



SAW Components

SAW IF filter

Satellite radio

Series/type: **B1707**

Ordering code: **B39765B1707H310**

Date: May 16, 2006

Version: 1.1

SAW Components

B1707

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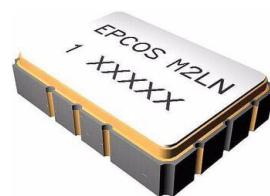
76.50 MHz

Data sheet



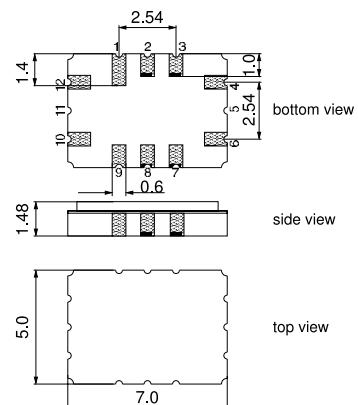
Application

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



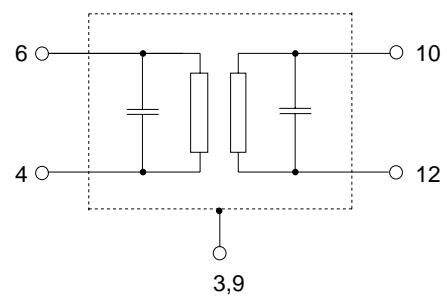
Features

- Package size 7.0 x 5.0 x 1.48 mm³
- Package code QCC12C
- RoHS compatible
- Approximate weight 0.20 g
- Ceramic package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**



Pin configuration

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



Please read *cautions and warnings and important notes* at the end of this document.

**SAW Components****B1707****SAW IF filter****76.50 MHz****Data sheet****Characteristics**

Temperature range for specification:

 $T = -40^{\circ}\text{C}$ to $(+85^{\circ}\text{C}) +105^{\circ}\text{C}$

Terminating source impedance:

 $Z_S = 27\ \Omega$ and matching network

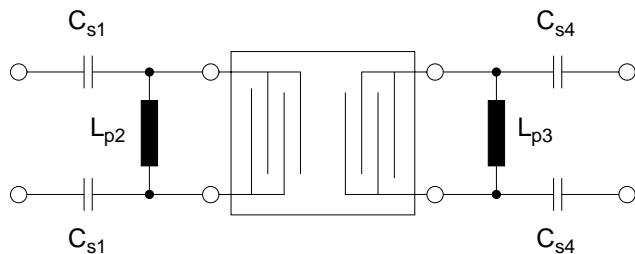
Terminating load impedance:

 $Z_L = 1\ \text{k}\Omega$ and matching network

		min.	typ. @ 25 °C	max.	
Nominal frequency	f_N	—	76.50	—	MHz
Minimum insertion attenuation¹⁾	α_{\min}	—	15.4	16.9	dB
Maximum voltage gain source – load (V_L/V_S)	α_{vgsI}	-5.9	-4.4	—	dB
Amplitude ripple (p-p)	$\Delta\alpha$ $f_N \pm 1.89\ \text{MHz}$	—	1.0	(1.3) 1.8	dB
Pass bandwidth					
$\alpha_{\text{rel}} \leq 1.5\ \text{dB}$	$B_{1.5\text{dB}}$	—	4.4	—	MHz
$\alpha_{\text{rel}} \leq 3\ \text{dB}$	$B_{3\text{dB}}$	—	4.7	—	MHz
$\alpha_{\text{rel}} \leq 15\ \text{dB}$	$B_{15\text{dB}}$	—	5.8	6.0	MHz
$\alpha_{\text{rel}} \leq 30\ \text{dB}$	$B_{30\text{dB}}$	—	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})					
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	$f_N \pm 1.89\ \text{MHz}$	—	190	—	ns
Temperature coefficient of frequency	TC_f	—	-18	—	ppm/K

¹⁾ Including losses in the matching network

Matching network¹⁾ (based on four port measurement, quality factors $Q_L = 40$, $Q_C = 90$)



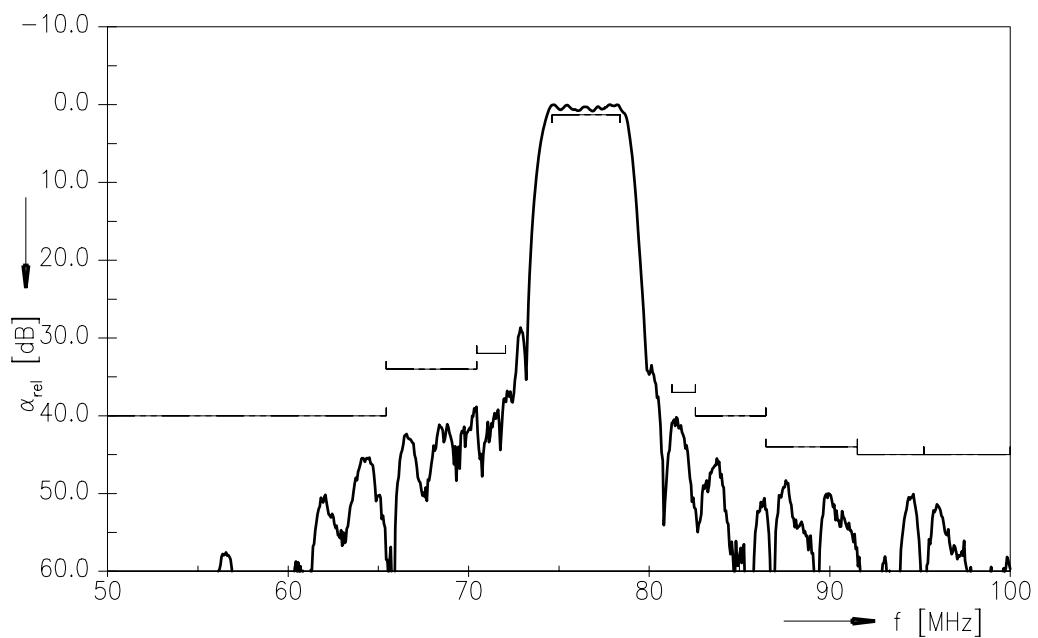
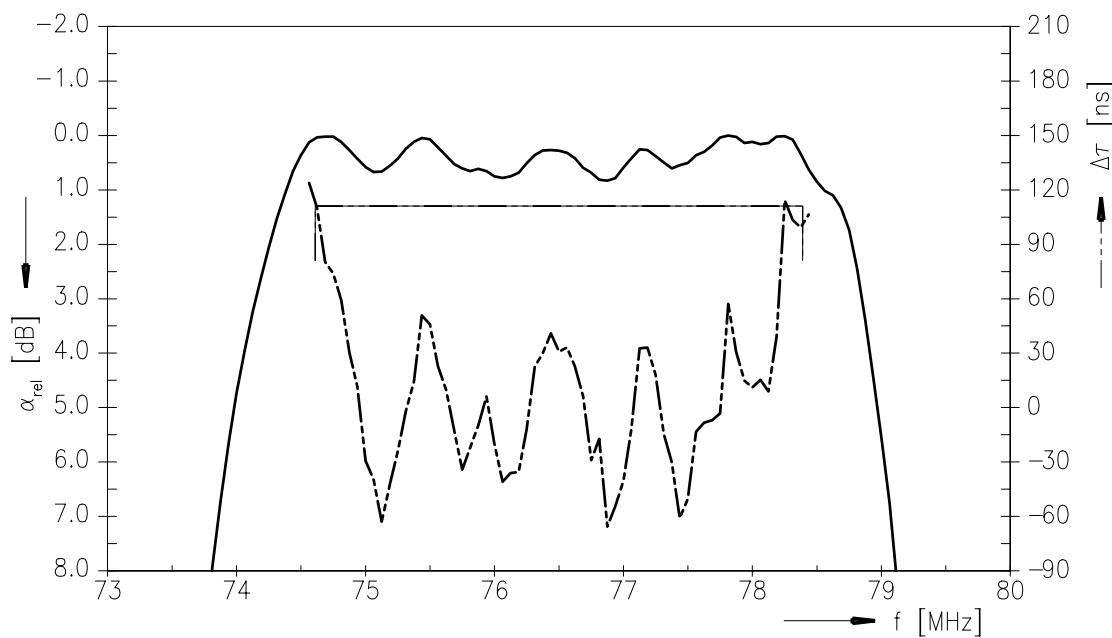
$$C_{s1} = 12 \text{ pF}$$

$$L_{p2} = 220 \text{ nH}$$

$$L_{p3} = 680 \text{ nH}$$

$$C_{s4} = 5.6 \text{ pF}$$

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


Transfer function (pass band)


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Temperature range for specification:

 $T = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$

Terminating source impedance:

 $Z_S = 50\Omega$ (single ended) and matching network

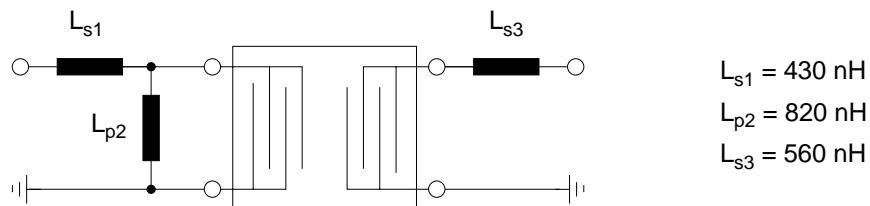
Terminating load impedance:

 $Z_L = 50\Omega$ (single ended) and matching network

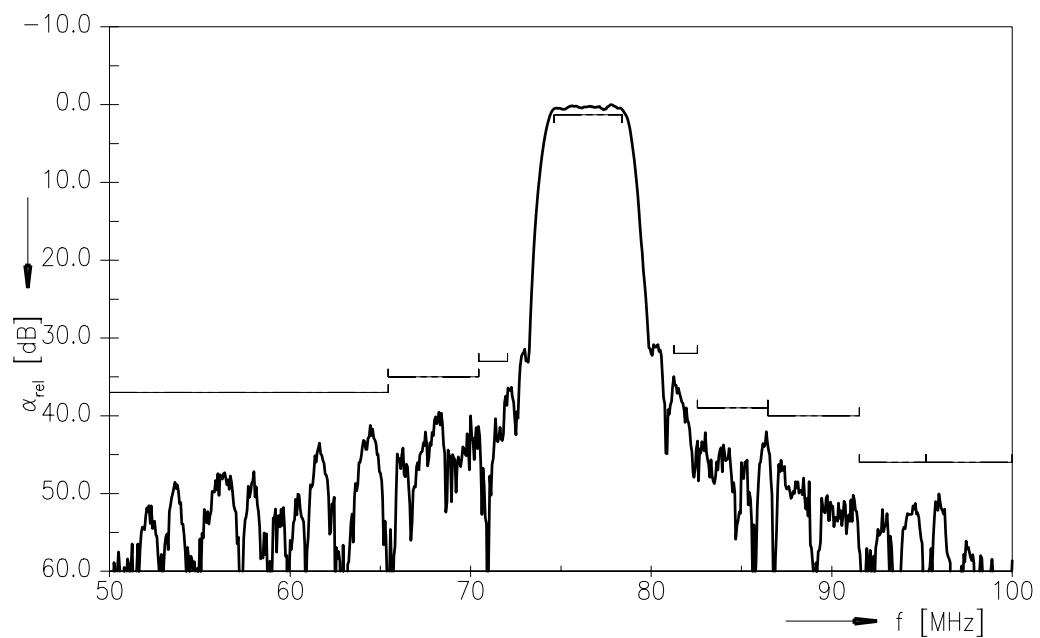
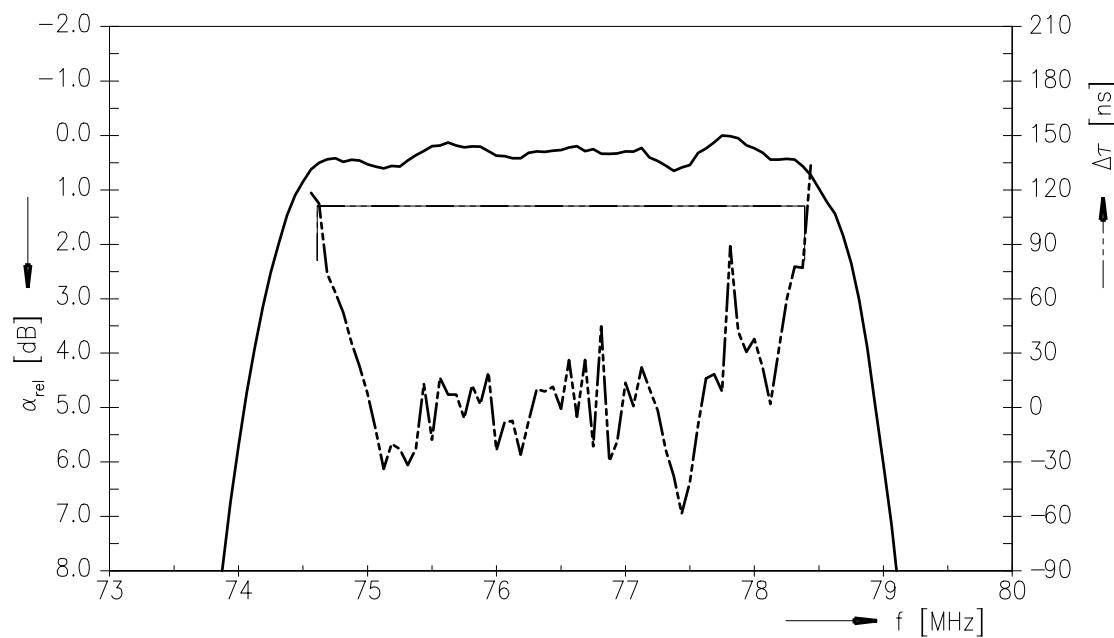
		min.	typ. @ 25 °C	max.	
Nominal frequency	f_N	—	76.50	—	MHz
Minimum insertion attenuation¹⁾	α_{\min}	—	11.3	12.8	dB
Amplitude ripple (p-p)	$\Delta\alpha$	—	1.0	1.3	dB
	$f_N \pm 1.89 \text{ MHz}$				
Pass bandwidth					
$\alpha_{\text{rel}} \leq 1.5 \text{ dB}$	$B_{1.5\text{dB}}$	—	4.3	—	MHz
$\alpha_{\text{rel}} \leq 3 \text{ dB}$	$B_{3\text{dB}}$	—	4.6	—	MHz
$\alpha_{\text{rel}} \leq 15 \text{ dB}$	$B_{15\text{dB}}$	—	5.8	6.0	MHz
$\alpha_{\text{rel}} \leq 30 \text{ dB}$	$B_{30\text{dB}}$	—	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	$f_N \pm 1.89 \text{ MHz}$	—	200	—	ns
Temperature coefficient of frequency	TC_f	—	-18	—	ppm/K

¹⁾ Including losses in the matching network

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

Maximum ratings

Operable temperature range	T	$-40 / +105$	$^{\circ}\text{C}$	
Storage temperature range	T_{stg}	$-40 / +105$	$^{\circ}\text{C}$	
DC voltage	V_{DC}	0	V	
Source power	P_S	10	dBm	source impedance 50Ω

Transfer function

Transfer function (pass band)


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**References**

Type	B1707
Ordering code	B39765B1707H310
Marking and package	C61157-A7-A95
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	B1707_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 .

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