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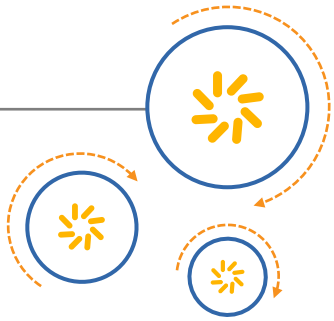
A Qualcomm – TDK Joint Venture



SAW Components

SAW IF filter

Satellite radio

Series/type:	B1728
Ordering code:	B39725B1728H810
Date:	December 19, 2012
Version:	2.2

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SAW IF filter

Satellite radio

Series/type:	**B1728**
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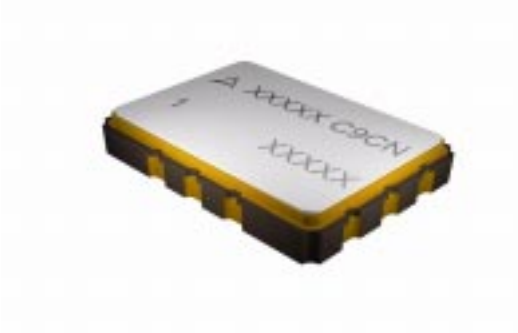
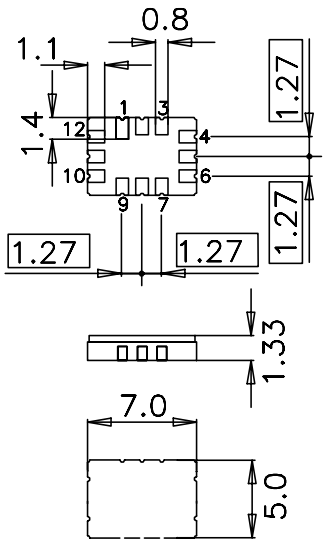
Application

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



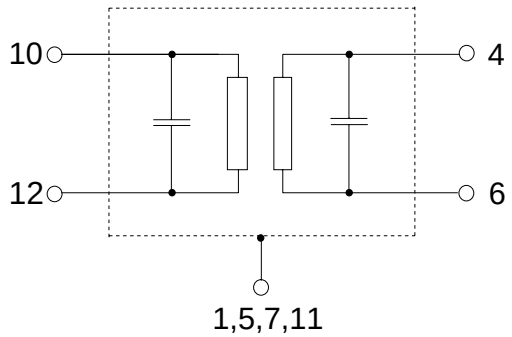
Features

- 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 **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

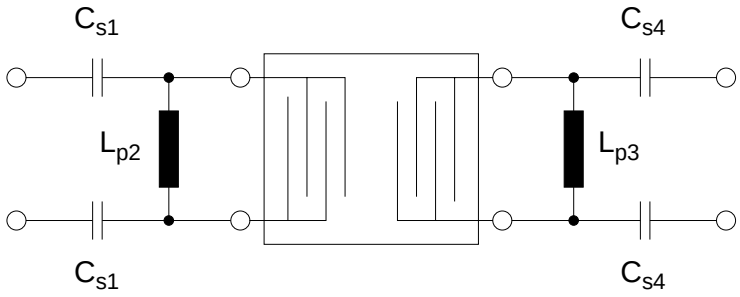
Characteristics

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	—	72.54	—	MHz
Minimum insertion attenuation[1)]	α_{min}	—	14.5	16.0	dB
Maximum voltage gain source – load (V_L/V_S)	α_{vgsl}	–4.2	–2.7	—	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 1.85$ MHz		—	1.0	(1.3) 1.5	dB
Pass bandwidth					
$\alpha_{rel} \leq 1.5$ dB	$B_{1.5dB}$	—	4.0	—	MHz
$\alpha_{rel} \leq 3$ dB	B_{3dB}	—	4.3	—	MHz
$\alpha_{rel} \leq 15$ dB	B_{15dB}	—	5.7	5.9	MHz
$\alpha_{rel} \leq 30$ dB	B_{30dB}	—	6.6	7.0	MHz
Mean attenuation (relative to α_{min})	α_{rel}				
Upper sidelobe 86.47 ... 91.53 MHz		48.0	53.0	—	dB
Relative attenuation (relative to α_{min})	α_{rel}				
Lower sidelobe 50.00 ... 65.00 MHz		40.0	44.0	—	dB
65.00 ... 66.48 MHz		33.0	38.0	—	dB
66.48 ... 68.08 MHz		32.0	36.0	—	dB
Upper sidelobe 77.30 ... 78.60 MHz		32.0	36.0	—	dB
78.60 ... 86.47 MHz		36.0	41.0	—	dB
86.47 ... 91.53 MHz		44.0	48.0	—	dB
91.53 ... 95.21 MHz		44.0	48.0	—	dB
95.21 ... 100.00 MHz		46.0	50.0	—	dB
Group delay ripple (p–p)	$\Delta\tau$				
Aperture 50 kHz $f_N \pm 1.85$ MHz		—	210	—	ns
Temperature coefficient of frequency	TC_f	—	–18	—	ppm/K

1) Including losses in the matching network

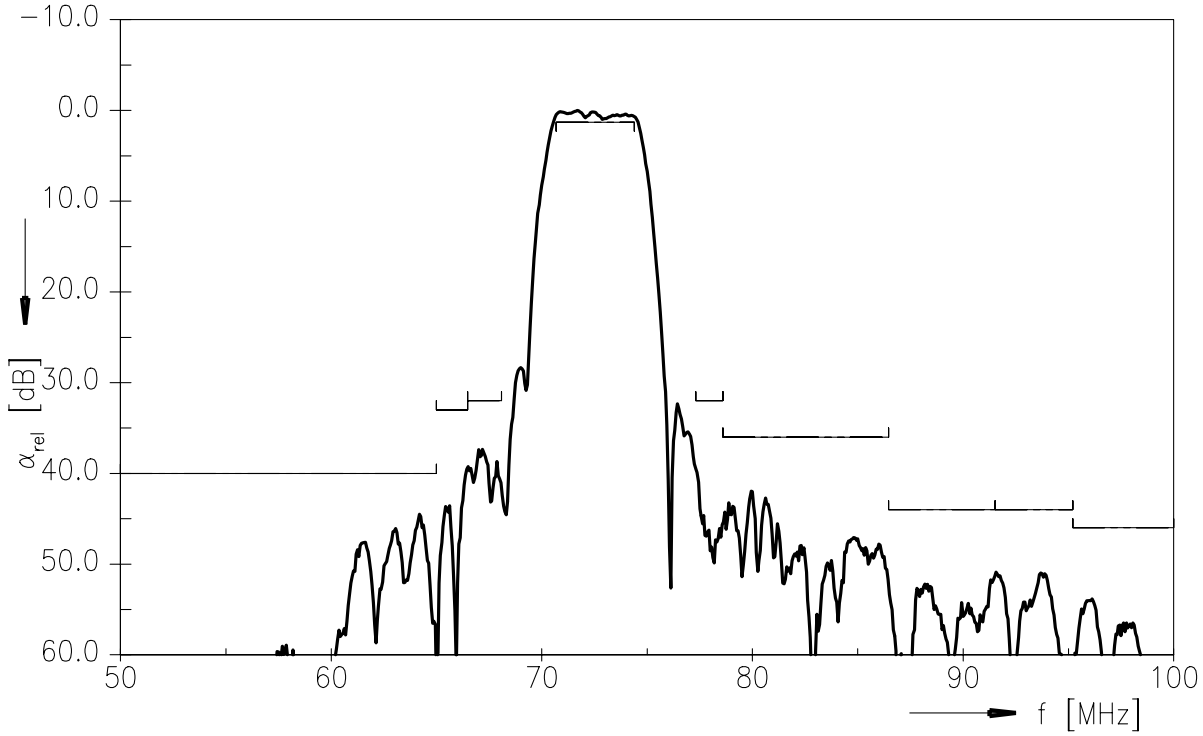
Matching network[1)] (based on four port measurement, quality factors Q_L = 40, Q_C = 90)



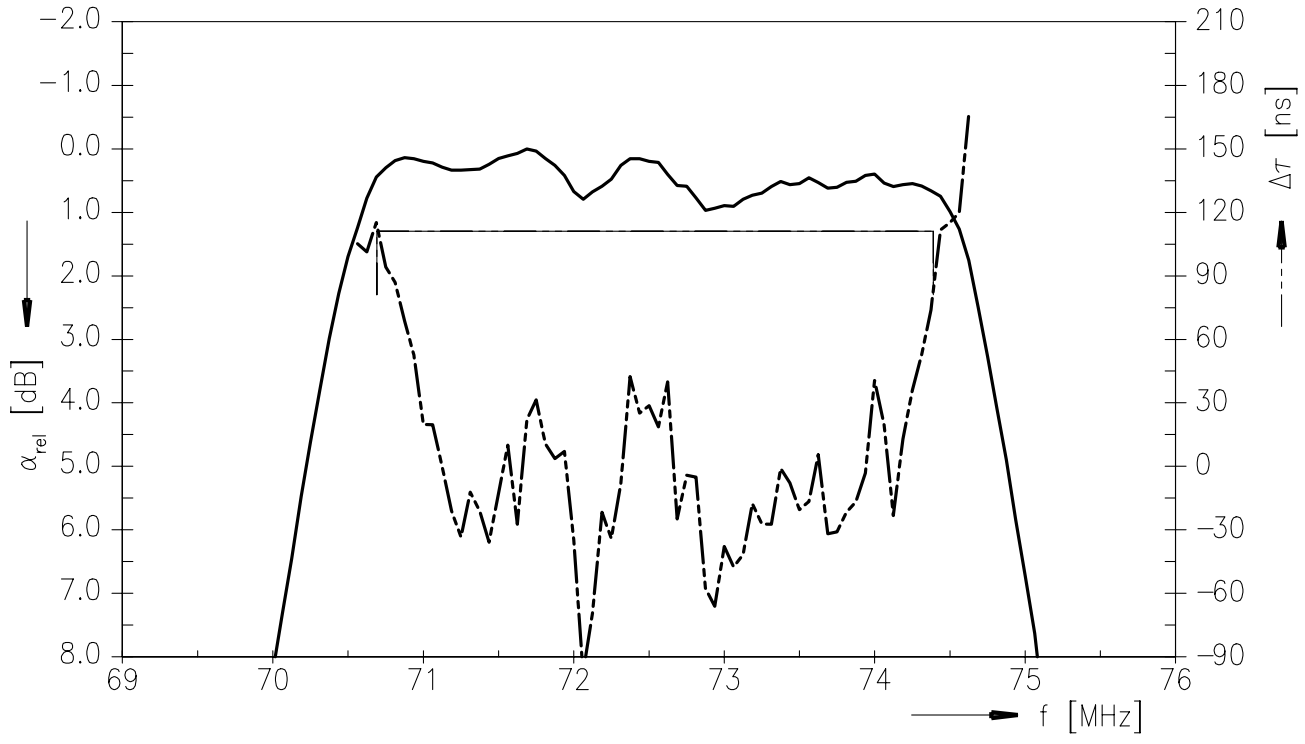
C_{s1} = 20 pF
L_{p2} = 220 nH
L_{p3} = 620 nH
C_{s4} = 3.6 pF

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)



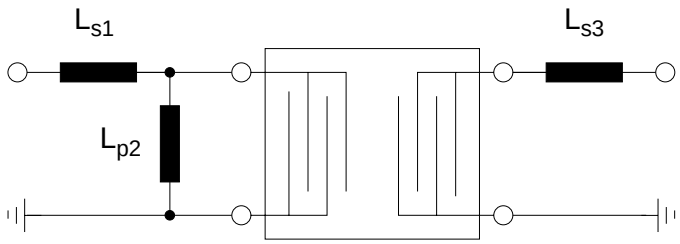
Characteristics

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	—	72.54	—	MHz
Minimum insertion attenuation[1)]	α_{min}	—	12.9	14.4	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 1.85$ MHz		—	1.2	1.5	dB
Pass bandwidth					
$\alpha_{rel} \leq 1.5$ dB	$B_{1.5dB}$	—	4.0	—	MHz
$\alpha_{rel} \leq 3$ dB	B_{3dB}	—	4.4	—	MHz
$\alpha_{rel} \leq 15$ dB	B_{15dB}	—	5.8	6.0	MHz
$\alpha_{rel} \leq 30$ dB	B_{30dB}	—	6.7	7.0	MHz
Mean attenuation (relative to α_{min})	α_{rel}				
Upper sidelobe 86.47 ... 91.53 MHz		48.0	52.0	—	dB
Relative attenuation (relative to α_{min})	α_{rel}				
Lower sidelobe 50.00 ... 65.00 MHz		34.0	38.0	—	dB
65.00 ... 66.48 MHz		36.0	42.0	—	dB
66.48 ... 68.08 MHz		34.0	38.0	—	dB
Upper sidelobe 77.30 ... 78.60 MHz		28.0	32.0	—	dB
78.60 ... 86.47 MHz		34.0	39.0	—	dB
86.47 ... 91.53 MHz		42.0	46.0	—	dB
91.53 ... 95.21 MHz		44.0	48.0	—	dB
95.21 ... 100.00 MHz		48.0	53.0	—	dB
Group delay ripple (p–p)	$\Delta\tau$				
Aperture 50 kHz $f_N \pm 1.85$ MHz		—	190	—	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)

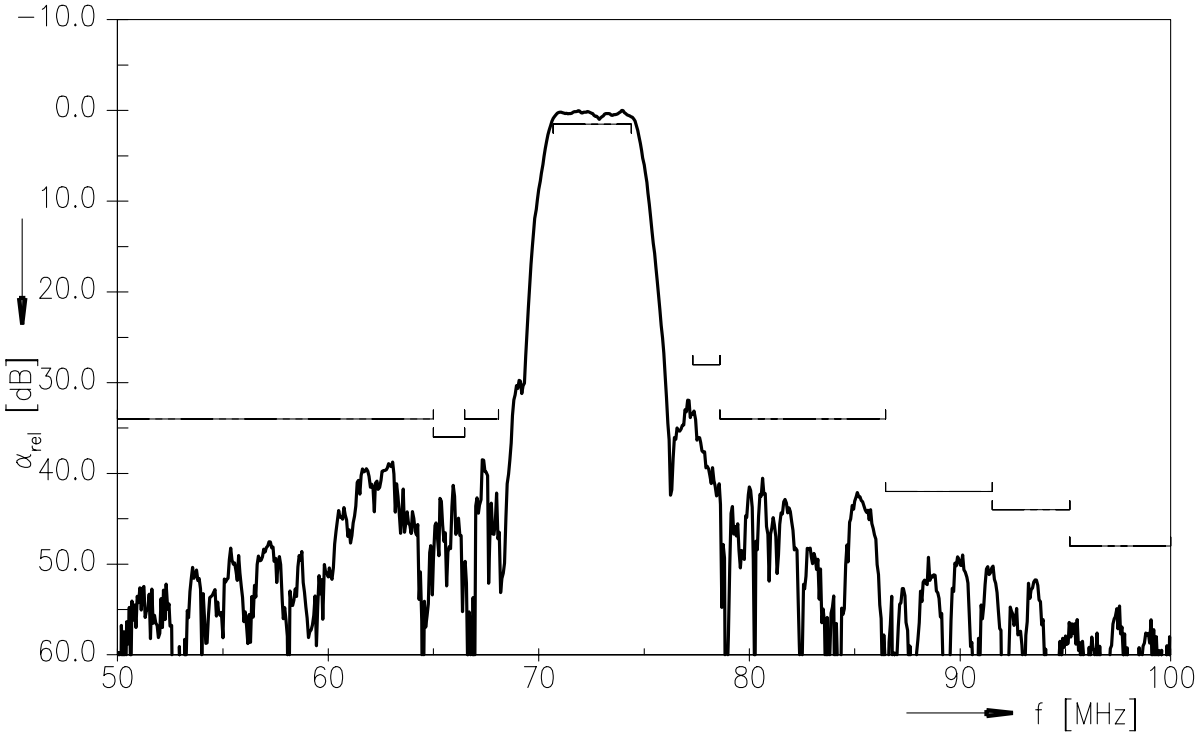


L_{s1} = 620 nH
L_{p2} = 750 nH
L_{s3} = 560 nH

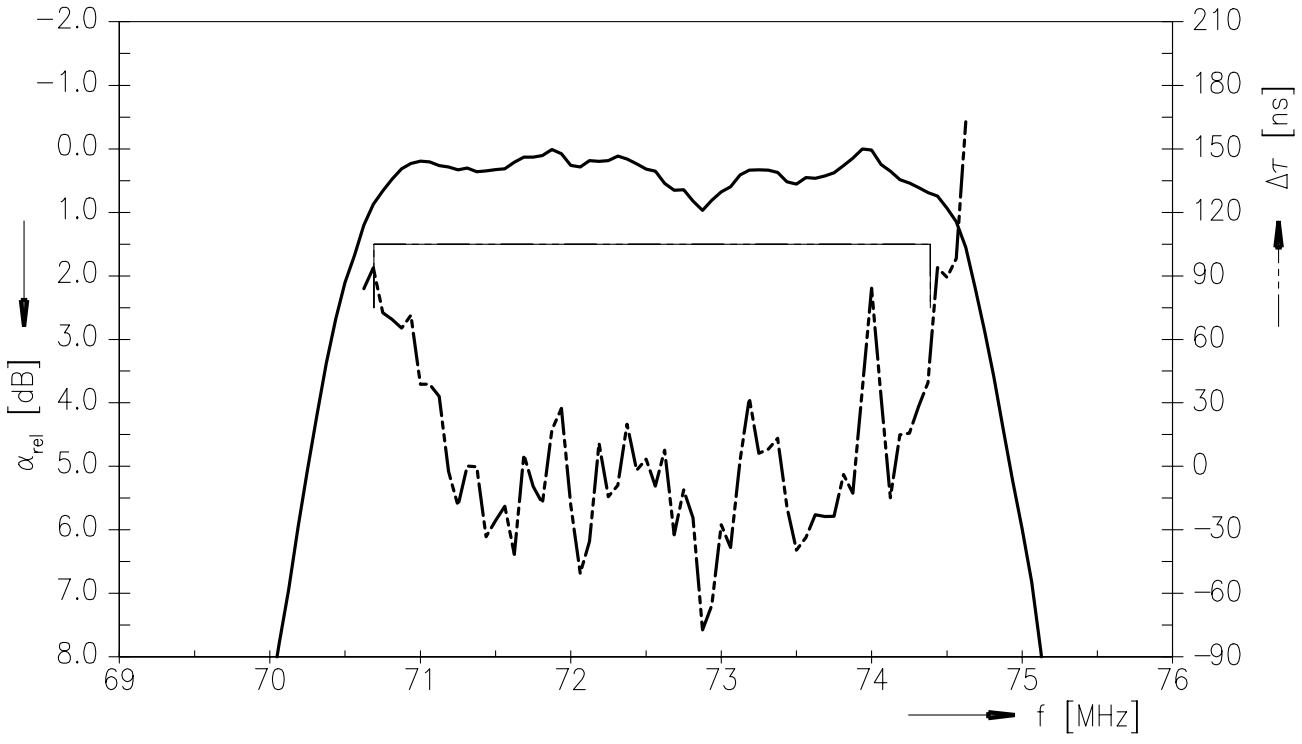
Maximum ratings

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

Transfer function



Transfer function (pass band)



References

Type	B1728
Ordering code	B39725B1728H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	B1728_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 8th, 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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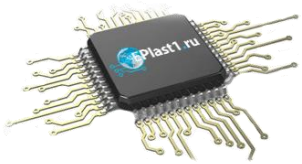

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