

RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

SAW Components

SAW IF filter

Satellite radio

Series/type:	B1729
Ordering code:	B39805B1729H810
Date:	December 19, 2012
Version:	2.3

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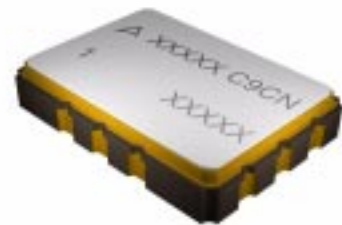
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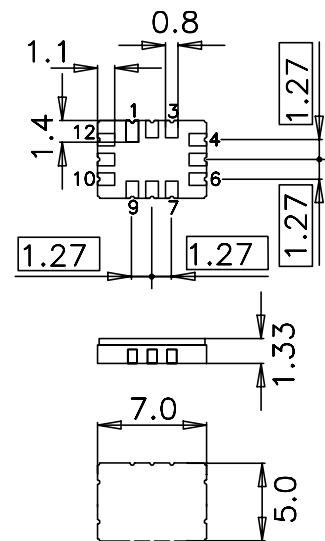
Data sheet


Application

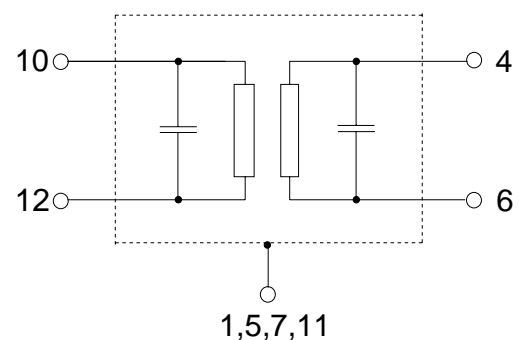
- IF filter for digital radio
- Usable bandwidth 3.7 MHz
- Low insertion attenuation
- Constant group delay
- Unbalanced or balanced operation


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
- AEC-Q200 qualified component family
- **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

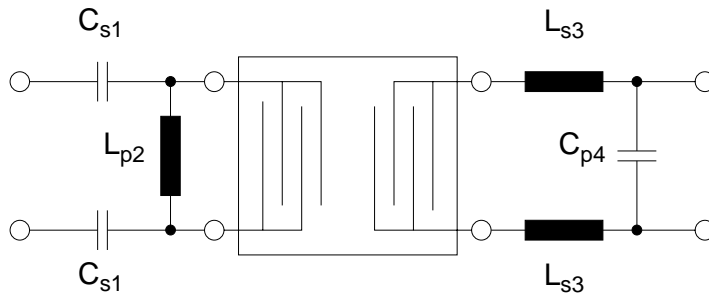
Characteristics

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	—	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

Data sheet


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


$$C_{s1} = 7.5 \text{ pF}$$

$$L_{p2} = 240 \text{ nH}$$

$$L_{s3} = 200 \text{ nH}$$

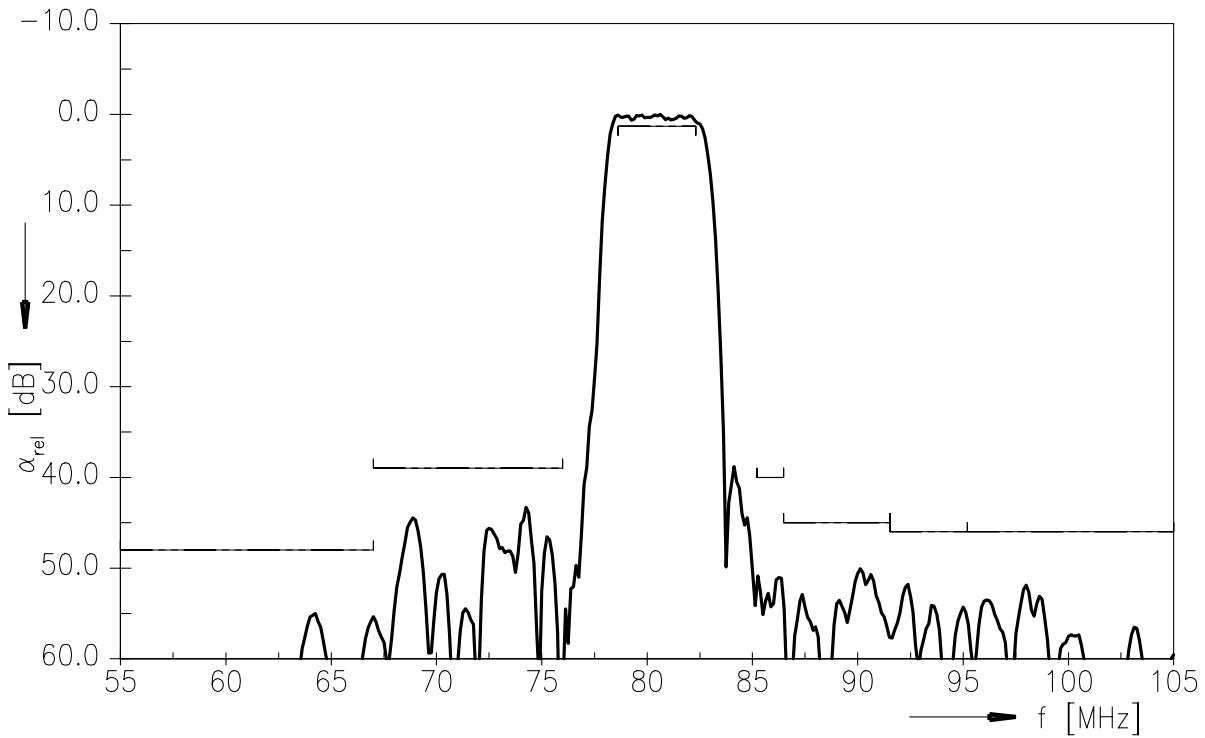
$$C_{p4} = 15 \text{ pF}$$

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.

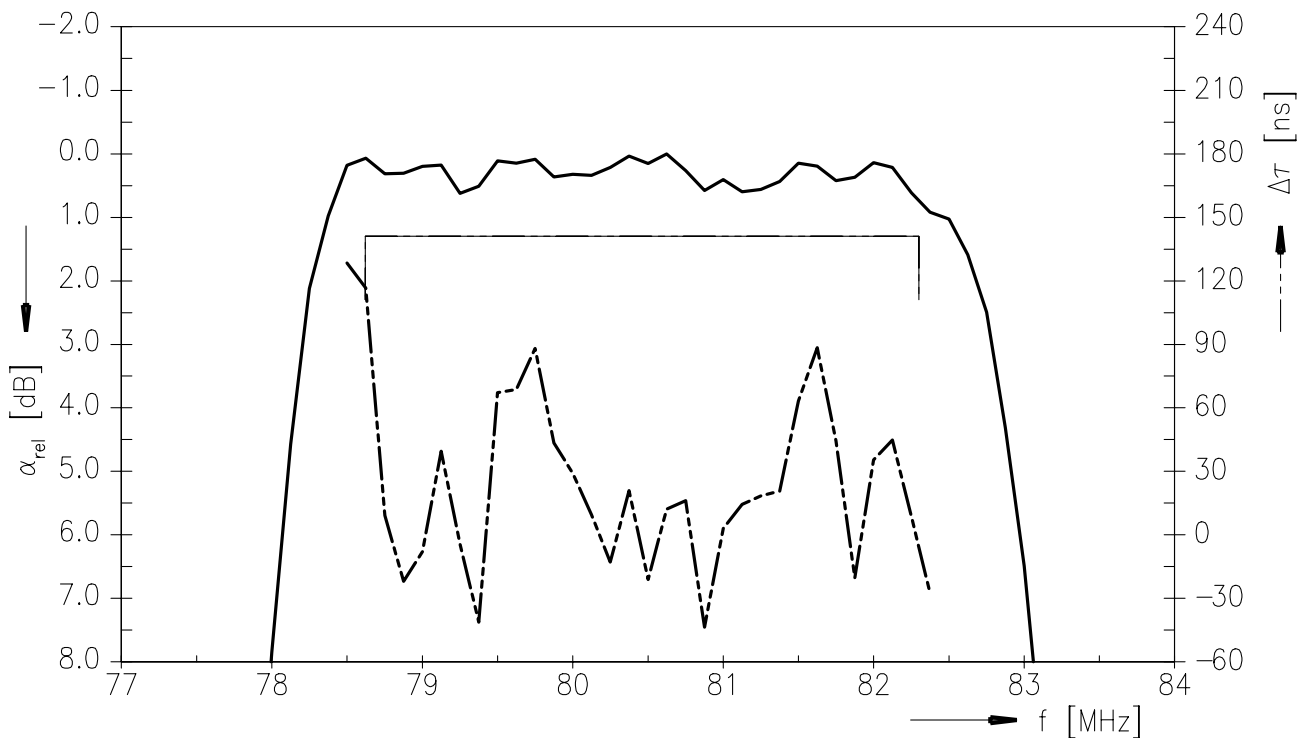
Data sheet



Transfer function



Transfer function (pass band)



Data sheet

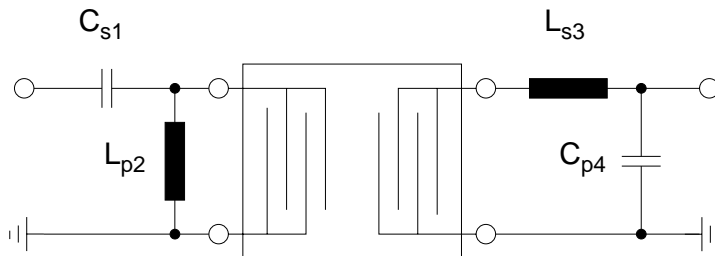

Characteristics

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

Data sheet


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


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

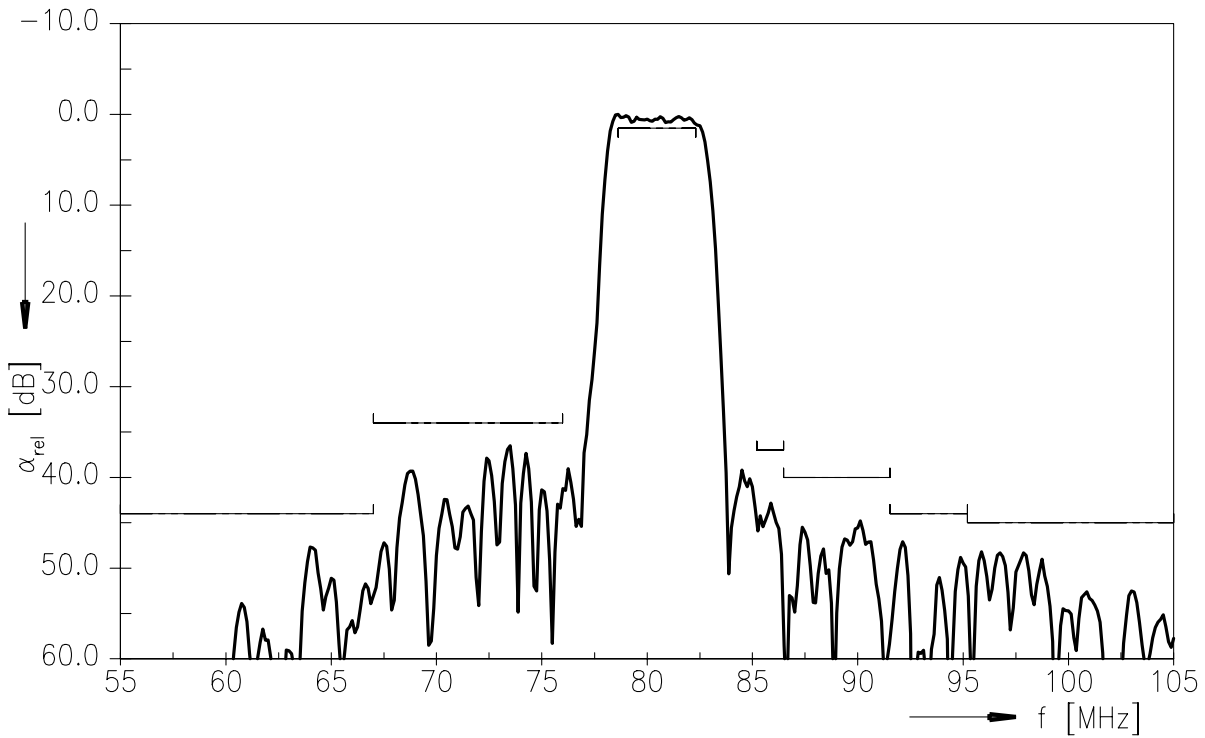
Maximum ratings

Operable temperature range	T	-40 / +105	°C	
Storage temperature range	T_{stg}	-40 / +105	°C	
DC voltage	V_{DC}	6	V	
Source power	P_S	10	dBm	source impedance 50 Ω

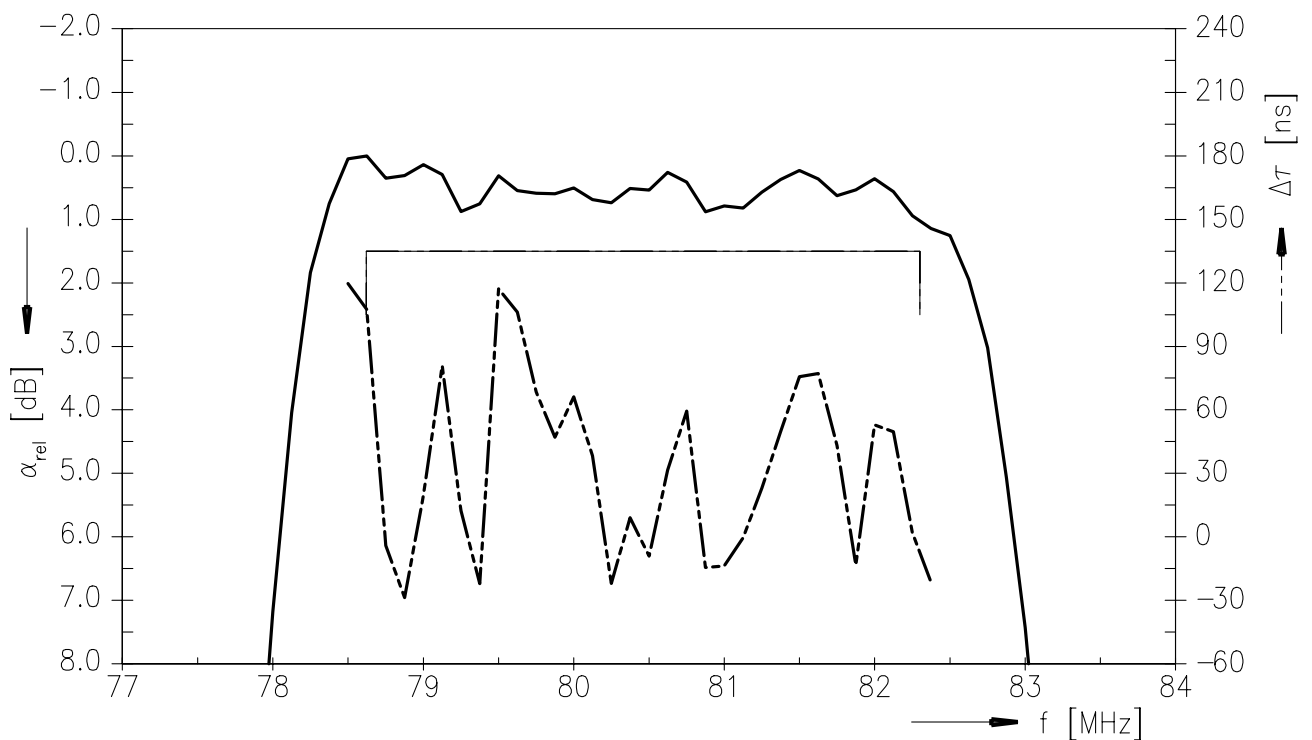
Data sheet



Transfer function



Transfer function (pass band)




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 See file header for port/pin assignment table.
Soldering profile	S_6001
RoHS compatible	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 th , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.
Matching coils	See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm for a large variety of matching coils.

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