IF Filters for Narrowband Cellular Phones

Series/Type: B4864

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39181B4864Z710		14.06.2006	31.08.2006	30.09.2006

For further information please contact your nearest EPCOS sales office, which will also support you in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.epcos.com/sales.

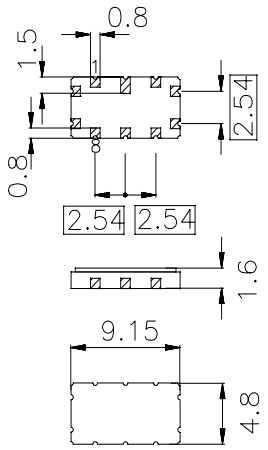
Ceramic package **QCC10B**

Features

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

Terminals

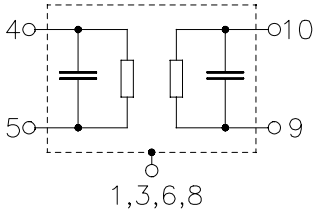
- Ni, gold plated



Dimensions in mm, approx. weight 0,23 g

Pin configuration

10	Input
5	Output
9	Balanced input or input ground
4	Balanced output or output ground
1,3,6,8	Case ground
2,7	Not connected



Type	Ordering code	Marking and Package according to	Packing according to
B4864	B39181-B4864-Z710	C61157-A7-A49	F61064-V8035-Z000

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

Maximum ratings

Operable temperature range	T	– 25/+ 75	˚C
Storage temperature range	T_{stg}	– 40/+ 85	˚C
DC voltage	V_{DC}	13	V
Source power	P_s	10	dBm

Characteristics

Operating temperature range: T = -25˚C ... 75˚C
Terminating source impedance: Z_S = 410 Ω || - 0,4 pF
Terminating load impedance: Z_L = 410 Ω || - 0,4 pF

		min.	typ.	max.	
Nominal center frequency	f_N	—	183,60	—	MHz
Filter bandwidth at -5 dB		+-11	62	—	kHz
Minimum insertion attenuation (including losses in the matching network without loss of the balun)	α_{min}	—	4,8	6,0	dB
Group delay ripple (p-p)	$\Delta\tau$				
f_N – 13,0 kHz ... f_N + 13,0 kHz		—	2,0	10,0	µs
Relative attenuation (relative to α_{min})	α_{rel}				
f_N – 11,0 kHz		—	0,5	5	dB
f_N + 11,0 kHz		—	0,5	5	dB
f_N – 120,0 kHz ... f_N – 60,0 kHz		11	30	—	dB
f_N + 60,0 kHz ... f_N + 120,0 kHz		11	24	—	dB
f_N ± 120,0 kHz ... f_N ± 130,0 kHz		43	50	—	dB
f_N ± 130,0 kHz ... f_N ± 360,0 kHz		45	55	—	dB
f_N ± 360,0 kHz ... f_N ± 1,4 MHz		40	60	—	dB
Impedance within the passband					
Input: $Z_{IN} = R_{IN} \parallel C_{IN}$		—	410 || 0,4	—	Ω || pF
Output: $Z_{OUT} = R_{OUT} \parallel C_{OUT}$		—	410 || 0,4	—	Ω || pF
Temperature coefficient of frequency [1]	TC_f	—	– 0,036	—	ppm/K²
Turnover temperature	T_0	—	25	—	˚C

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

Characteristics

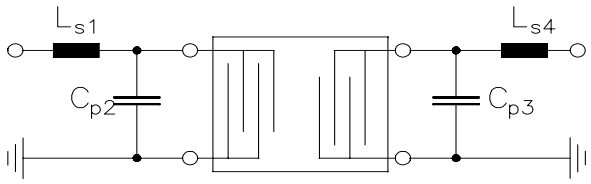
Operating temperature range: T = -30˚C ... 80˚C
Terminating source impedance: Z_S = 410 Ω || - 0,4 pF
Terminating load impedance: Z_L = 410 Ω || - 0,4 pF

		min.	typ.	max.	
Nominal center frequency	f_N	—	183,60	—	MHz
Filter bandwidth at -5 dB		+-11	62	—	kHz
Minimum insertion attenuation (including losses in the matching network without loss of the balun)	α_{min}	—	4,8	6,0	dB
Group delay ripple (p-p)	$\Delta\tau$				
f_N – 13,0 kHz ... f_N + 13,0 kHz		—	2,0	10,0	µs
Relative attenuation (relative to α_{min})	α_{rel}				
f_N – 11,0 kHz		—	0,5	5	dB
f_N + 11,0 kHz		—	0,5	5	dB
f_N – 120,0 kHz ... f_N – 60,0 kHz		8	30	—	dB
f_N + 60,0 kHz ... f_N + 120,0 kHz		8	24	—	dB
f_N ± 120,0 kHz ... f_N ± 130,0 kHz		40	50	—	dB
f_N ± 130,0 kHz ... f_N ± 360,0 kHz		42	55	—	dB
f_N ± 360,0 kHz ... f_N ± 1,4 MHz		40	60	—	dB
Impedance within the passband					
Input: $Z_{IN} = R_{IN} \parallel C_{IN}$		—	410 || 0,4	—	Ω || pF
Output: $Z_{OUT} = R_{OUT} \parallel C_{OUT}$		—	410 || 0,4	—	Ω || pF
Temperature coefficient of frequency [1]	TC_f	—	– 0,036	—	ppm/K²
Turnover temperature	T_0	—	25	—	˚C

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

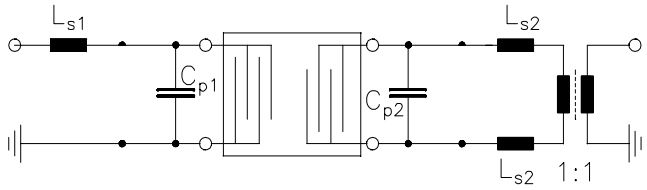
Recommended pin configurations / test matching networks:

a) single-ended 50Ω / single-ended 50Ω



Input : Pin 10
Output : Pin 5
L_{s1} = 100 nH
C_{p2} = 3,9 pF
C_{p3} = 3,9 pF
L_{s4} = 100 nH

b) single-ended 50Ω / balanced 50Ω



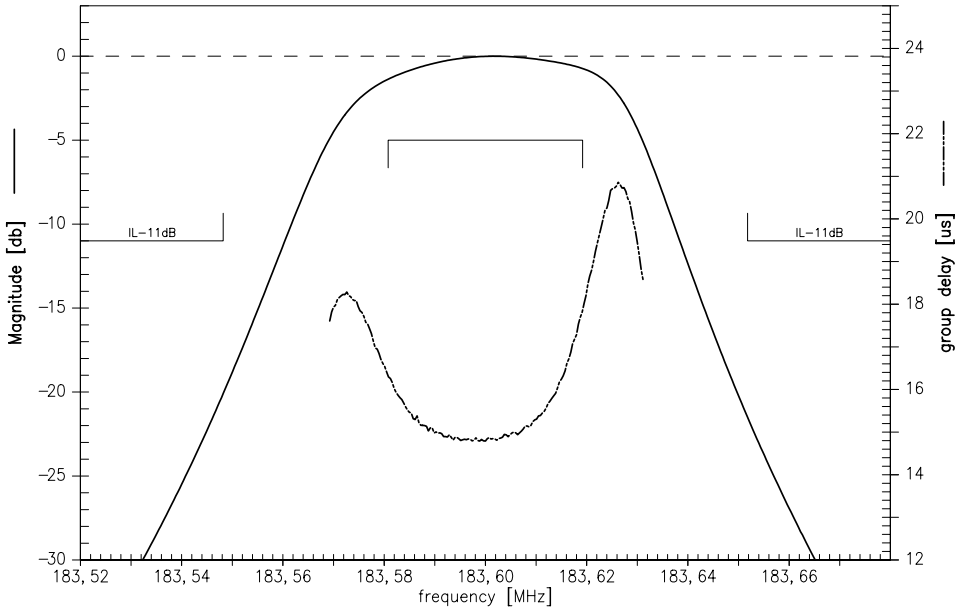
Input : Pin 10
Output : Pins 5 and 4
L_{s1} =100 nH
C_{p1} = 3,9 pF
C_{p2} = 3,9 pF
L_{s2} =39 / 47 nH

Note :

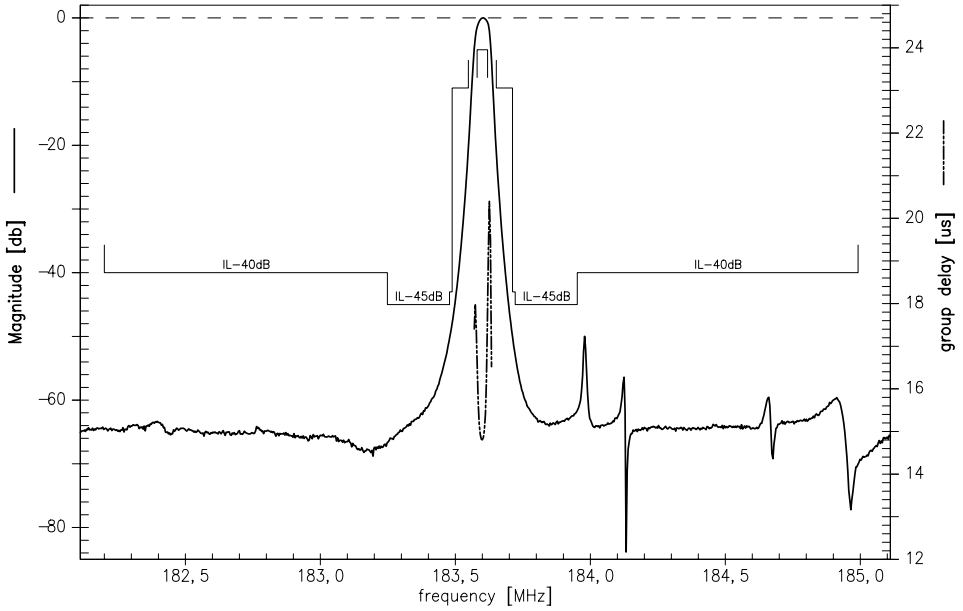
The balanced network is realized using TOKO 1:1 balun B5FL. The insertion attenuation of a balun is 0.3 dB at 183.6 MHz. The loss of the balun is not included in the specified filter insertion attenuation.

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.

Normalized transfer function passband (measured single ended / single ended)



Normalized transfer function wideband (measured 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

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