SAW Components

SAW IF filter

LTE

Series/type:	**B5204**
Ordering code:	**B39161B5204H810**
Date:	November 17, 2009
Version:	2.1

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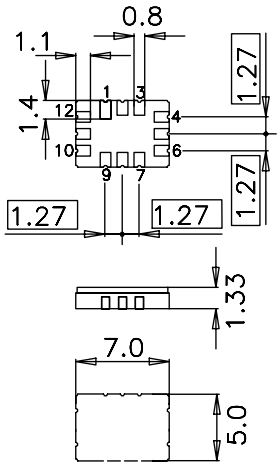
Application

- Low-loss IF filter for LTE base station
- Usable passband 20.0 MHz
- Unbalanced or balanced operation



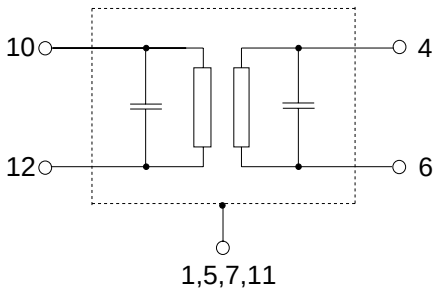
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- RoHS compatible
- Approximate weight 0.25 g
- Ceramic Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- Filter surface passivated



Pin configuration

■	10	Input
■	12	Input ground or balanced input
■	4	Output
■	6	Output ground or balanced output
■	2, 3, 8, 9	To be grounded
■	1, 5, 7, 11	Case ground



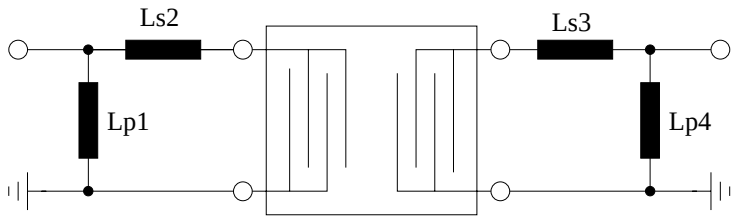
Characteristics

Temperature range for specification: T = –40 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω and matching network
Terminating load impedance: Z_L = 50 Ω and matching network

		min.	typ. @ 25 ˚C	max.	
Nominal frequency	f_N	—	164.0	—	MHz
Minimum insertion attenuation (including matching network)	α_{min}	—	7.5	9.0	dB
Passband width $\alpha_{rel} \leq$ 1.0 dB	$B_{1.0dB}$	20.0	23.8	—	MHz
Amplitude ripple (p-p) $f_N \pm$ 10.0 MHz	$\Delta\alpha$	—	0.2	1.0	dB
Phase ripple (rms) $f_N \pm$ 10.0 MHz	$\Delta\varphi_{rms}$	—	0.5	2.0	°
Group delay ripple (p-p) $f_N \pm$ 10.0 MHz	$\Delta\tau$	—	15	50	ns
Absolute group delay (mean) $f_N \pm$ 10.0 MHz	τ	—	0.5	—	µs
Average Error Vector Magnitude $f_{N, WCDMA}(k)^{1)} \pm$ 1.92 MHz	EVM	—	1.0	4.0	%
Input IP3		40	—	—	dBm
Relative attenuation (relative to α_{min})	α_{rel}				
10 MHz ... 123 MHz		40	65	—	dB
194 MHz ... 1 GHz		40	50	—	dB
Temperature coefficient of frequency	TC_f	—	–87	—	ppm/K

1) $f_{N, WCDMA}(k) = 156.5MHz + k*5MHz$; k = (0,1,2,3)

Matching network to 50 Ω



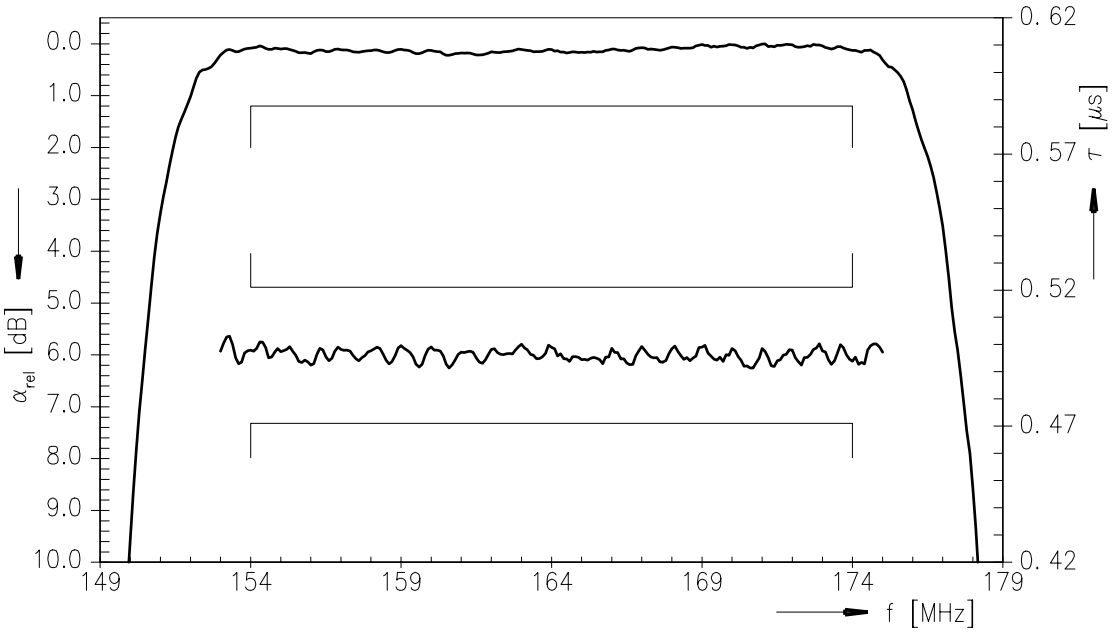
L_{p1} = 33 nH
L_{s2} = 33 nH
L_{s3} = 22 nH
L_{p4} = 33 nH

Element values depend upon board layout and properties.

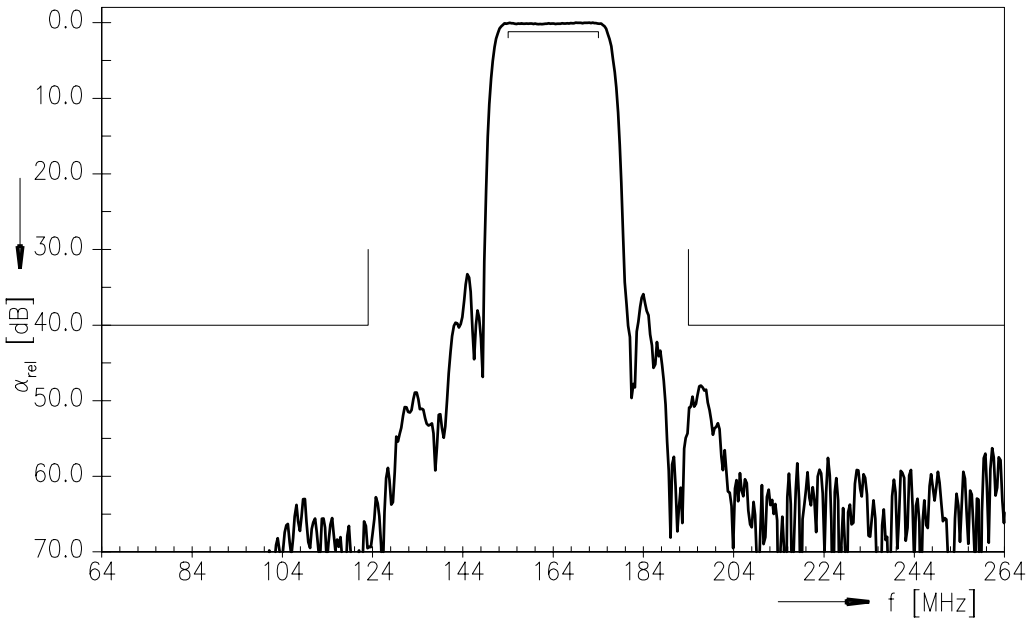
Maximum ratings

Operable temperature range	T	–40/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	0	V	
Input power	P_{IN}	15	dBm	
Input power	P_{IN}	21	dBm	lifetime-test ongoing
Input power (peak)	P_{IN}	22	dBm	for 2 minutes

Transfer function (S21, Narrowband)



Transfer function (S21, Wideband)



References

Type	B5204
Ordering code	B39161B5204H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	B5204_NB.s2p B5204_NB_UN.s4p, B5204_WB_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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