EPCOS

SAW Components

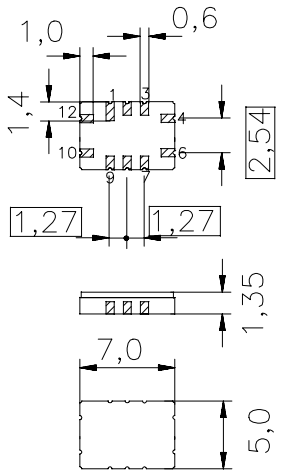
Data Sheet B4870

Features

- Low-loss IF filter for mobile telephone
- Channel selection in AMPS/D-AMPS systems
- Filter surface passivated
- Low group delay variation
- Balanced or unbalanced operation possible
- Package for **S**urface **M**ounted **T**echnology (**SMT**)

Terminals

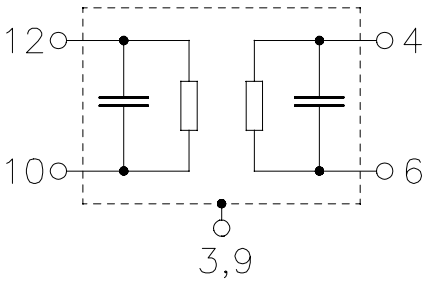
Ceramic package **QCC12B**



Dimesions in mm, approx. weight 0,23 g

Pin configuration

12	Input
6	Output
10	Balanced input or input ground
4	Balanced output or output ground
3,9	To be grounded
1,2,7,8	Not connected



Type	Ordering code	Marking and Package according to	Packing according to
B4870	B39111-B4870-Z910	C61157-A7-A49	F61064-V8035-Z000

Electrostatic **S**ensitive **D**evice (**ESD**)

Maximum ratings

Operable temperature range	T	– 30/+ 85	˚C
Storage temperature range	T_{stg}	– 40/+ 85	˚C
DC voltage	V_{DC}	13	V
Source power	P_s	10	dBm

Characteristics

Terminating source impedance: Z_S 1020 Ω || -1,2 pF
Terminating load impedance: Z_L 1000 Ω || -1,1 pF
Operating temperature range: T = -30˚C ... +85˚C

		min.	typ.	max.	
Nominal center frequency	f_N	—	112,32	—	MHz
Minimum insertion attenuation including losses in the matching network	α_{min}	—	4,0	5,5	dB
3 dB bandwidth (from f_N)		± 15	—	—	kHz
Group delay ripple (p-p)	$\Delta\tau$				
f_N – 15,0 kHz ... f_N + 15,0 kHz		—	1,5	6,5	µs
Relative attenuation (relative to α_{min})	α_{rel}				
f_N – 15,0 kHz ... f_N + 15,0 kHz		—	1,0	3,0	dB
f_N ± 60,0 kHz ... f_N ± 120,0 kHz		13	22	—	dB
f_N ± 120,0 kHz ... f_N ± 240,0 kHz		43	46	—	dB
f_N ± 240,0 kHz ... f_N ± 330,0 kHz		45	60	—	dB
f_N ± 330,0 kHz ... f_N ± 480,0 kHz		45	60	—	dB
f_N ± 480,0 kHz ... f_N ± 660,0 kHz		45	60	—	dB
Temperature coefficient of frequency [1]	TC_f	—	– 0,03	—	ppm/K²
Turnover temperature	T_0	—	24	—	˚C

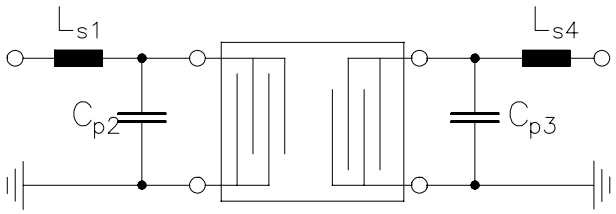
Operating temperature : T = room temperature

		min.	typ.	max.	
Minimum insertion attenuation	α_{min}	—	4,0	5,1	dB
including losses in the matching network					
Group delay ripple (p-p)	$\Delta\tau$				
f_N – 15,0 kHz ... f_N + 15,0 kHz		—	1,5	5,6	µs
Relative attenuation (relative to α_{min})	α_{rel}				
f_N ± 60,0 kHz ... f_N ± 120,0 kHz		18	25	—	dB
f_N ± 120,0 kHz ... f_N ± 240,0 kHz		46	50	—	dB
f_N ± 240,0 kHz ... f_N ± 330,0 kHz		65	60	—	dB

[1] Temperature dependance of f_c: $f_c(T) = f_c(T_0)(1 + TC_f(T - T_0)^2)$

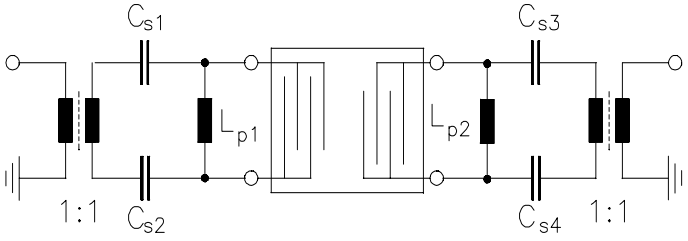
Recommended pin configuration / test matching network to 50 Ω:

single-ended / single-ended



Input: Pin 12
Output: Pin 6
L_{s1} = 330 nH
C_{p2} = 2,7 pF
C_{p3} = 2,7 pF
L_{s4} = 330 nH

balanced / balanced



Input: Pin 12
Output: Pin 6
C_{s1} = 12 pF
C_{s2} = 12 pF
L_{p1} = 270 nH
L_{p2} = 270 nH
C_{s3} = 12 pF
C_{s4} = 12 pF

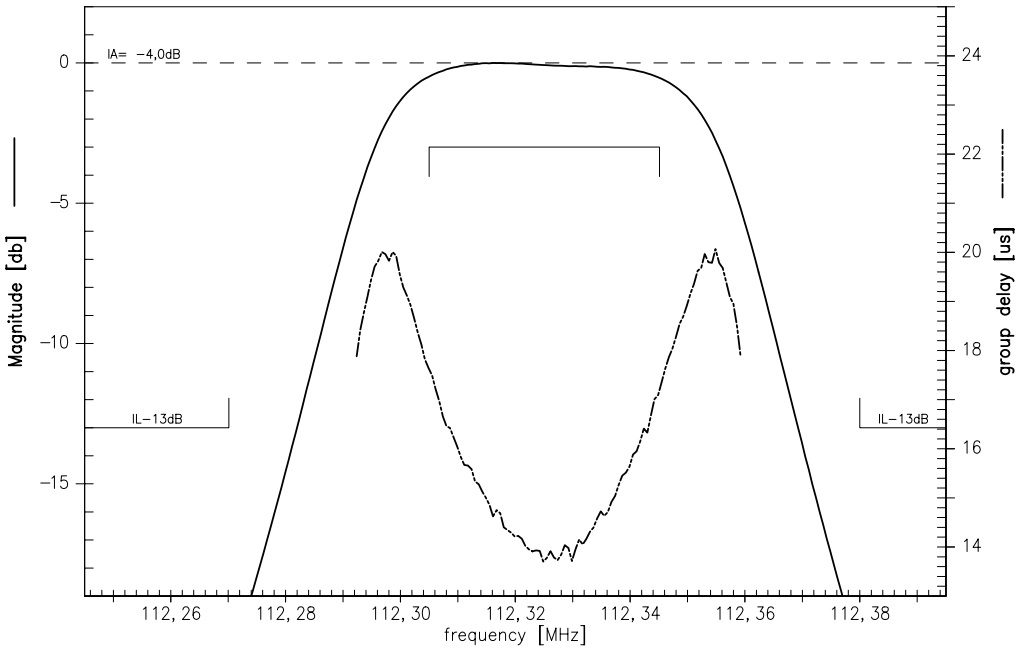
Note :

The balanced network is realized using TOKO 1:1 balun B5FL. The insertion attenuation of a balun is 0,6 dB at 112,32 MHz. The loss of the balun is not included in the specified filter insertion attenuation.

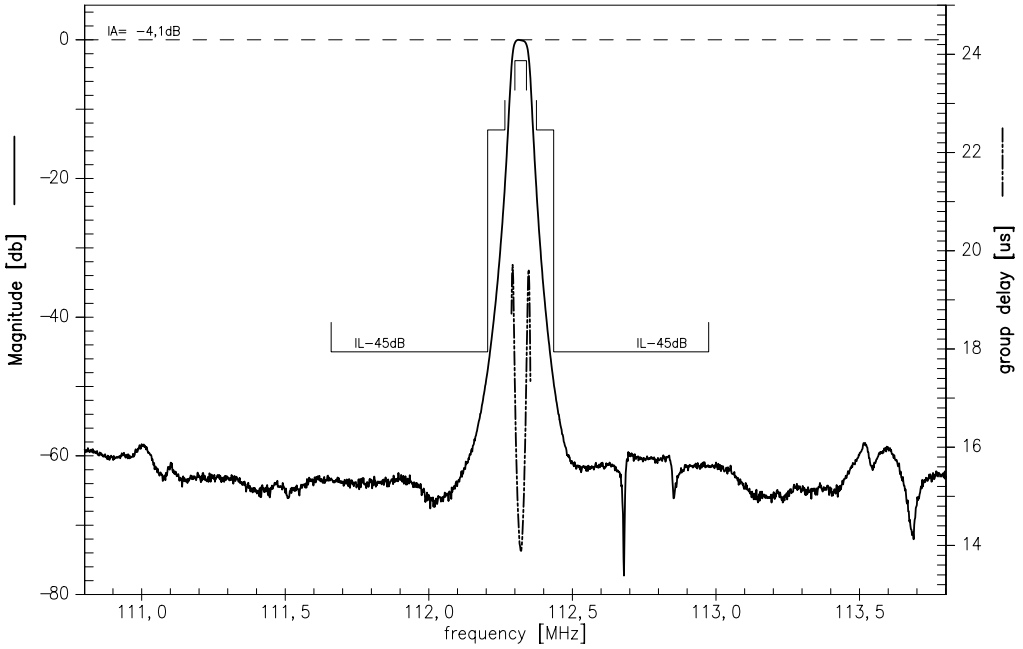
The level of ultimate suppression may be limited by electromagnetic feedthrough depending on the layout of the pcb and the arrangement of the matching components.
The above mentioned characteristics can be realized either in balanced or in unbalanced mode of operation.
To achieve the best performance it is recommended to drive at least one side of the filter balanced.

For more details see EPCOS's application note *PCB Layout for Highly Selective IF Filters*.

Transfer function pass band (normalized, measured single-ended / single-ended)



Transfer function wide band (normalized, measurement single-ended / single-ended)



Published by EPCOS AG
Surface Acoustic Wave Components Division, OFW E MF
P.O. Box 80 17 09, D-81617 München

As far as patents or other rights of third parties are concerned, liability is only assumed for components per se, not for applications, processes and circuits implemented within components or assemblies.

The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved.

For questions on technology, prices and delivery please contact the sales offices of EPCOS AG or the international representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our sales offices.