



SAW Components

SAW IF filter

Satellite radio

Series/type:	B1729
Ordering code:	B39805B1729H810
Date:	December 27, 2006
Version:	2.1

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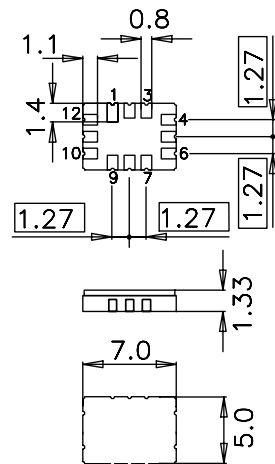
Application

- IF filter for digital radio
- Usable bandwidth 3.7 MHz
- Low insertion attenuation
- Constant group delay
- Unbalanced or balanced operation



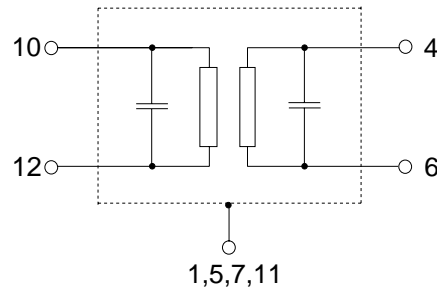
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- Maximum package height 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





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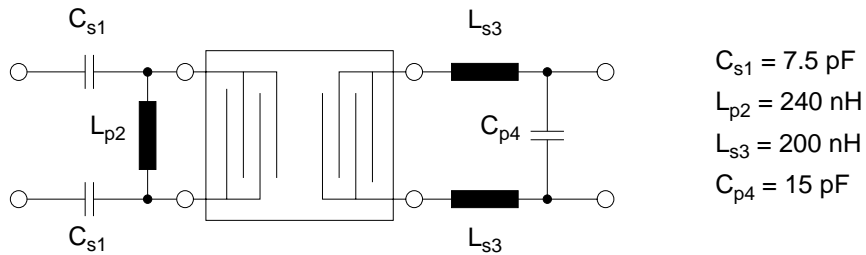
Characteristics

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	—	80.46	—	MHz
Minimum insertion attenuation¹⁾	α _{min}	—	18.1	19.6	dB
Maximum voltage gain source – load (V _L /V _S)	α _{vgsL}	-8.8	-7.3	—	dB
Amplitude ripple (p-p)	Δα				
	f _N ± 1.84 MHz	—	0.9	(1.3) 1.8	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}	—	5.5	6.0	MHz
α _{rel} ≤ 30 dB	B _{30dB}	—	6.1	6.5	MHz
Mean attenuation (relative to α _{min})	α _{rel}				
Upper sidelobe	86.47 ... 91.53 MHz	50.0	54.0	—	dB
Relative attenuation (relative to α _{min})	α _{rel}				
Lower sidelobe	55.00 ... 67.00 MHz	48.0	54.0	—	dB
	67.00 ... 75.99 MHz	39.0	43.0	—	dB
Upper sidelobe	85.21 ... 86.47 MHz	40.0	49.0	—	dB
	86.47 ... 91.53 MHz	45.0	49.0	—	dB
	91.53 ... 95.21 MHz	46.0	52.0	—	dB
	95.21 ... 105.00 MHz	46.0	52.0	—	dB
Group delay ripple (p-p)	Δτ				
Aperture 50 kHz	f _N ± 1.84 MHz	—	190	—	ns
Temperature coefficient of frequency	TC _f	—	-18	—	ppm/K

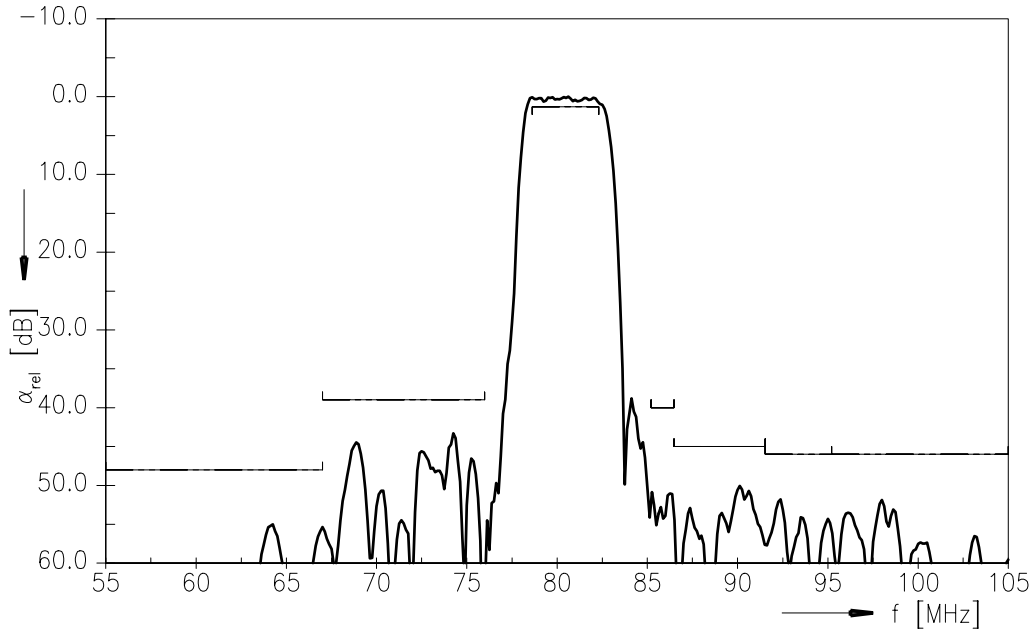
1) Including losses in the matching network

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

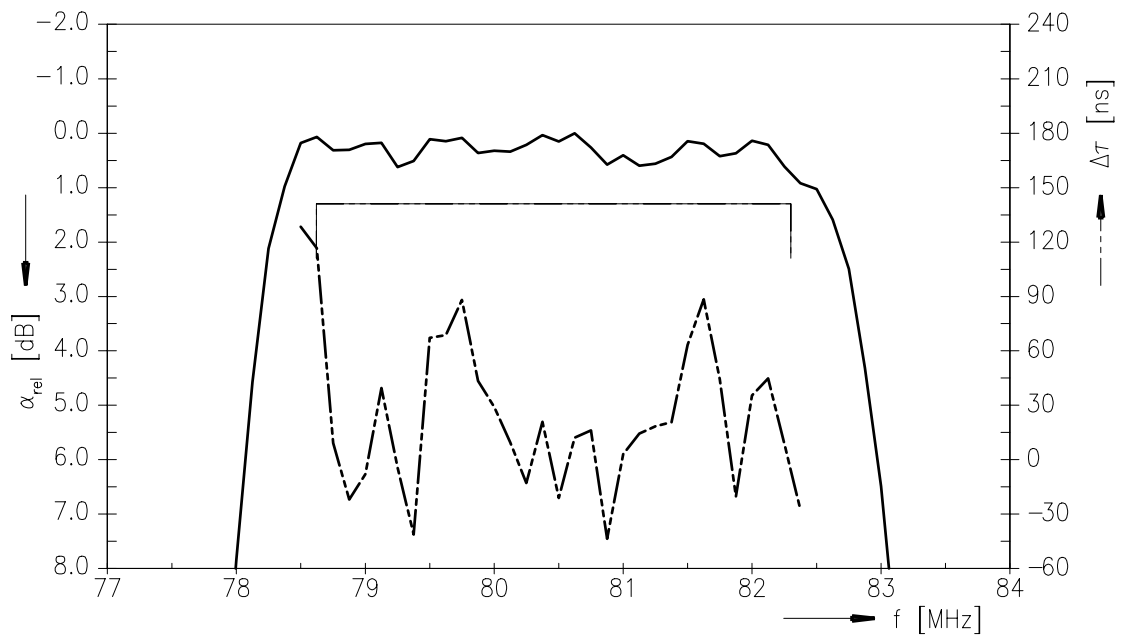


1) The input matching circuit has been designed as a power match of the filter's input port to 175 Ω . In a second step it has been optimized in a narrow range in order to operate at 27 Ω with optimum filter performance.

Transfer function



Transfer function (pass band)





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Characteristics

Temperature range for specification: $T = -40\text{ °C to }+85\text{ °C}$
 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	—	80.46	—	MHz
Minimum insertion attenuation¹⁾	α_{\min}	—	15.3	16.8	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
	$f_N \pm 1.84\text{ MHz}$	—	1.1	1.5	dB
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
$\alpha_{\text{rel}} \leq 15\text{ dB}$	$B_{15\text{dB}}$	—	5.5	6.0	MHz
$\alpha_{\text{rel}} \leq 30\text{ dB}$	$B_{30\text{dB}}$	—	6.2	6.6	MHz
Mean attenuation (relative to α_{\min})	α_{rel}				
Upper sidelobe	86.47 ... 91.53 MHz	46.0	48.0	—	dB
Relative attenuation (relative to α_{\min})	α_{rel}				
Lower sidelobe	55.00 ... 67.00 MHz	44.0	48.0	—	dB
	67.00 ... 75.99 MHz	34.0	37.0	—	dB
Upper sidelobe	85.21 ... 86.47 MHz	37.0	42.0	—	dB
	86.47 ... 91.53 MHz	40.0	44.0	—	dB
	91.53 ... 95.21 MHz	44.0	47.0	—	dB
	95.21 ... 105.00 MHz	45.0	48.0	—	dB
Group delay ripple (p-p)	$\Delta\tau$				
Aperture 50 kHz	$f_N \pm 1.84\text{ MHz}$	—	180	—	ns
Temperature coefficient of frequency	TC_f	—	-18	—	ppm/K

1) Including losses in the matching network



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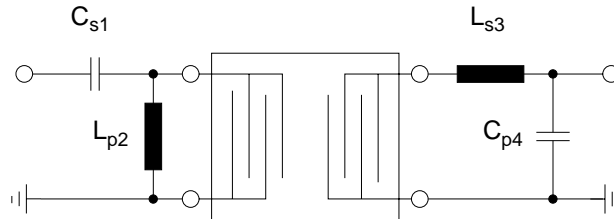
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Matching network (based on four port measurement, quality factors $Q_L = 40$, $Q_C = 90$)



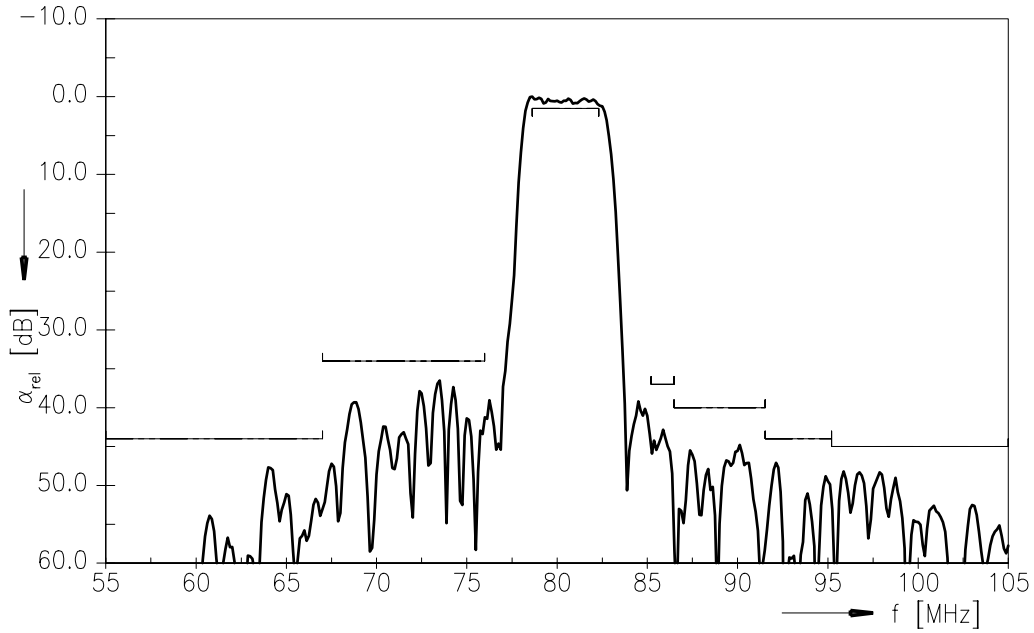
$C_{s1} = 3.9 \text{ pF}$
 $L_{p2} = 220 \text{ nH}$
 $L_{s3} = 200 \text{ nH}$
 $C_{p4} = 56 \text{ pF}$

Maximum ratings

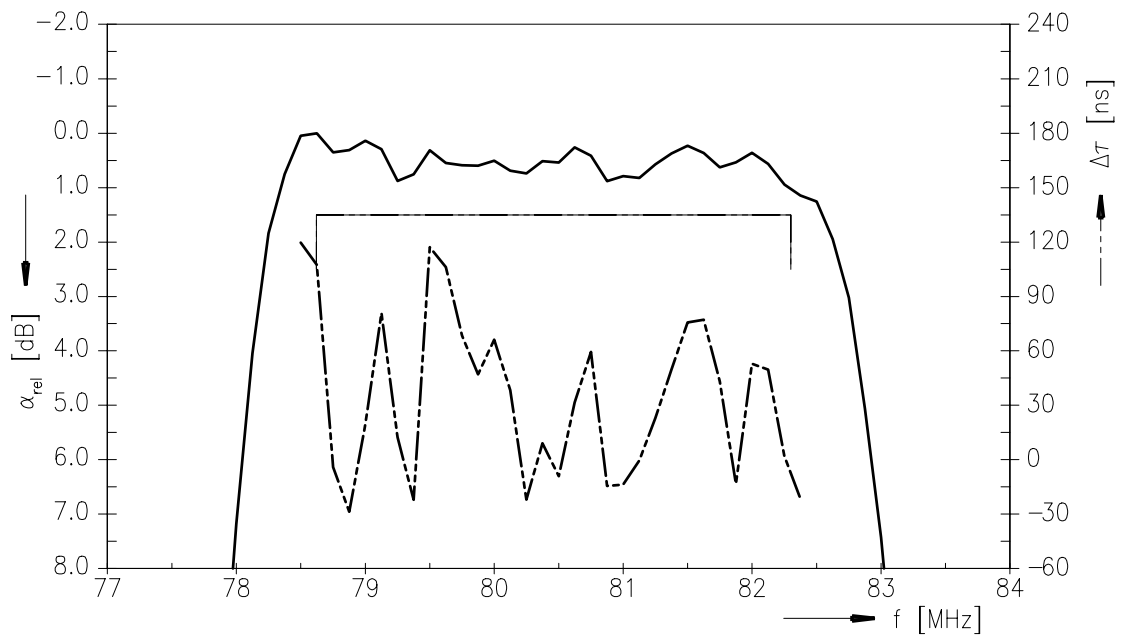
Operable temperature range	T	-40 / +105	°C	
Storage temperature range	T _{stg}	-40 / +105	°C	
DC voltage	V _{DC}	0	V	
Source power	P _S	10	dBm	source impedance 50 Ω

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

Transfer function



Transfer function (pass band)





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References

Type	B1729
Ordering code	B39805B1729H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	B1729_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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