SAW Components

SAW IF filter

Satellite radio

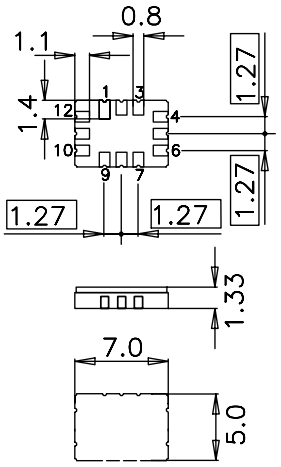
Series/type:	**B1727**
Ordering code:	**B39765B1727H810**
Date:	February 19, 2010
Version:	2.2

Application

- IF filter for digital radio
- Usable bandwidth 3.8 MHz
- Low insertion attenuation
- Constant group delay
- Unbalanced or balanced operation

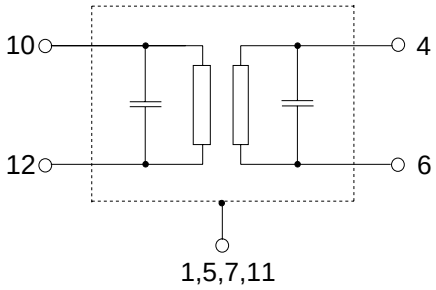
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- Maximum package height of 1.48 mm
- RoHS compatible
- Approximate weight 0.25 g
- Ceramic package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- AEC-Q200 qualified component family
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

■	4	Balanced input or input ground
■	6	Input
■	10	Balanced output or output ground
■	12	Output
■	1,5,7,11	Case – ground
■	2,3,8,9	To be grounded



Data sheet SMD

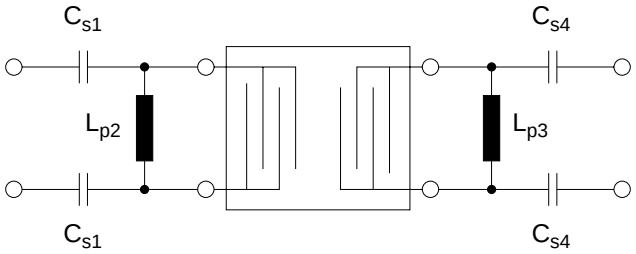
Characteristics

Temperature range for specification: T = –40 ˚C to (+85 ˚C) +105 ˚C
Terminating source impedance: Z_S = 27 Ω and matching network
Terminating load impedance: Z_L = 1 kΩ and matching network

		min.	typ. @ 25 ˚C	max.	
Nominal frequency	f_N	—	76.50	—	MHz
Minimum insertion attenuation[1)]	α_{min}	—	15.4	16.9	dB
Maximum voltage gain source – load (V_L/V_S)	α_{vgsl}	–5.9	–4.4	—	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 1.89$ MHz		—	1.0	(1.3) 1.8	dB
Pass bandwidth					
$\alpha_{rel} \leq 1.5$ dB	$B_{1.5dB}$	—	4.4	—	MHz
$\alpha_{rel} \leq 3$ dB	B_{3dB}	—	4.7	—	MHz
$\alpha_{rel} \leq 15$ dB	B_{15dB}	—	5.8	6.0	MHz
$\alpha_{rel} \leq 30$ dB	B_{30dB}	—	6.5	6.8	MHz
Mean attenuation (relative to α_{min})	α_{rel}				
Upper sidelobe 86.47 ... 91.53 MHz		48.0	54.0	—	dB
Relative attenuation (relative to α_{min})	α_{rel}				
Lower sidelobe 50.00 ... 65.44 MHz		40.0	45.0	—	dB
65.44 ... 70.44 MHz		34.0	38.0	—	dB
70.44 ... 72.04 MHz		32.0	36.0	—	dB
Upper sidelobe 81.26 ... 82.56 MHz		37.0	40.0	—	dB
82.56 ... 86.47 MHz		40.0	45.0	—	dB
86.47 ... 91.53 MHz		44.0	48.0	—	dB
91.53 ... 95.21 MHz		45.0	49.0	—	dB
95.21 ... 100.00 MHz		45.0	49.0	—	dB
Group delay ripple (p–p)	$\Delta\tau$				
Aperture 50 kHz $f_N \pm 1.89$ MHz		—	190	—	ns
Temperature coefficient of frequency	TC_f	—	–18	—	ppm/K

1) Including losses in the matching network

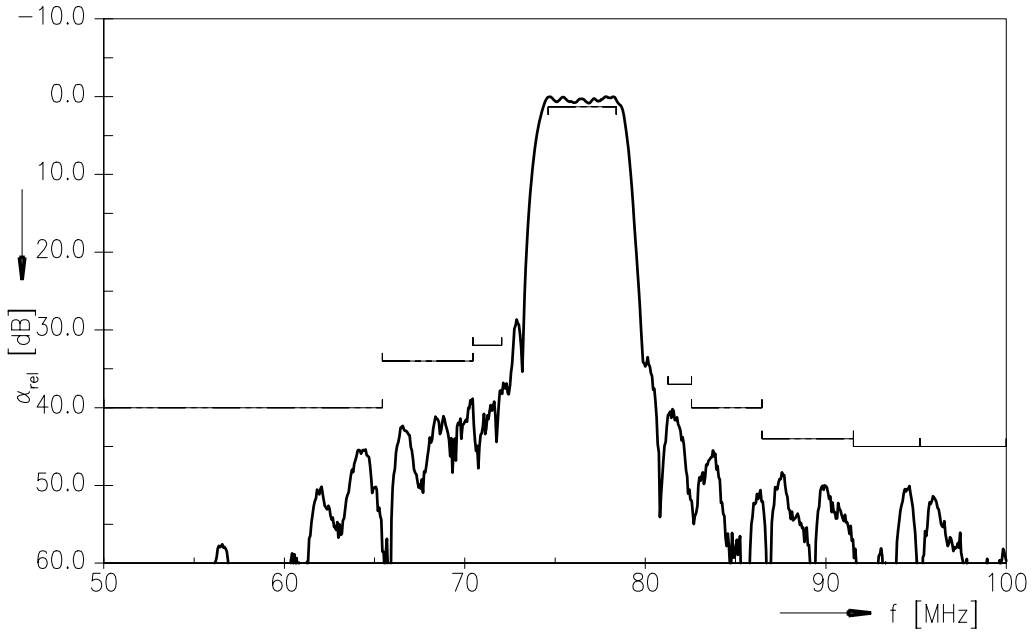
Matching network[1] (based on four port measurement, quality factors Q_L = 40, Q_C = 90)



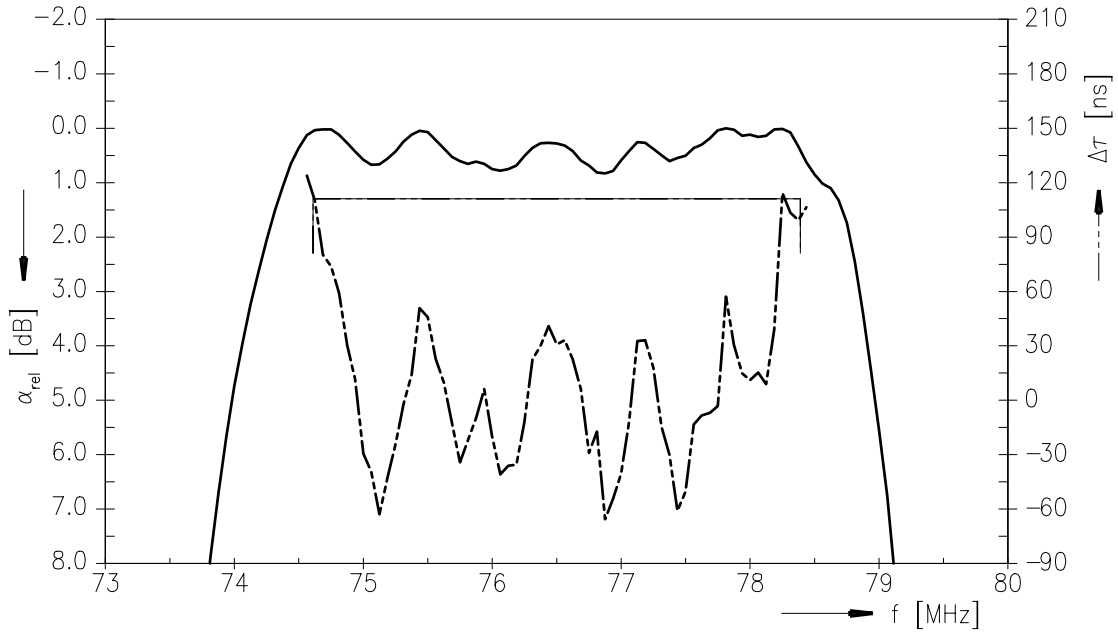
C_{s1} = 12 pF
L_{p2} = 220 nH
L_{p3} = 680 nH
C_{s4} = 5.6 pF

1) The input matching circuit has been designed as a power match of the filter's input port to 175 Ω. In a second step it has been optimized in a narrow range in order to operate at 27 Ω with optimum filter performance.

Transfer function



Transfer function (pass band)



Data sheet SMD

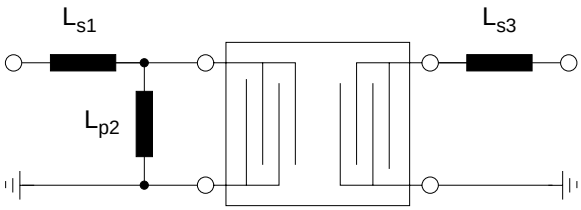
Characteristics

Temperature range for specification: T = –40 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (single ended) and matching network
Terminating load impedance: Z_L = 50 Ω (single ended) and matching network

		min.	typ. @ 25 ˚C	max.	
Nominal frequency	f_N	—	76.50	—	MHz
Minimum insertion attenuation[1)]	α_{min}	—	11.3	12.8	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 1.89$ MHz		—	1.0	1.3	dB
Pass bandwidth					
$\alpha_{rel} \leq 1.5$ dB	$B_{1.5dB}$	—	4.3	—	MHz
$\alpha_{rel} \leq 3$ dB	B_{3dB}	—	4.6	—	MHz
$\alpha_{rel} \leq 15$ dB	B_{15dB}	—	5.8	6.0	MHz
$\alpha_{rel} \leq 30$ dB	B_{30dB}	—	6.6	6.9	MHz
Mean attenuation (relative to α_{min})	α_{rel}				
Upper sidelobe 86.47 ... 91.53 MHz		46.0	50.0	—	dB
Relative attenuation (relative to α_{min})	α_{rel}				
Lower sidelobe 50.00 ... 65.44 MHz		37.0	41.0	—	dB
65.44 ... 70.44 MHz		35.0	39.0	—	dB
70.44 ... 72.04 MHz		33.0	36.0	—	dB
Upper sidelobe 81.26 ... 82.56 MHz		32.0	35.0	—	dB
82.56 ... 86.47 MHz		39.0	42.0	—	dB
86.47 ... 91.53 MHz		40.0	42.0	—	dB
91.53 ... 95.21 MHz		46.0	50.0	—	dB
95.21 ... 100.00 MHz		46.0	50.0	—	dB
Group delay ripple (p–p)	$\Delta\tau$				
Aperture 50 kHz $f_N \pm 1.89$ MHz		—	200	—	ns
Temperature coefficient of frequency	TC_f	—	–18	—	ppm/K

1) Including losses in the matching network

Matching network (based on four port measurement, quality factors Q_L = 40, Q_C = 90)

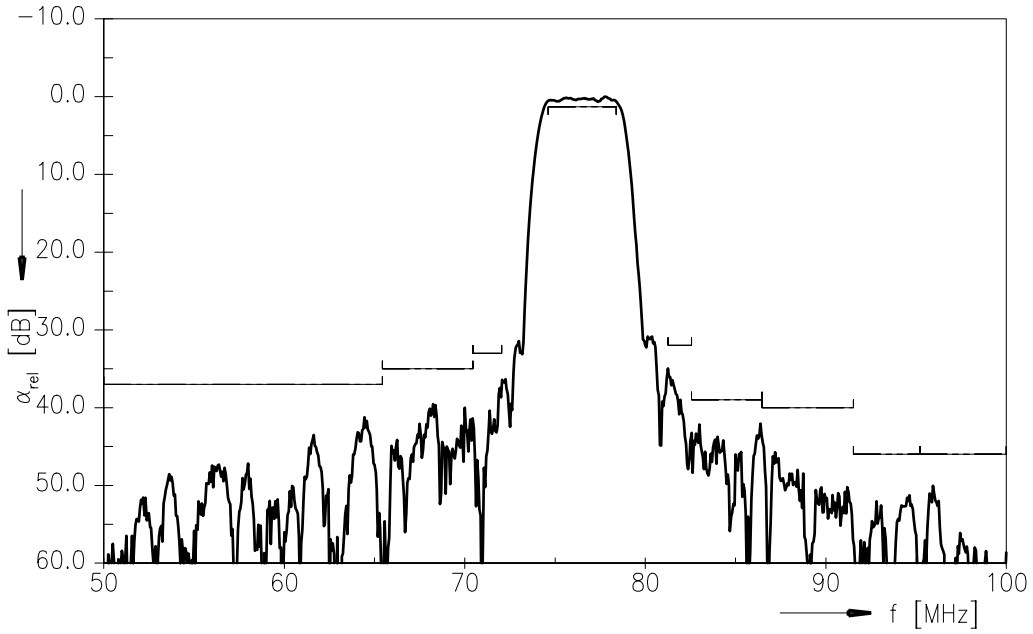


L_{s1} = 430 nH
L_{p2} = 820 nH
L_{s3} = 560 nH

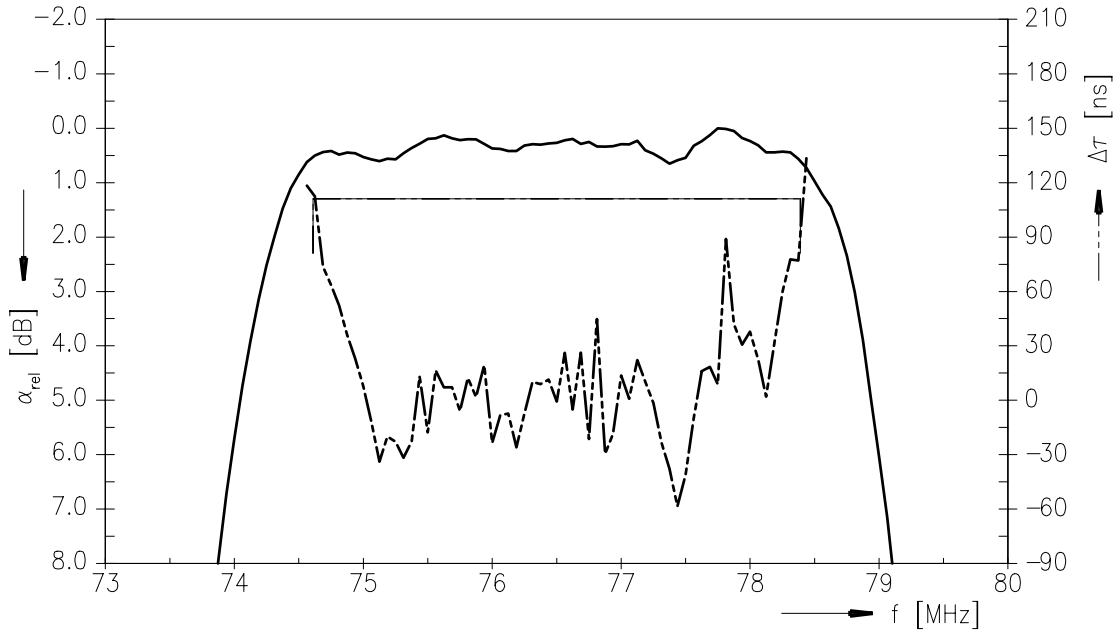
Maximum ratings

Operable temperature range	T	–40 / +105	˚C	
Storage temperature range	T_{stg}	–40 / +105	˚C	
DC voltage	V_{DC}	0	V	
Source power	P_S	10	dBm	source impedance 50 Ω

Transfer function



Transfer function (pass band)



References

Type	B1727
Ordering code	B39765B1727H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	B1727_NB_UN.s4p
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."

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com .

Published by EPCOS AG
Surface Acoustic Wave Components Division
P.O. Box 80 17 09, 81617 Munich, GERMANY

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.

Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application.** As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified.** In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.epcos.com/material). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.
   We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
6. Unless otherwise agreed in individual contracts, **all orders are subject to the current version of the "General Terms of Delivery for Products and Services in the Electrical Industry" published by the German Electrical and Electronics Industry Association (ZVEI)**.
7. The trade names EPCOS, BAOKE, Alu-X, CeraDiode, CSMP, CSSP, CTVS, DeltaCap, DigiSiMic, DSSP, MiniBlue, MiniCell, MKK, MLSC, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SIP5D, SIP5K, ThermoFuse, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.epcos.com/trademarks.