



SAW Components

SAW IF filter

LTE

Series/type:	B5220
Ordering code:	B39171B5220H810
Date:	September 07, 2012
Version:	2.1



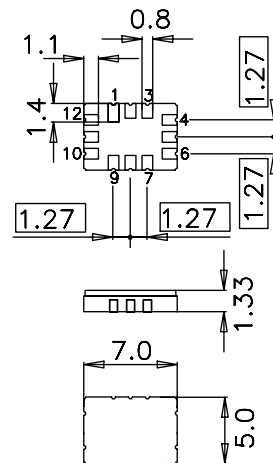
Application

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



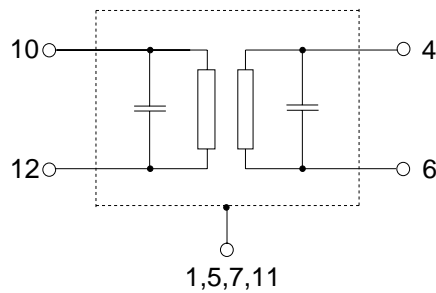
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- RoHS compatible
- Approximate weight 0.25 g
- Ceramic Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (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





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172.8 MHz

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Characteristics

Temperature range for specification:

T = -40 °C to +85 °C

Terminating source impedance:

Z_S = 200 Ω balanced and matching network

Terminating load impedance:

Z_L = 150 Ω balanced and matching network

		min.	typ. @ 25 °C	max.	
Nominal frequency	f _N	—	172.8	—	MHz
Minimum insertion attenuation (including matching network)	α _{min}	—	9.4	10.5	dB
Passband width					
	α _{rel} ≤ 1.0 dB	B _{1.0dB}	21.0	26.0	— MHz
Amplitude ripple (p-p)					
	f _N ± 10.5 MHz	Δα	—	0.4	1.0 dB
Group delay ripple (p-p)					
	f _N ± 10.5 MHz	Δτ	—	25	60 ns
Phase ripple (p-p)					
	f _N ± 10.5 MHz	Δφ	—	3.0	10 °
Phase ripple (rms)					
	f _N ± 10.5 MHz	Δφ _{rms}	—	0.7	— °
Absolute group delay (mean)					
	f _N ± 10.5 MHz	τ̄	—	0.72	— μs
Relative attenuation (relative to α_{min})					
	α _{rel}				
	10.0 MHz ... 145.0 MHz	50	57	—	dB
	145.0 MHz ... 153.5 MHz	10	36	—	dB
	200.0 MHz ... 1.0 GHz	50	58	—	dB
Temperature coefficient of frequency	TC _f	—	-87	—	ppm/K



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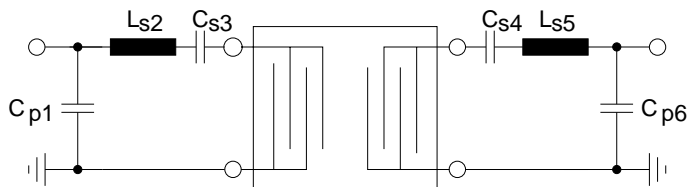
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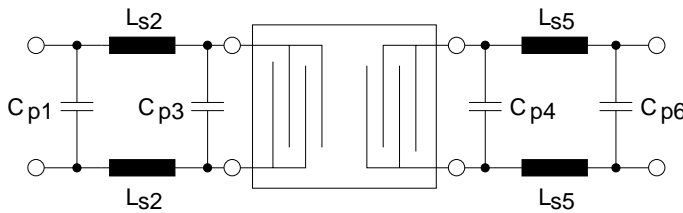


Matching network to 50 Ω



- $C_{p1} = 22 \text{ pF}$
- $L_{s2} = 100 \text{ nH}$
- $C_{s3} = 33 \text{ pF}$
- $C_{s4} = 33 \text{ pF}$
- $L_{s5} = 82 \text{ nH}$
- $C_{p6} = 22 \text{ pF}$

Matching network to 200 Ω input and 150 Ω output



- $C_{p1} = 15 \text{ pF}$
- $L_{s2} = 56 \text{ nH}$
- $C_{p3} = 1.5 \text{ pF}$
- $C_{p4} = 1.0 \text{ pF}$
- $L_{s5} = 43 \text{ nH}$
- $C_{p6} = 12+3.9 \text{ pF}$

(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	
ESD voltage	V _{ESD}	1000 ¹⁾	V	charged device model, 3 pulses
Input power	P _{IN}	10	dBm	
Input power (peak)	P _{IN}	22	dBm	cw < 100 hours

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



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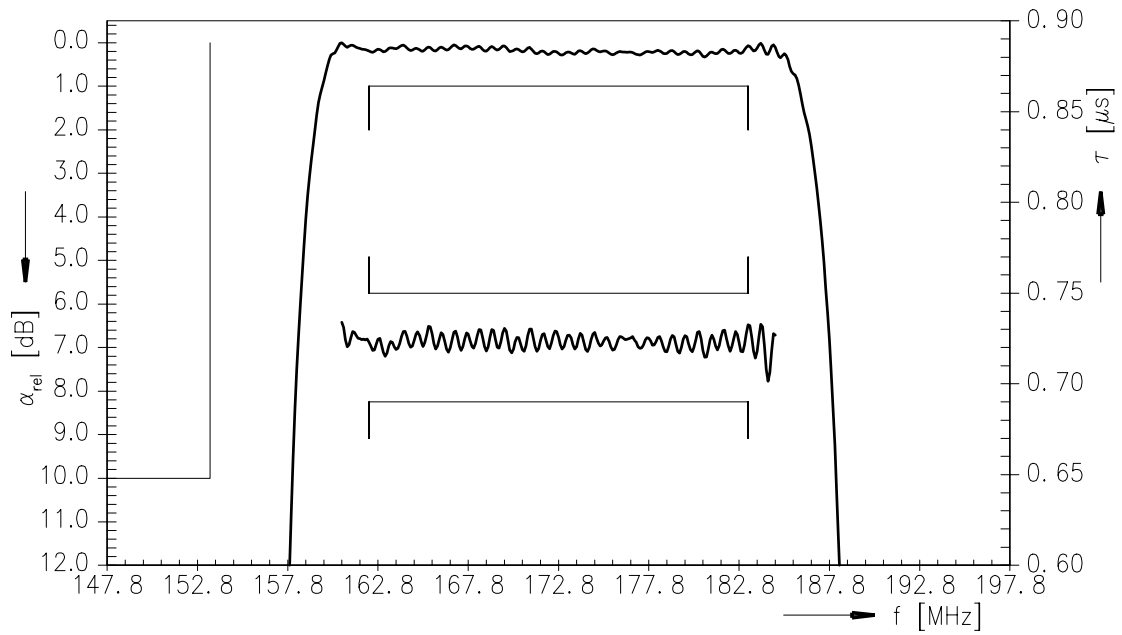
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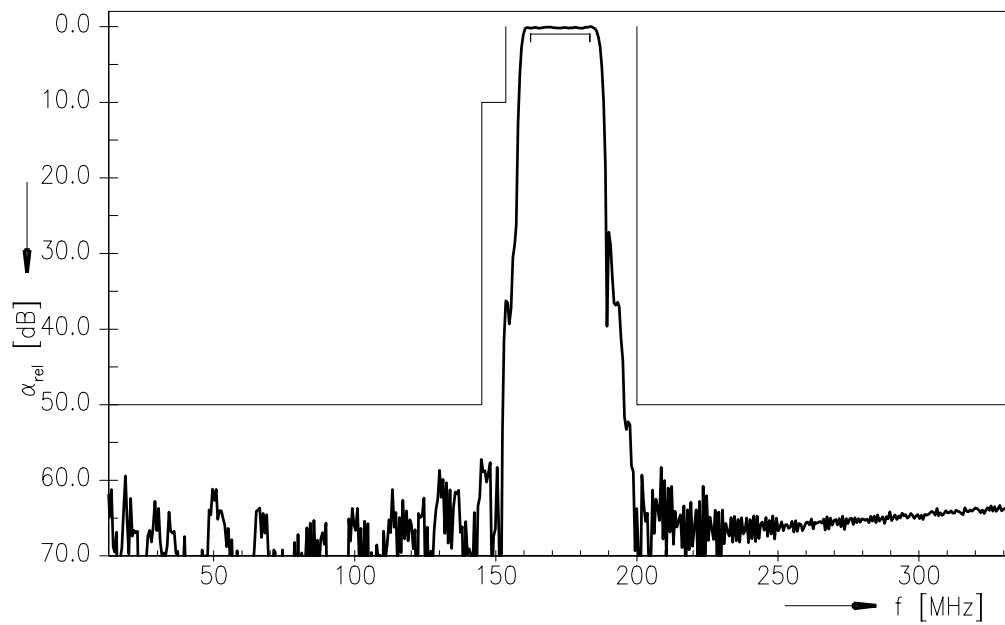
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Transfer function (S21, narrowband, normalized)



Transfer function (S21, wideband, normalized)



Please read *cautions and warnings* and *important notes* at the end of this document.



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References

Type	B5220
Ordering code	B39171B5220H810
Marking and package	C61157-A7-A103
Packaging	F61074-V8170-Z000
Date codes	L_1126
S-parameters	
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."
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

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Published by EPCOS AG
Systems, Acoustics, Waves Business Group
P.O. Box 80 17 09, 81617 Munich, GERMANY

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