



SAW Components

SAW filter

Short range devices

Series/type:	B3773
Ordering code:	B39871B3773Z810
Date:	January 25, 2006
Version:	2.0

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B3773

SAW filter

868.95 MHz

Data sheet

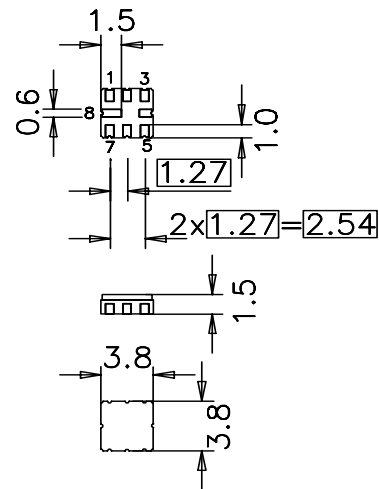


Application

- Low-loss RF filter for remote control receivers
- Balanced and unbalanced operation possible

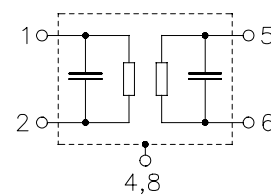
Features

- Package size 3.8 x 3.8 x 1.5 mm³
- Package code QCC8B
- RoHS compatible
- Approximate weight 0.07 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Passivation layer Protec
- AEC-Q200 qualified component family
- Electrostatic **Sensitive Device (ESD)**



Pin configuration¹⁾

- 1 Input (recommended) or input ground
- 2 Input ground (recommended) or input
- 5 Output (recommended) or output ground
- 6 Output ground (recommended) or output
- 4,8 Case - ground
- 3,7 to be grounded



1) The recommended pin configuration usually offers best suppression of electrical crosstalk. The filter characteristics refer to this configuration.



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Characteristics

Operating temperature range:	T = -45 °C to +120 °C
Terminating source impedance:	Z _S = 50 Ω and matching network
Terminating load impedance:	Z _L = 50 Ω and matching network

		min.	typ. @ 25 °C	max.	
Center frequency	f _C	—	868.95	—	MHz
Minimum insertion attenuation	α _{min}				
incl. loss in matching elements (Q _L = 47)		—	3.0	3.7	dB
excl. loss in matching elements		—	2.5	3.2	dB
Pass band (relative to α_{min})					
868.80 ... 869.10 MHz		—	0.5	2.0	dB
868.70 ... 869.20 MHz		—	1.1	3.0	dB
Filter bandwidth					
α _{rel} ≤ 3 dB		1.25	1.35	1.45	MHz
Relative attenuation (relative to α_{min})	α _{rel}				
10.00 ... 850.00 MHz		55	59	—	dB
850.00 ... 858.00 MHz		50	55	—	dB
858.00 ... 866.15 MHz		30	35	—	dB
871.65 ... 880.00 MHz		23	27	—	dB
880.00 ... 890.00 MHz		40	47	—	dB
890.00 ... 1000.00 MHz		55	59	—	dB
Impedance for pass band matching¹⁾					
Input: Z _{IN} = R _{IN} C _{IN}		—	270 1.0	—	Ω pF
Output: Z _{OUT} = R _{OUT} C _{OUT}		—	270 1.0	—	Ω pF

¹⁾ Impedance for passband matching bases on an ideal, perfect matching of the SAW filter to source- and to load impedance (here 50 Ohm). After removal of the SAW filter the input impedance of the input and 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.

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**Maximum ratings**

Operable temperature range	T	−45/+120	°C	
Storage temperature range	T _{stg}	−45/+120	°C	
DC voltage	V _{DC}	6	V	
Source power	P _S	0	dBm	source impedance 50 Ω



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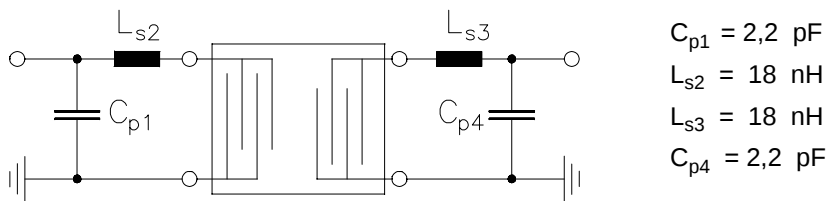
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Matching network to 50 Ω (element values depend on pcb layout and equivalent circuit)



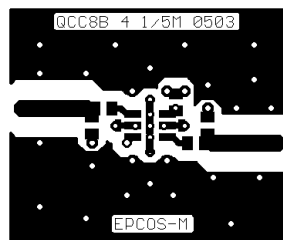
Minimising the crosstalk

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 QCC8B 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.



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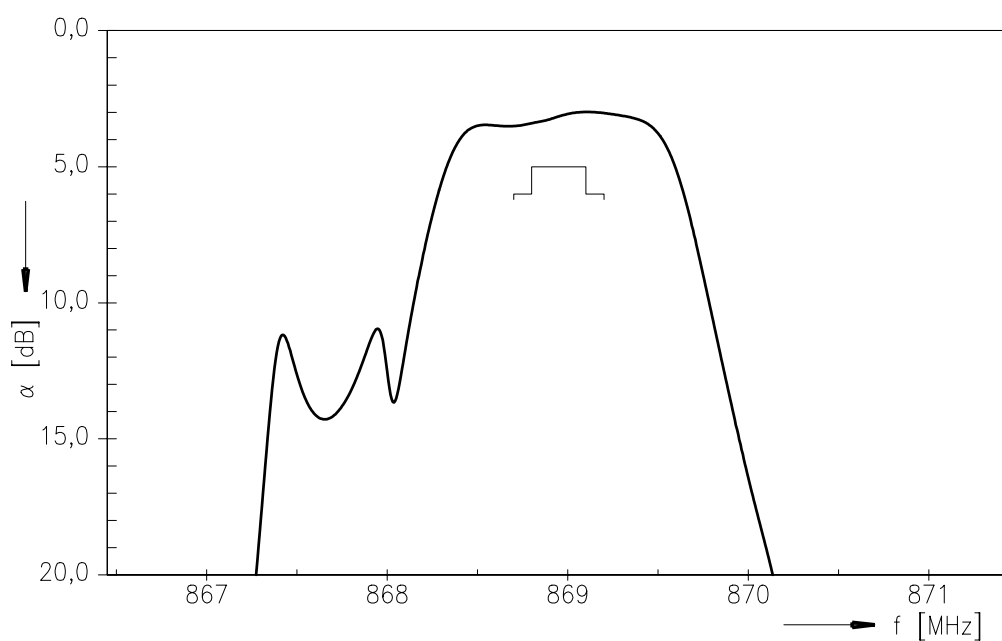
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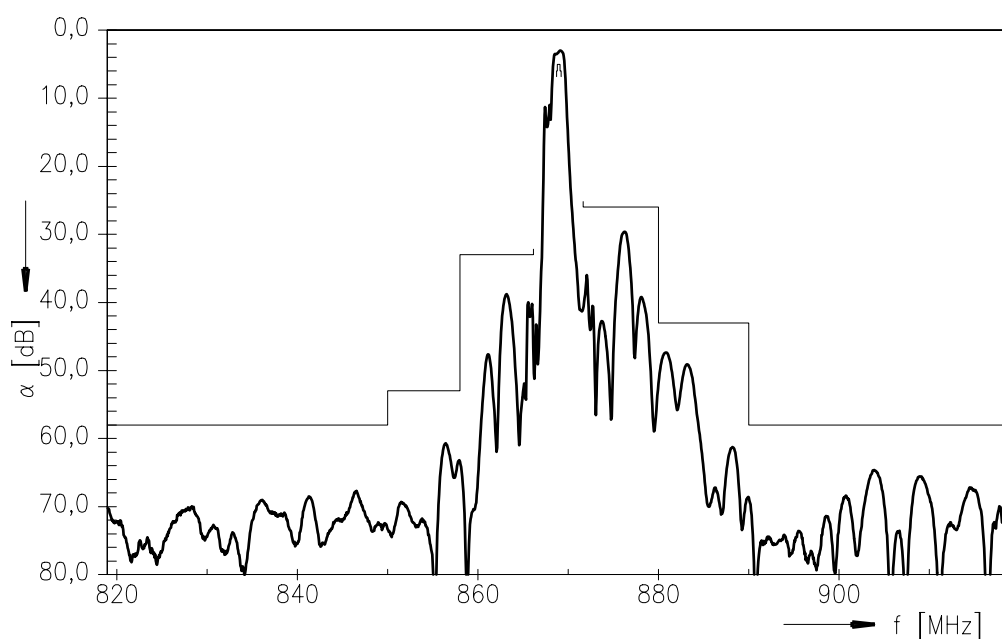
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Transfer function



Transfer function (wideband)





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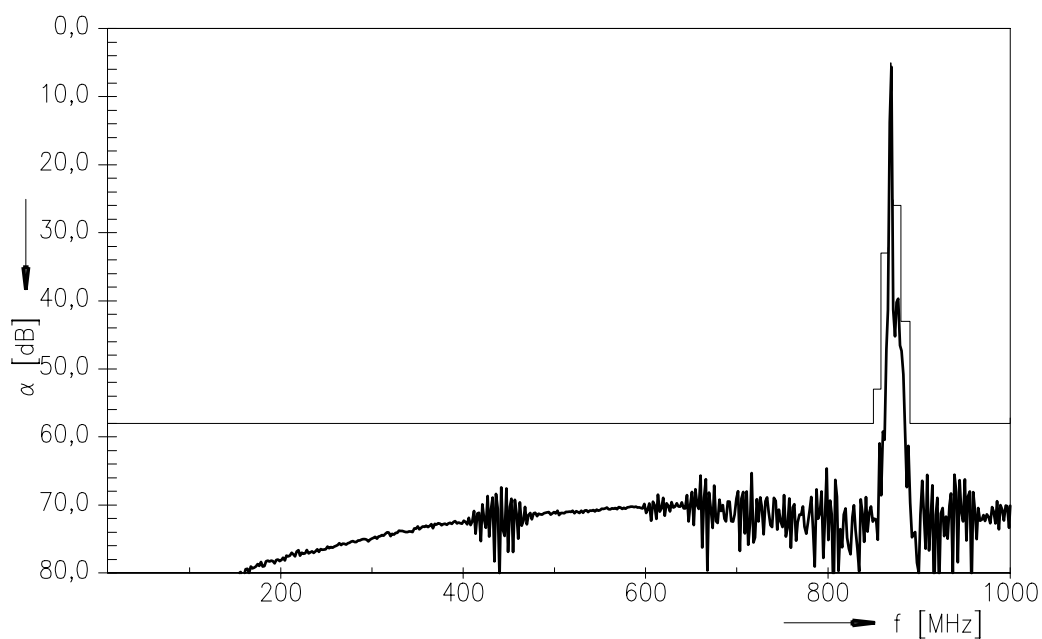
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Transfer function (ultimate rejection)



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**References**

Type	B3773
Ordering code	B39871B3773Z810
Marking and package	C61157-A7-A46
Packaging	F61074-V8167-Z000
Date codes	L_1126
S-parameters	B3773_SB.s2p B3773_WB.s2p
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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