SAW Components

SAW IF filter

LTE

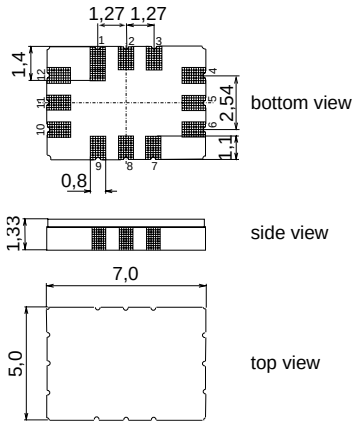
Series/type:	**B5215**
Ordering code:	**B39361B5215H810**
Date:	January 27, 2010
Version:	2.0

Application

- Low-loss IF filter for LTE base station
- Usable passband 19.2 MHz
- High stopband attenuation
- Balanced or unbalanced operation possible

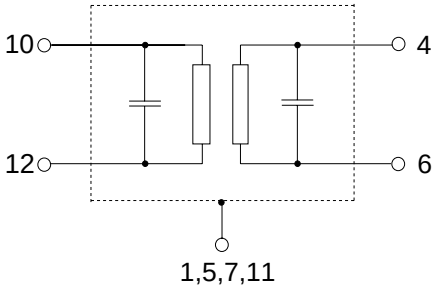
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- RoHS compatible
- Approx. 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, 12	Balanced Input
■	4	Balanced output or single ended output
■	6	Balanced output or output ground
■	2, 3, 8, 9	To be grounded
■	1, 5, 7, 11	Case ground



Characteristics

Operating temperature range: T = -33 to 85 °C
Terminating source impedance: Z_S = 200 Ω bal. and matching network
Terminating load impedance: Z_L = 200 Ω bal. and matching network

		min.	typ. @ 25 °C	max.	
Nominal frequency	f_N	—	358.4	—	MHz
Minimum insertion attenuation (including matching network)	α_{min}	—	11.0	12.5	dB
Passband width $\alpha_{rel} \le 1.0$ dB	$B_{1.0dB}$	19.2	22.9	—	MHz
Amplitude ripple (p-p) $f_N \pm 9.6$ MHz	$\Delta\alpha$	—	0.4	1.0	dB
Phase ripple (p-p) $f_N \pm 9.6$ MHz	$\Delta\varphi$	—	4.0	—	°
Phase ripple (rms) $f_N \pm 9.6$ MHz	$\Delta\varphi$	—	1.2	—	°
Group delay ripple (p-p) $f_N \pm 9.6$ MHz	$\Delta\tau$	—	30	100	ns
Absolute group delay mean within $f_N \pm 9.6$ MHz	τ_{mean}	—	0.57	0.60	µs
EVM QPSK signal (3.84 MHz) within passband		—	1	3	%
Relative attenuation (relative to α_{min})	α_{rel}				
$f_N \pm$ 15.0 ... $f_N \pm$ 16.0 MHz		5	10	—	dB
$f_N \pm$ 16.0 ... $f_N \pm$ 16.6 MHz		10	20	—	dB
$f_N \pm$ 16.6 ... $f_N \pm$ 17.2 MHz		15	25	—	dB
$f_N \pm$ 17.2 ... $f_N \pm$ 17.7 MHz		20	30	—	dB
$f_N \pm$ 17.7 ... $f_N \pm$ 23.0 MHz		25	35	—	dB
$f_N \pm$ 23.0 ... $f_N \pm$ 30.7 MHz		30	40	—	dB
$f_N \pm$ 30.7 ... $f_N \pm$ 51.0 MHz		40	50	—	dB
$f_N -$ 300.0 ... $f_N -$ 51.0 MHz		60	65 [1)]	—	dB
$f_N +$ 51.0 ... $f_N +$ 300.0 MHz		55	60 [1)]	—	dB
530.0 ... 555.0 MHz		65	70 [1)]	—	dB

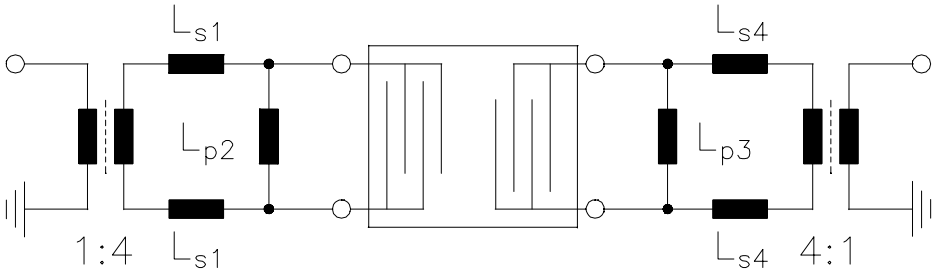
		min.	typ. @ 25 ˚C	max.	
Time side-lobe response attenuation					
>1µs after main pulse		40 [2]	60	—	dB
Return loss	Δα				
input	$f_N \pm 9.6$ MHz	—	10	—	dB
output	$f_N \pm 9.6$ MHz	—	14	—	dB
Temperature coefficient of frequency	TC_f	—	–18	—	ppm/K

[1] Ultimate rejection is limited by electromagnetic feedthrough which depends upon PCB layout
[2] Apart from triple transit peak around 1.7µs which may reach up to 39dB

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 (passband)	P_{IN}	19	dBm	24 hours at 50˚C
Input power (stopband > 10 dBc)	P_{IN}	25	dBm	24 hours at 50˚C

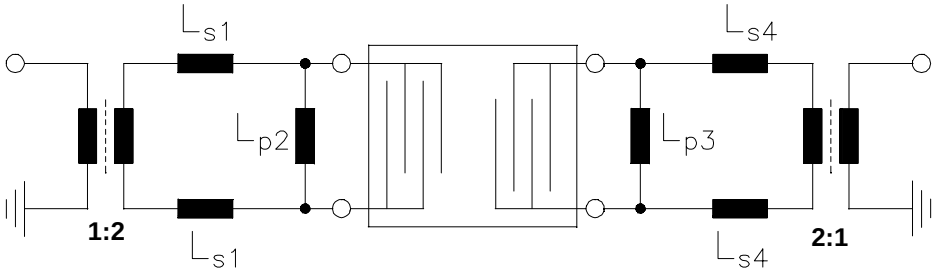
Matching network to 200 Ω



L_{s1} = 18 nH
L_{p2} = 22 nH
L_{p3} = 18 nH || 220 nH
L_{s4} = 0 nH

Element values depend upon PCB properties and layout.
Transformers are only required for measurement in a 50Ω system.

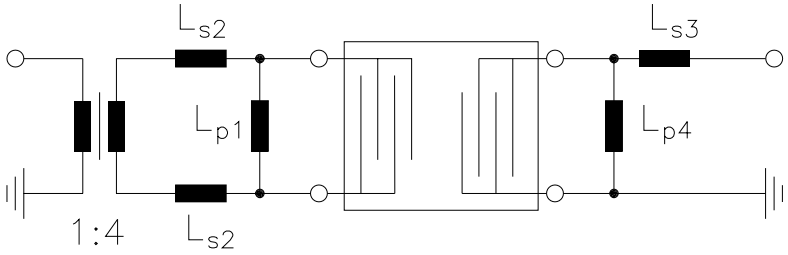
Alternative matching network to 100 Ω



L_{s1} = 15 nH
L_{p2} = 27 nH
L_{p3} = 18 nH
L_{s4} = 8.2 nH

Element values depend upon PCB properties and layout.
Transformers are only required for measurement in a 50Ω system.

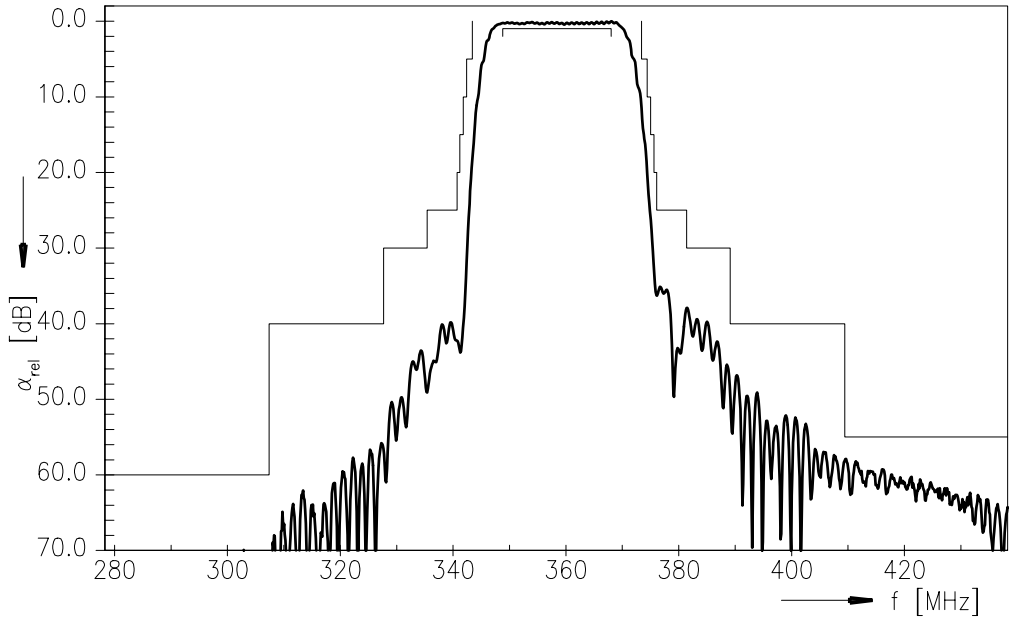
Alternative matching network to 200 Ω (input) and 50 Ω (output)



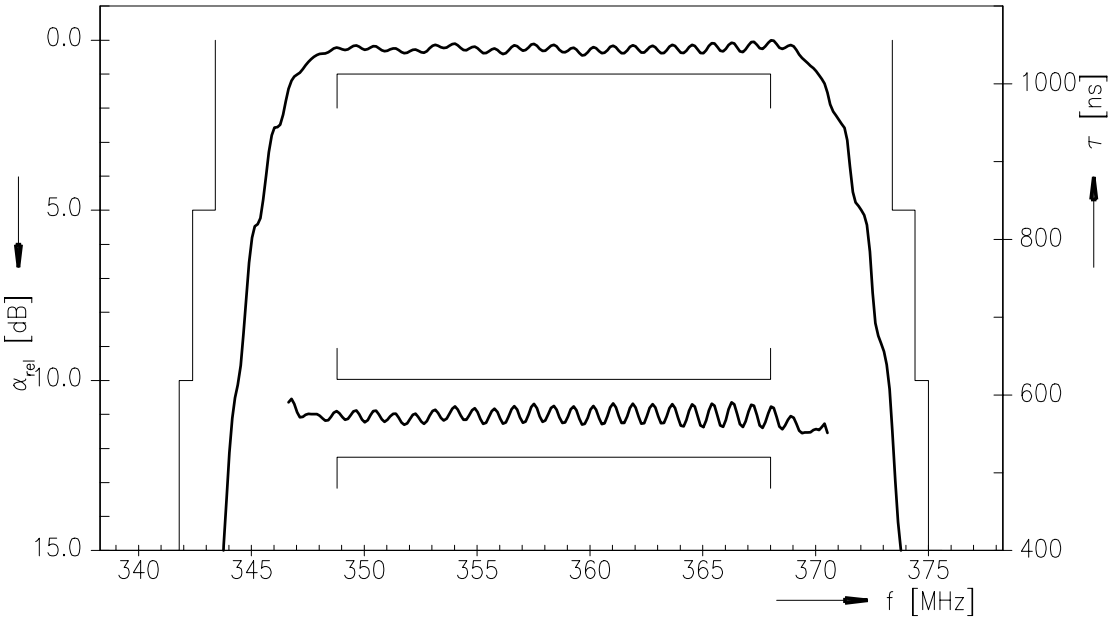
L_{s2} = 18 nH
L_{p1} = 22 nH
L_{p4} = 22 nH
L_{s3} = 33 nH

Element values depend upon PCB properties and layout.
Transformer is only required for measurement in a 50Ω system.

Transfer function



Transfer function (passband)



References

Type	B5215
Ordering code	B39361B5215H810
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."

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