 2,5 (top side, scale 1:1)

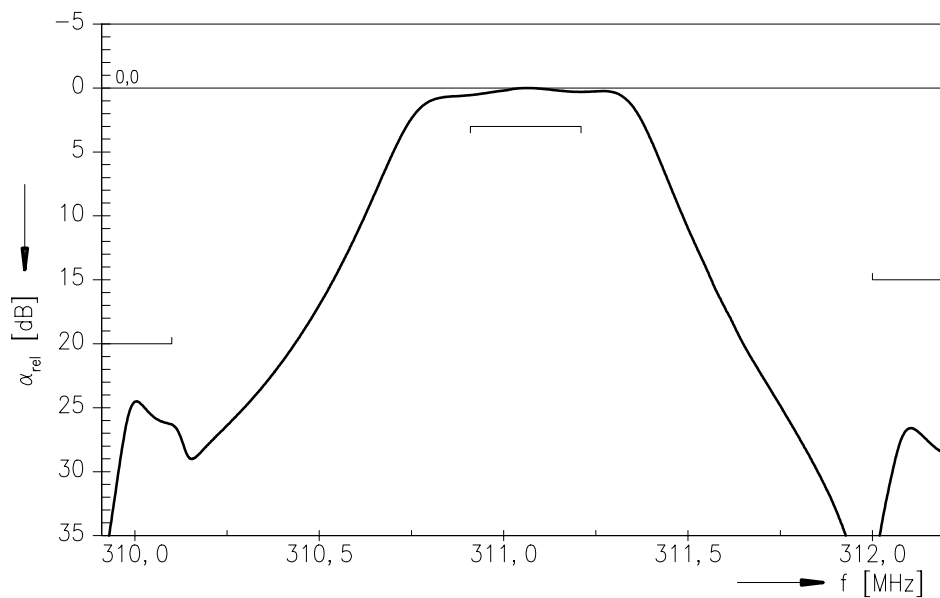
The bottom side is a copper plane (system ground area). The input and output grounding pins are isolated and connected to the common ground by separated via holes.

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

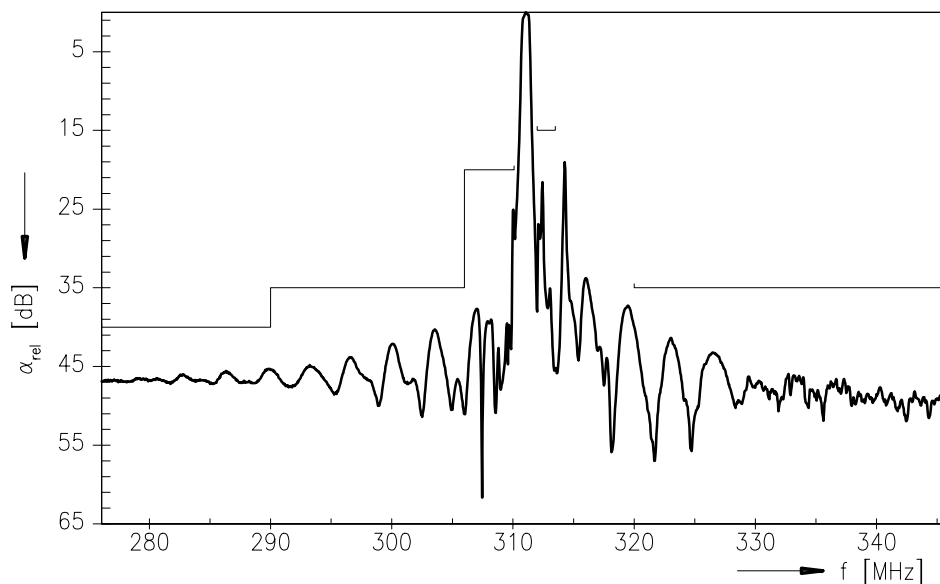


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Normalized frequency response



Normalized frequency response (wideband)





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**Low-loss Filter**

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**Published by EPCOS AG**

**Surface Acoustic Wave Components Division, SAW CE AE PD**

**P.O. Box 80 17 09, D-81617 München**

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