



SAW Components

SAW IF filter

Satellite radio

Series/type:	B1727
Ordering code:	B39765B1727H810
Date:	December 27, 2006
Version:	2.1

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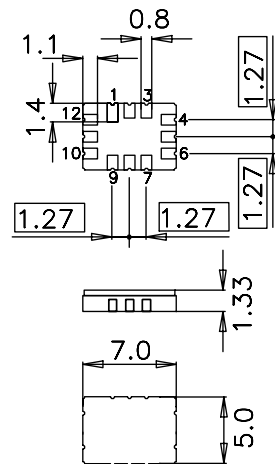
Application

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



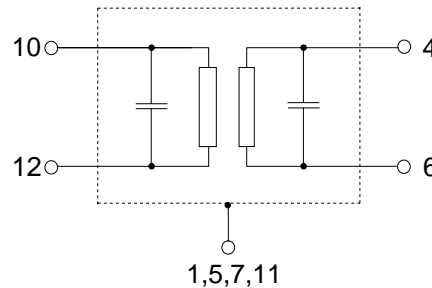
Features

- 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 **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
- 1,5,7,11 Case – ground
- 2,3,8,9 To be grounded





Data sheet



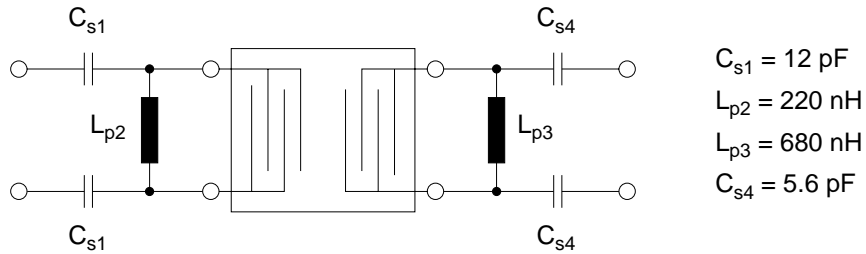
Characteristics

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 attenuation¹⁾	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)	Δα				
	f _N ± 1.89 MHz	—	1.0	(1.3) 1.8	dB
Pass bandwidth					
α _{rel} ≤ 1.5 dB	B _{1.5dB}	—	4.4	—	MHz
α _{rel} ≤ 3 dB	B _{3dB}	—	4.7	—	MHz
α _{rel} ≤ 15 dB	B _{15dB}	—	5.8	6.0	MHz
α _{rel} ≤ 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)	Δτ				
Aperture 50 kHz	f _N ± 1.89 MHz	—	190	—	ns
Temperature coefficient of frequency	TC _f	—	-18	—	ppm/K

¹⁾ Including losses in the matching network

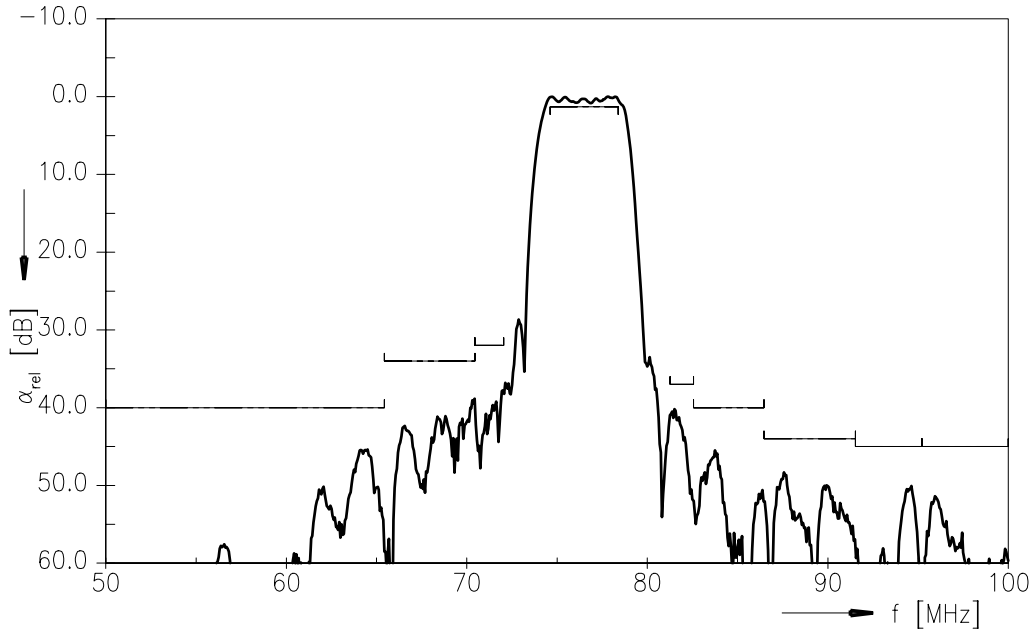
Matching network¹⁾ (based on four port measurement, quality factors $Q_L = 40$, $Q_C = 90$)



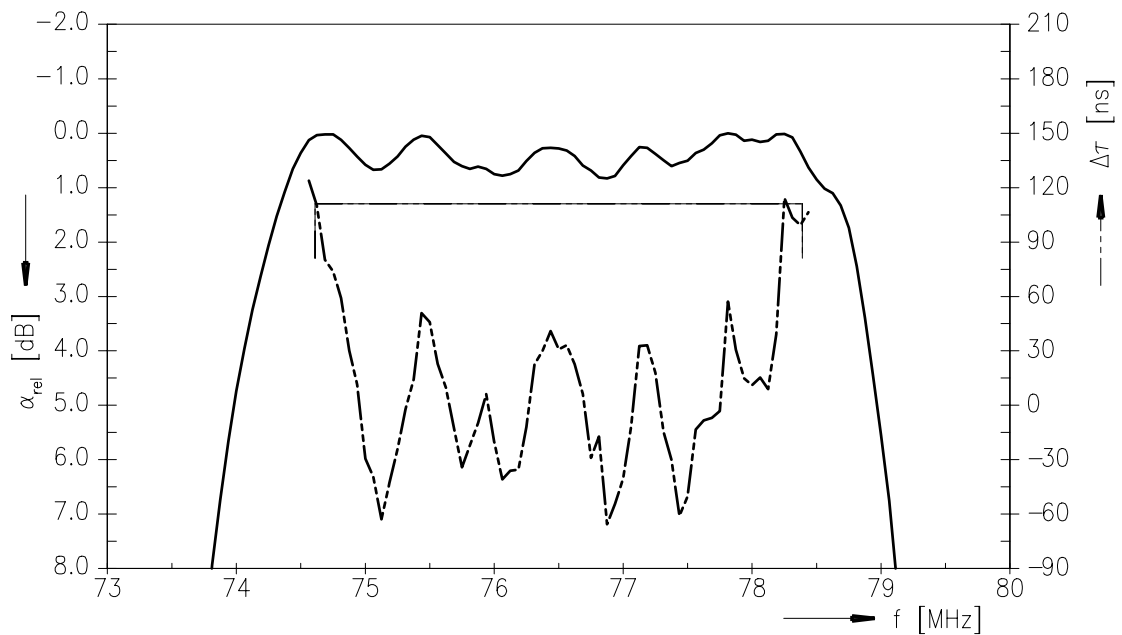
1) The input matching circuit has been designed as a power match of the filter's input port to 175Ω . In a second step it has been optimized in a narrow range in order to operate at 27Ω with optimum filter performance.



Transfer function



Transfer function (pass band)





Data sheet



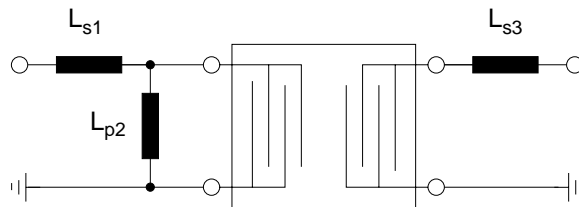
Characteristics

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 attenuation¹⁾	α _{min}	—	11.3	12.8	dB
Amplitude ripple (p-p)	Δα				
	f _N ± 1.89 MHz	—	1.0	1.3	dB
Pass bandwidth					
α _{rel} ≤ 1.5 dB	B _{1.5dB}	—	4.3	—	MHz
α _{rel} ≤ 3 dB	B _{3dB}	—	4.6	—	MHz
α _{rel} ≤ 15 dB	B _{15dB}	—	5.8	6.0	MHz
α _{rel} ≤ 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)	Δτ				
Aperture 50 kHz	f _N ± 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 $Q_L = 40$, $Q_C = 90$)



$$L_{s1} = 430 \text{ nH}$$

$$L_{p2} = 820 \text{ nH}$$

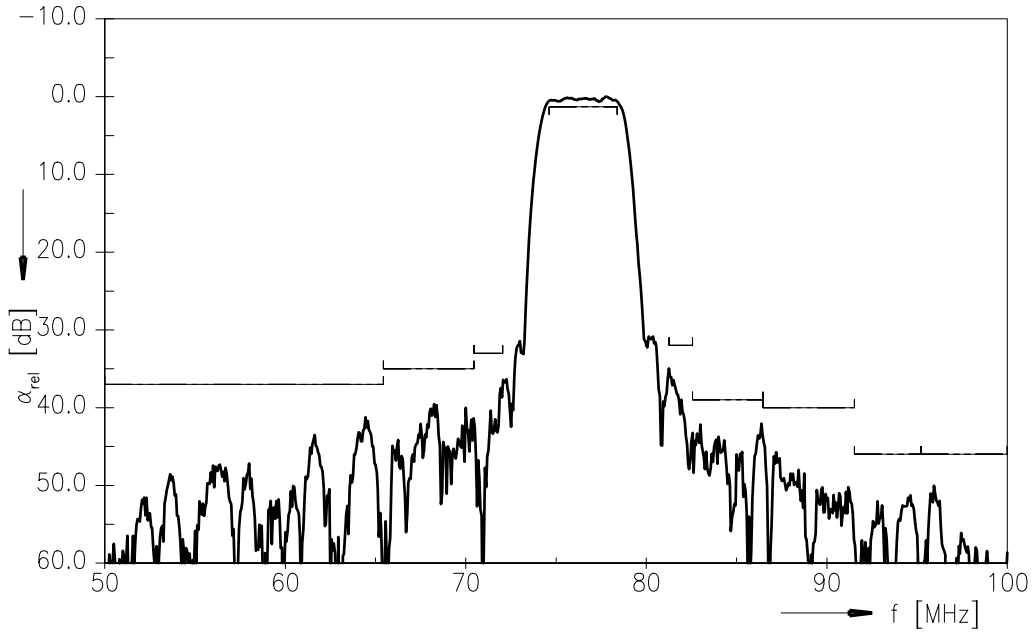
$$L_{s3} = 560 \text{ nH}$$

Maximum ratings

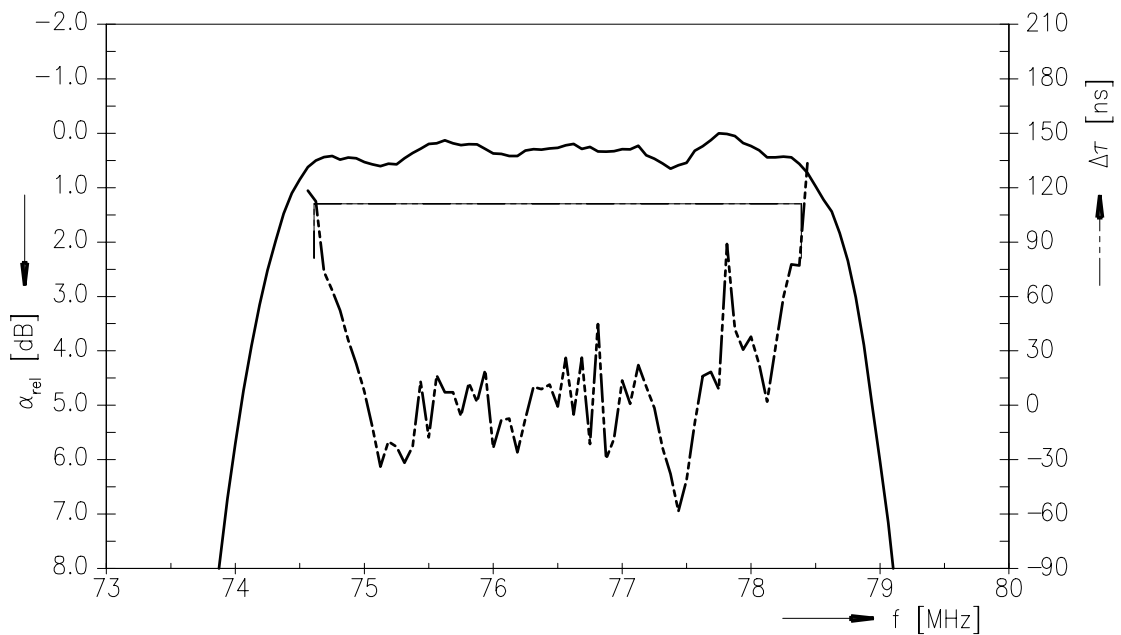
Operable temperature range	T	-40 / +105	°C	
Storage temperature range	T _{stg}	-40 / +105	°C	
DC voltage	V _{DC}	0	V	
Source power	P _S	10	dBm	source impedance 50 Ω



Transfer function



Transfer function (pass band)





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SAW IF filter

76.50 MHz

Data sheet



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."

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