Qualcomm

RF360
Europe GmbH

SAW Components

SAW IF filter

LTE

Series/type:	B5219
Ordering code:	B39191B5219H810
Date:	May 07, 2015
Version:	2.3

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Series/type:	**B5219**
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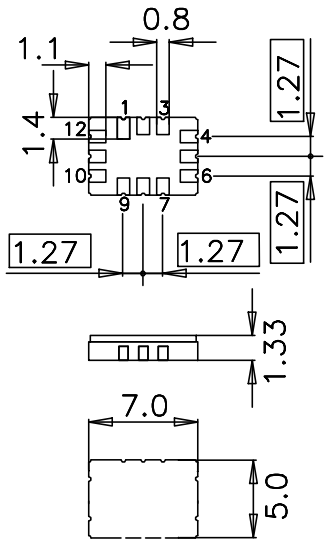
Application

- Low-loss IF filter for LTE base station
- Usable passband 21 MHz
- Unbalanced or balanced operation possible

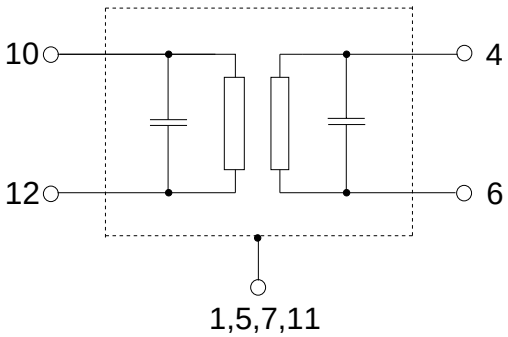
Features

- Package size 7.0 x 5.0 x 1.33 mm^3
- 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 or balanced input
- 12 Input ground or balanced input
- 4 Output or balanced output
- 6 Output ground or balanced output
- 2, 3, 8, 9 To be grounded
- 1, 5, 7, 11 Case ground



Data sheet SMD

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.	
Center frequency	f_C	—	192.0	—	MHz
Minimum insertion attenuation (including matching network)	α_{min}	—	7.9	9.0	dB
Passband width $\alpha_{rel} \leq$ 1.0 dB	$B_{1.0dB}$	21.0	25.4	—	MHz
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm$ 10.5 MHz		—	0.4	1.0	dB
Group delay ripple (p-p)	$\Delta\tau$				
$f_N \pm$ 10.5 MHz		—	35	80	ns
Absolute group delay (mean)	τ				
$f_N \pm$ 10.5 MHz		—	0.6	—	µs
Relative attenuation (relative to α_{min})	α_{rel}				
10.0 MHz ... 170.0 MHz		50	55	—	dB
170.0 MHz ... 175.5 MHz		13	30	—	dB
208.5 MHz ... 214.0 MHz		13	30	—	dB
214.0 MHz ... 223.0 MHz		45	50	—	dB
223.0 MHz ... 1.0 GHz		50	60	—	dB
Temperature coefficient of frequency	TC_f	—	–87	—	ppm/K

Data sheet SMD

Characteristics

Temperature range for specification: T = –40 ˚C to +105 ˚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.	
Center frequency	f_C	—	192.0	—	MHz
Minimum insertion attenuation (including matching network)	α_{min}	—	7.9	9.5	dB
Passband width					
$\alpha_{rel} \leq$ 1.0 dB	$B_{1.0dB}$	21.0	25.4	—	MHz
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm$ 10.5 MHz		—	0.4	1.8	dB
Group delay ripple (p-p)	$\Delta\tau$				
$f_N \pm$ 10.5 MHz		—	35	80	ns
Absolute group delay (mean)	τ				
$f_N \pm$ 10.5 MHz		—	0.6	—	µs
Relative attenuation (relative to α_{min})	α_{rel}				
10.0 MHz ... 170.0 MHz		48	55	—	dB
170.0 MHz ... 175.5 MHz		9	30	—	dB
208.5 MHz ... 214.0 MHz		13	30	—	dB
214.0 MHz ... 223.0 MHz		45	50	—	dB
223.0 MHz ... 1.0 GHz		48	60	—	dB
Temperature coefficient of frequency	TC_f	—	–87	—	ppm/K

Maximum ratings

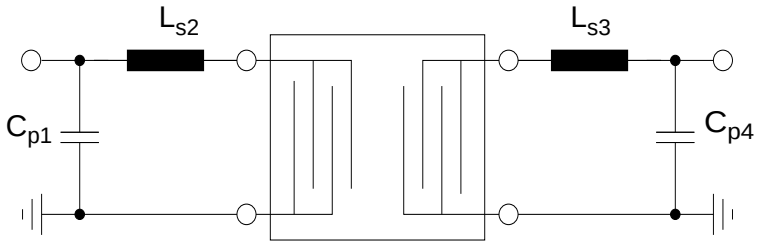
Operable temperature range	T	–40/+105	˚C	
Storage temperature range	T_{stg}	–40/+105	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	300[1)]	V	Machine Model
		600[2)]	V	Human Body Model
		1000[3)]	V	Charged Device Model
Input power	P_{IN}			
181.5 ... 202.5 MHz		10	dBm	
Input power(peak)	P_{IN}			
181.5 ... 202.5 MHz		22	dBm	cw<100 h

1) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

2) acc. to JESD22-A114F (HBM - Human Body Model), 1 negative & 1 positive pulse

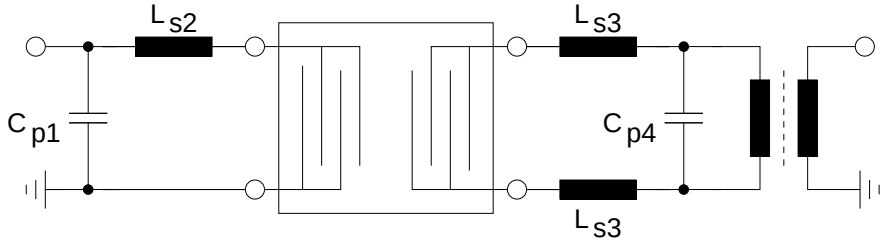
3) acc. to JESD22-C101C (CDM - Field Induced Charged Device Model), 3 negative & 3 positive pulses

Matching network to 50 Ω unbalanced



C_{p1} = 18 pF
L_{s2} = 68 nH
L_{s3} = 82 nH
C_{p4} = 10 pF

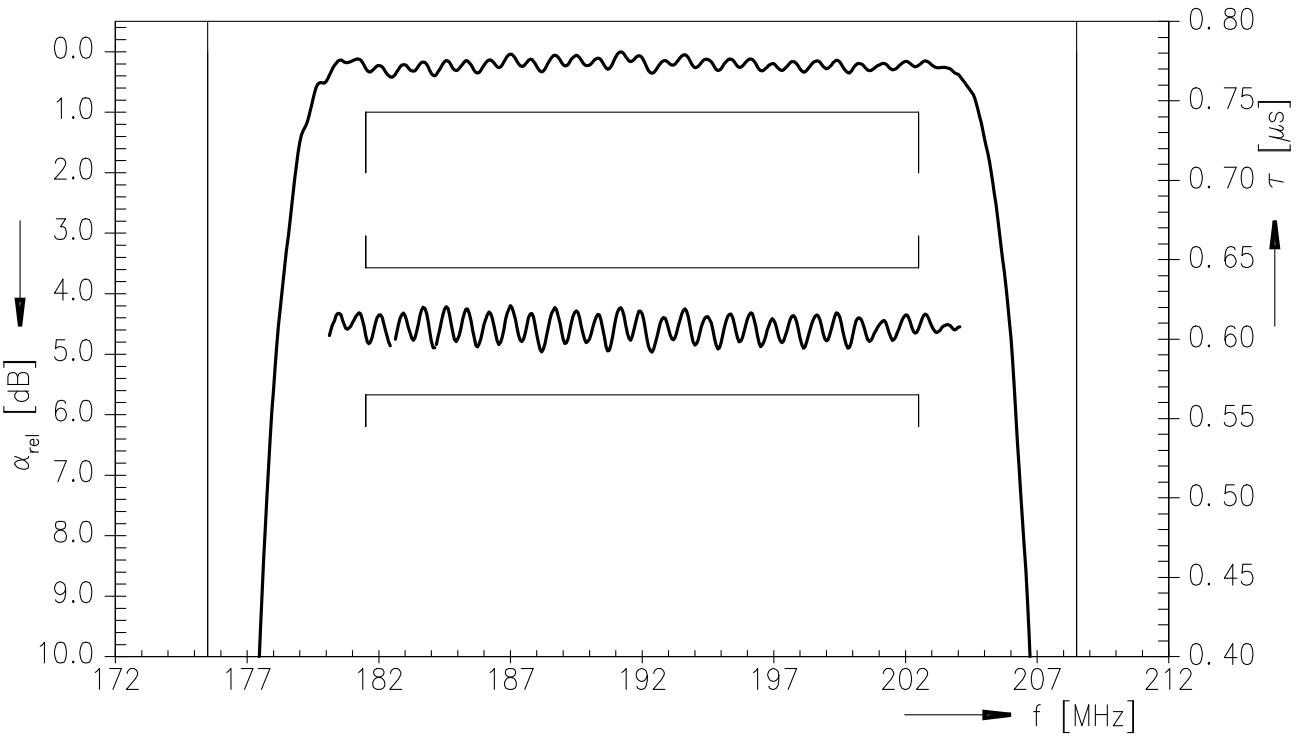
Matching network to 50 Ω unbalanced input and 200 Ω balanced output



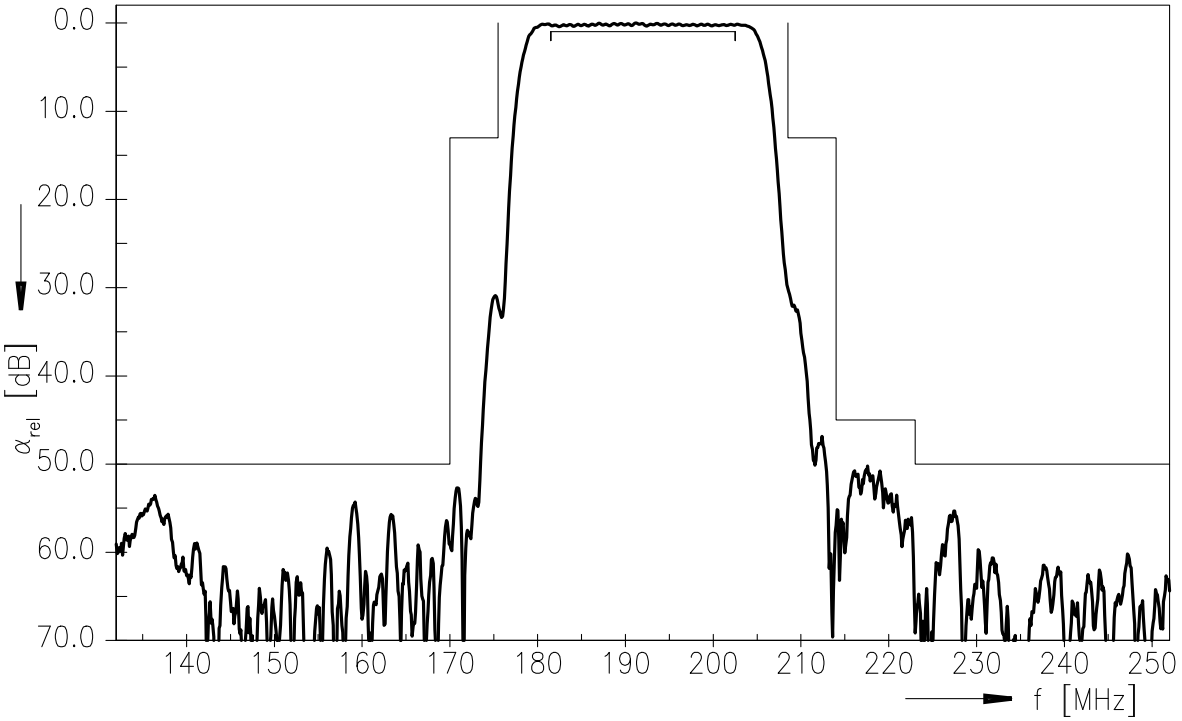
C_{p1} = 18 pF
L_{s2} = 68 nH
L_{s3} = 68 nH
C_{p4} = 6.8 pF

transformer only used for measurement in 50 Ω environment
(element values depend upon board layout and properties)

Transfer function (S21, narrowband)



Transfer function (S21, wideband)



References

Type	B5219
Ordering code	B39191B5219H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	unmatched: B5219_NB_UN.s4p, B5219_WB_UN.s4p matched: B5219_NB.s2p, B5219_WB.s2p 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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