SAW Components

SAW Filter

GSM/EDGE

Series/Type:	**B5011**
Ordering code:	**B39461-B5011-H810**
Date:	Nov 28, 2005
Version:	4

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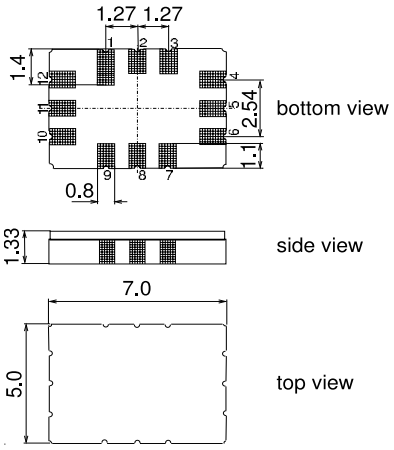
Application

- Low-loss IF filter for WiMAX
- Usable bandwidth 3.7 MHz
- Ceramic SMD package



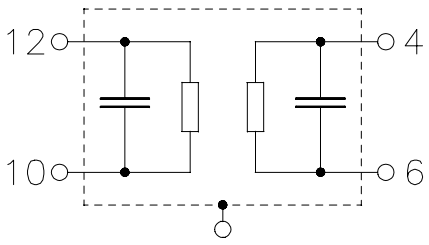
Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- RoHS compatible
- Approx. weight 0.2 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals



Pin configuration

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



Characteristics

Operating temperature range: T = –40 ˚C to +85 ˚C
Terminating source impedance: Z_S = 200 Ω balanced and matching network
Terminating load impedance: Z_L = 200 Ω balanced and matching network

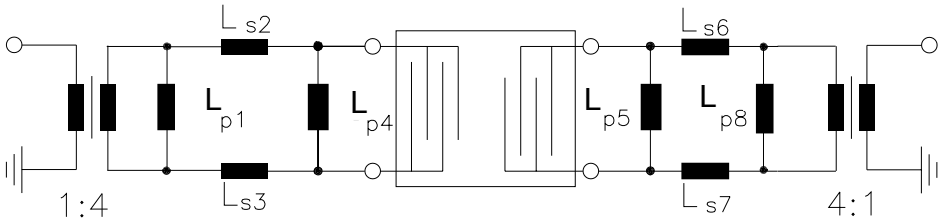
		min.	typ.	max.	
Nominal frequency	f_N	—	456.00	—	MHz
Minimum insertion attenuation[1] (including matching network)	α_{min}	—	8.5	10.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N \pm 1.7$ MHz		—	0.6	1.0	dB
$f_N \pm 1.85$ MHz		—	1.5	3.0	dB
Absolute group delay (at f_N)	τ	—	0.55	3.0	µs
Group delay ripple (p-p)	$\Delta\tau$				
$f_N \pm 1.7$ MHz		—	120	250	ns
Return loss $f_N \pm 1.7$ MHz Input		8	12	—	dB
Output		10	14	—	dB
Impulse response attenuation (Time/Height values are relative to the main time response lobe)					
1-2 µs		20	30	—	dB
2-3 µs		35	38	—	dB
> 3 µs		45	49	—	dB
Relative attenuation (relative to α_{min})	α_{rel}				
1 MHz ... 256 MHz		30	70	—	dB
256 MHz ... 360 MHz		40	70	—	dB
360 MHz ... 416.0 MHz		50	64	—	dB
416 MHz ... 452.65 MHz		40	46	—	dB
459.35 MHz ... 656 MHz		40	44	—	dB
656 MHz ... 946 MHz		30	44	—	dB
Temperature coefficient of frequency[2]	TC_f	—	–0.036	—	ppm/K²
Turnover temperature	T_0	—	20	—	˚C

1) Could increase up to 10,8 dB with single ended matching network at 50 Ω
2) Temperature dependance of f_c: $f_c(T_A) = f_c(T_0)(1 + TC_f(T_A - T_0)^2)$

Matching network to 200 Ω balanced

4:1 transformers are only required for measurement in a 50 Ω environment

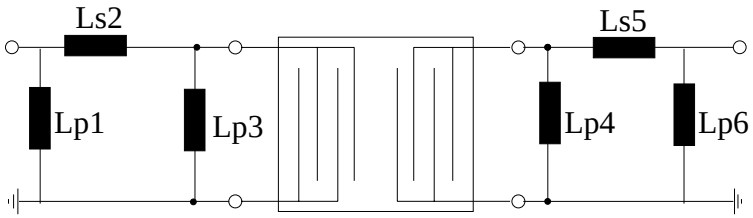
(element values depend on PCB layout)



L_{p1} = 100 nH L_{p4} = 22 nH L_{s6} = L_{s7}= 18 nH

L_{s2} = L_{s3}= 33 nH L_{p5}= 27 nH L_{p8} = 62 nH

Matching network to 50 Ω single ended(element values depend on PCB layout)



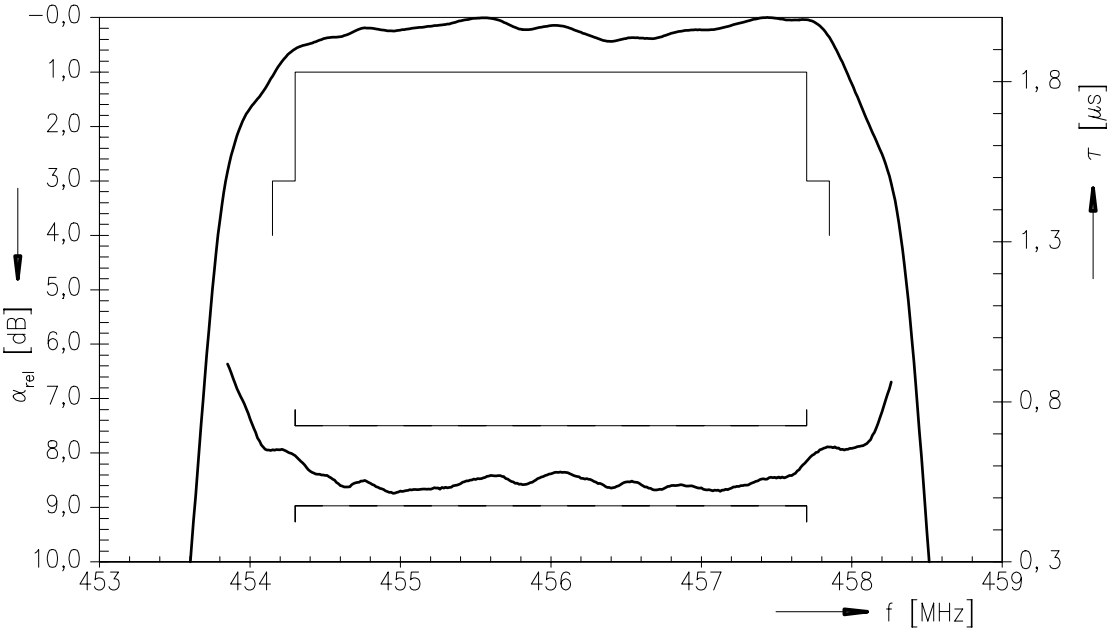
L_{p1} not used**;** L_{s2} = 47nH; L_{p3} = 18 nH L_{p4} = 22nH; L_{s5}=47nH; L_{p6}=47nH

Maximum ratings

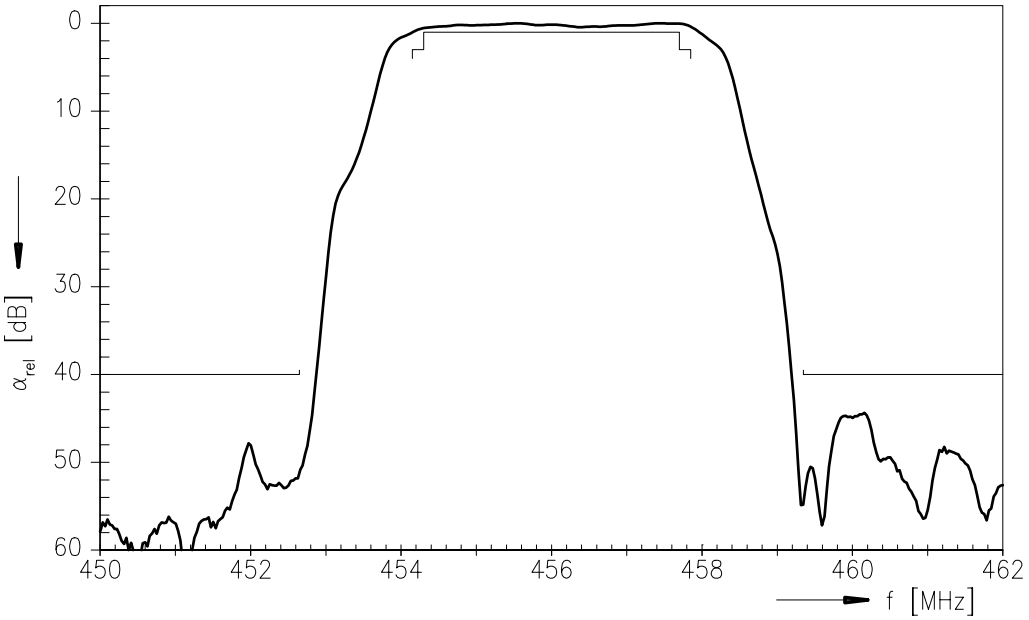
Operable temperature range	T	–40/+80	°C	
Storage temperature range	T_{stg}	–40/+85	°C	
DC voltage	V_{DC}	5	V	between input, output and ground
DC voltage	V_{DC}	0	V	between 10, 12 and between 4,6
ESD voltage	V_{ESD}	200[1)]	V	machine model, 1 pulse
Input power	P_{IN}	10	dBm	

1) acc. to J-STD22A-0115A (machine model, 1 pulse +/-).

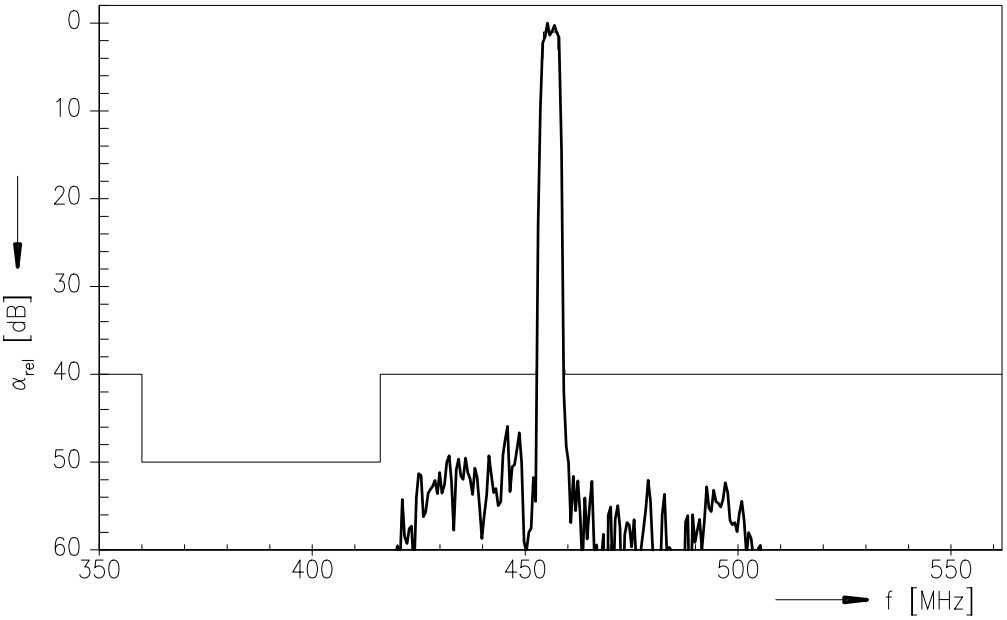
Transfer function



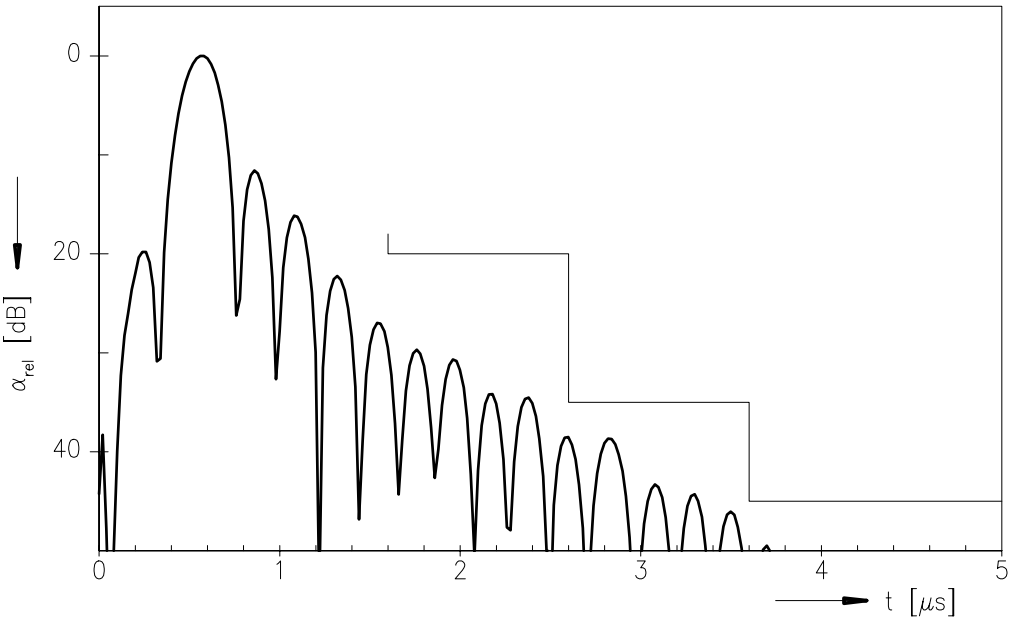
Transfer function (wideband



Normalized transfer function



Transfer function (Impulse response)



Type	B5011	
Ordering code	B39461-B5011-H810	
Marking and Package	C61157-A7-A103	
Packaging	F61074-V8170-Z000	
Date Codes		
S-Parameters		
Soldering profile	S_6001	

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com .

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