



## **SAW Components**

**SAW IF filter**

LTE

<b>Series/type:</b>	<b>B5219</b>
<b>Ordering code:</b>	<b>B39191B5219H810</b>
<b>Date:</b>	<b>September 07, 2012</b>
<b>Version:</b>	<b>2.1</b>



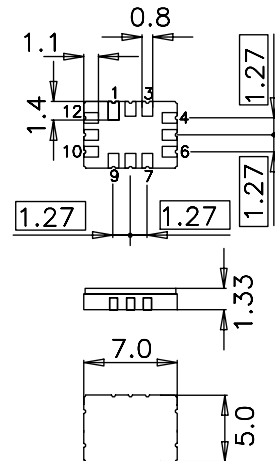
**Application**

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



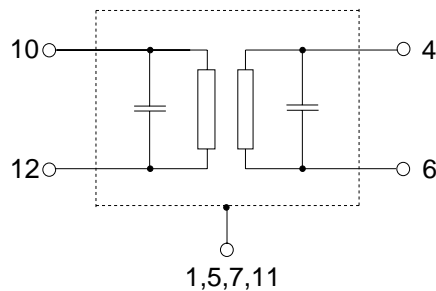
**Features**

- Package size 7.0 x 5.0 x 1.33 mm<sup>3</sup>
- Package code QCC12E
- RoHS compatible
- Approximate weight 0.25 g
- Ceramic Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (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





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**192.0 MHz**

Data sheet



**Characteristics**

Temperature range for specification:  $T = -40\text{ °C to }+85\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$  unbalanced and matching network  
 Terminating load impedance:  $Z_L = 50\ \Omega$  unbalanced and matching network

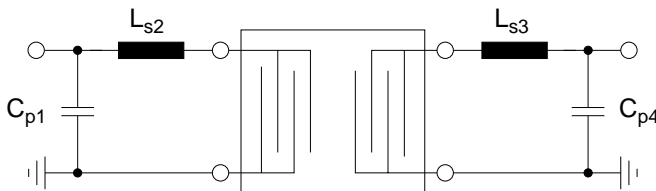
		min.	typ. @ 25 °C	max.	
<b>Nominal frequency</b>	$f_N$	—	192.0	—	MHz
<b>Minimum insertion attenuation</b> (including matching network)	$\alpha_{\min}$	—	7.9	9.0	dB
<b>Passband width</b>					
	$\alpha_{\text{rel}} \leq 1.0\text{ dB}$	$B_{1.0\text{dB}}$	21.0	25.4	— MHz
<b>Amplitude ripple (p-p)</b>					
	$f_N \pm 10.5\text{ MHz}$	$\Delta\alpha$	—	0.4	1.0 dB
<b>Group delay ripple (p-p)</b>					
	$f_N \pm 10.5\text{ MHz}$	$\Delta\tau$	—	35	80 ns
<b>Absolute group delay (mean)</b>					
	$f_N \pm 10.5\text{ MHz}$	$\tau$	—	0.6	— $\mu\text{s}$
<b>Relative attenuation (relative to <math>\alpha_{\min}</math>)</b>					
	$\alpha_{\text{rel}}$				
	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
<b>Temperature coefficient of frequency</b>	$TC_f$	—	-87	—	ppm/K



Data sheet

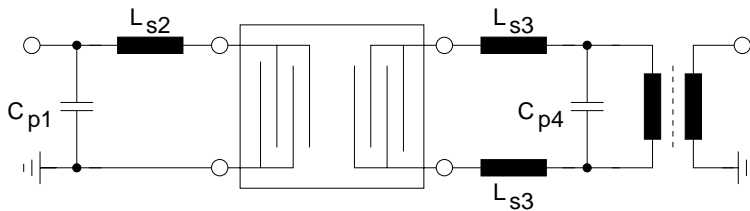


Matching network to 50 Ω unbalanced



- $C_{p1} = 18 \text{ pF}$
- $L_{s2} = 68 \text{ nH}$
- $L_{s3} = 82 \text{ nH}$
- $C_{p4} = 10 \text{ pF}$

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



- $C_{p1} = 18 \text{ pF}$
- $L_{s2} = 68 \text{ nH}$
- $L_{s3} = 68 \text{ nH}$
- $C_{p4} = 6.8 \text{ pF}$

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

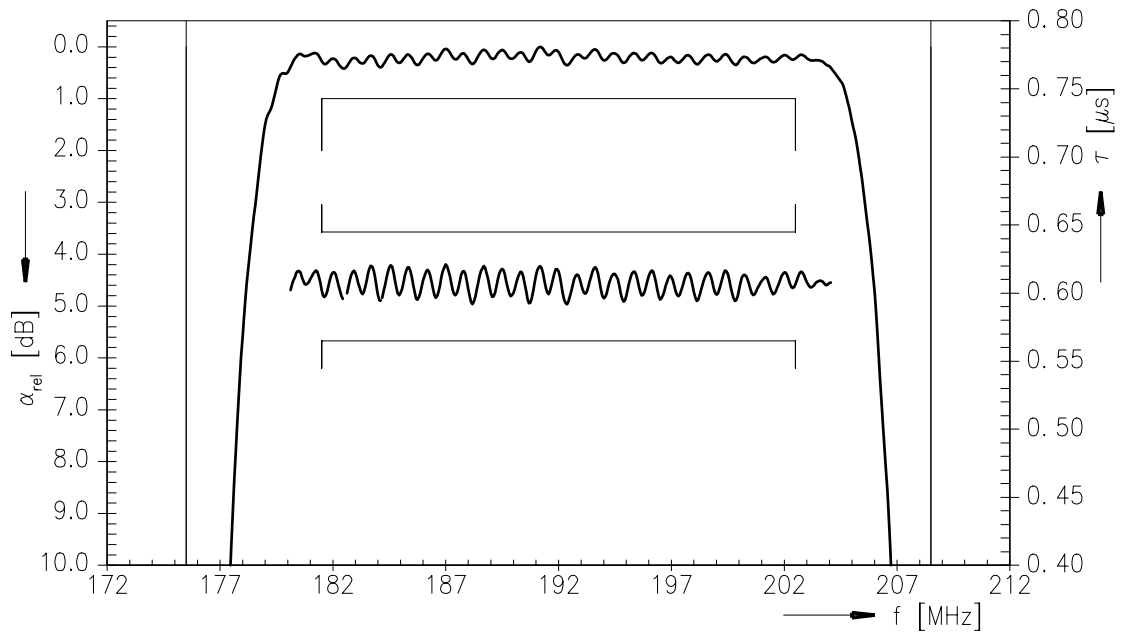
Maximum ratings

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	0	V	
ESD voltage	V <sub>ESD</sub>	1000 <sup>1)</sup>	V	charged device model, 3 pulses
Input power	P <sub>IN</sub>	10	dBm	
Input power (peak)	P <sub>IN</sub>	22	dBm	cw < 100 hours

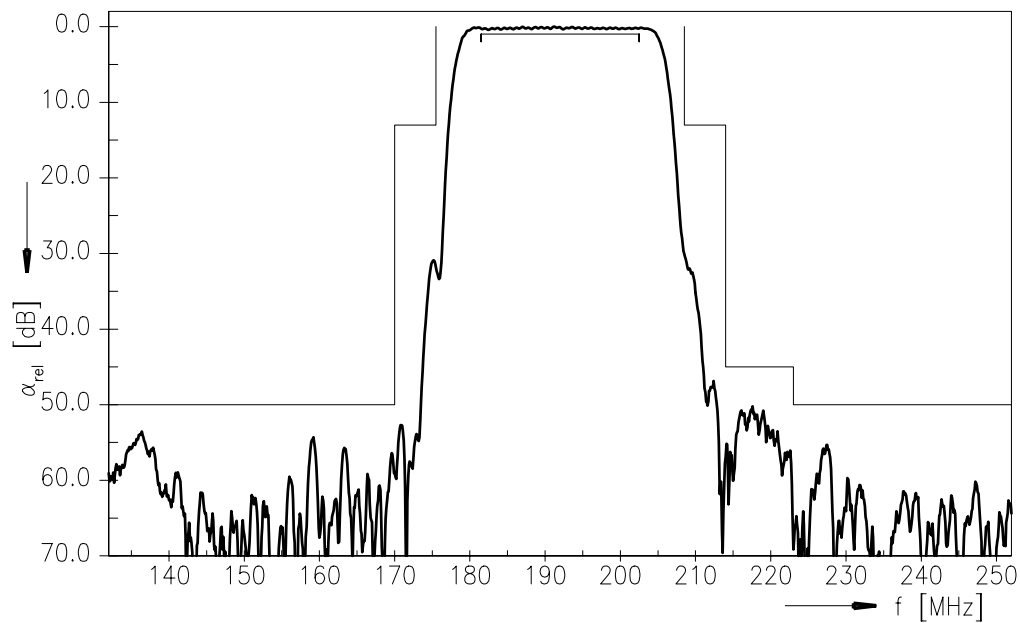
<sup>1)</sup> acc. to JESD22-C101E (charged device model), 3 negative & 3 positive pulses.



Transfer function (S21, narrowband, normalized)



Transfer function (S21, wideband, normalized)



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Data sheet

**References**

<b>Type</b>	B5219
<b>Ordering code</b>	B39191B5219H810
<b>Marking and package</b>	C61157-A7-A103
<b>Packaging</b>	F61074-V8170-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	unmatched: B5219_NB_UN.s4p, B5219_WB_UN.s4p matched: B5219_NB.s2p, B5219_WB.s2p See file header for port/pin assignment table
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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."
<b>Matching coils</b>	See Inductor pdf-catalog <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> and Data Library for circuit simulation <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a>

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