



Siemens Matsushita Components

SAW Components Low Loss Filter

B4833
225,0 MHz

Data Sheet

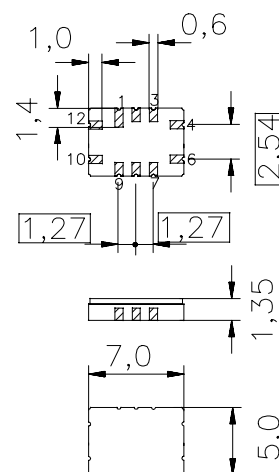
Features

- Low-loss IF filter for mobile telephone
- Channel selection in GSM systems
- Ceramic SMD package
- Balanced and unbalanced operation possible
- High stopband attenuation

Terminals

- Gold-plated Ni

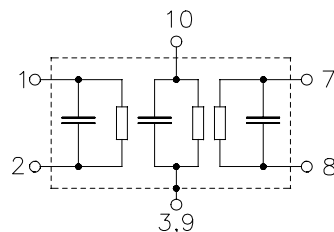
Ceramic package **QCC12B**



Dimensions in mm, approx. weight 0,2 g

Pin configuration

2	Input
1	Input ground or balanced input
8	Output
7	Output ground or balanced output
10	Expansion coil
3, 9	Case – ground
4, 6, 12	To be grounded



Type	Ordering code	Marking and Package according to	Packing according to
B4833	B39231-B4833-Z910	C61157-A7-A52	F61074-V8038-Z000

Electrostatic Sensitive Device (ESD)

Maximum ratings

Operable temperature range	T	- 25/+ 85	°C
Storage temperature range	T_{stg}	- 25/+ 85	°C
DC voltage	V_{DC}	5	V
Source power	P_s	10	dBm



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Characteristics

Reference temperature: $T = 25\text{ }^{\circ}\text{C}$
Terminating source impedance: $Z_S = 730\text{ }\Omega \parallel -2,9\text{ pF}$
Terminating load impedance: $Z_L = 730\text{ }\Omega \parallel -2,9\text{ pF}$

		min.	typ.	max.	
Nominal frequency	f_N	—	225,01	—	MHz
Minimum insertion attenuation (including loss in matching elements)	$\alpha_{\min}$	3,0	4,3	5,0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N - 67,5\text{ kHz} \dots f_N + 67,5\text{ kHz}$		—	0,6	1,6	dB
$f_N - 80,0\text{ kHz} \dots f_N + 80,0\text{ kHz}$		—	0,8	3,0	dB
Group delay ripple (p-p)	$\Delta\tau$				
$f_N - 50,0\text{ kHz} \dots f_N + 50,0\text{ kHz}$		—	0,4	1,2	μs
$f_N - 67,5\text{ kHz} \dots f_N + 67,5\text{ kHz}$		—	0,6	1,5	μs
$f_N - 80,0\text{ kHz} \dots f_N + 80,0\text{ kHz}$		—	0,8	2,1	μs
Relative attenuation (relative to $\alpha_{\min}$)	α_{rel}				
$f_N - 25,00\text{ MHz} \dots f_N - 3,00\text{ MHz}$		50	71	—	dB
$f_N - 3,00\text{ MHz} \dots f_N - 1,60\text{ MHz}$		50	71	—	dB
$f_N - 1,60\text{ MHz} \dots f_N - 1,50\text{ MHz}$		50	66	—	dB
$f_N - 1,50\text{ MHz} \dots f_N - 0,60\text{ MHz}$		38	50	—	dB
$f_N - 0,60\text{ MHz} \dots f_N - 0,40\text{ MHz}$		28	41	—	dB
$f_N - 0,40\text{ MHz} \dots f_N - 0,20\text{ MHz}$		8	19	—	dB
$f_N + 0,20\text{ MHz} \dots f_N + 0,40\text{ MHz}$		8	13	—	dB
$f_N + 0,40\text{ MHz} \dots f_N + 0,60\text{ MHz}$		28	34	—	dB
$f_N + 0,60\text{ MHz} \dots f_N + 1,50\text{ MHz}$		38	50	—	dB
$f_N + 1,50\text{ MHz} \dots f_N + 1,60\text{ MHz}$		50	57	—	dB
$f_N + 1,60\text{ MHz} \dots f_N + 3,00\text{ MHz}$		50	65	—	dB
$f_N + 3,00\text{ MHz} \dots f_N + 25,00\text{ MHz}$		50	63	—	dB
Impedance within the passband					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	730 $\parallel$ 2,9	—	$\Omega \parallel \text{pF}$
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	730 $\parallel$ 2,9	—	$\Omega \parallel \text{pF}$
Temperature coefficient of frequency ¹⁾	TC_f	—	- 0,036	—	ppm/K ²
Frequency inversion point	T_0	—	20	—	$^{\circ}\text{C}$

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



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Reference temperature: $T = -20$ to $+70$ °C
Terminating source impedance: $Z_S = 730 \Omega \parallel -2,9 \text{ pF}$
Terminating load impedance: $Z_L = 730 \Omega \parallel -2,9 \text{ pF}$

		min.	typ.	max.	
Nominal frequency	f_N	—	225,00	—	MHz
Minimum insertion attenuation (including loss in matching elements)	$\alpha_{\min}$	3,0	4,3	5,5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
$f_N - 67,5 \text{ kHz} \dots f_N + 67,5 \text{ kHz}$		—	0,6	2,0	dB
$f_N - 80,0 \text{ kHz} \dots f_N + 80,0 \text{ kHz}$		—	0,8	3,0	dB
Group delay ripple (p-p)	$\Delta\tau$				
$f_N - 50,0 \text{ kHz} \dots f_N + 50,0 \text{ kHz}$		—	0,4	1,2	μs
$f_N - 67,5 \text{ kHz} \dots f_N + 67,5 \text{ kHz}$		—	0,6	1,7	μs
$f_N - 80,0 \text{ kHz} \dots f_N + 80,0 \text{ kHz}$		—	0,8	2,1	μs
Relative attenuation (relative to $\alpha_{\min}$)	α_{rel}				
$f_N - 25,00 \text{ MHz} \dots f_N - 3,00 \text{ MHz}$		50	71	—	dB
$f_N - 3,00 \text{ MHz} \dots f_N - 1,60 \text{ MHz}$		50	71	—	dB
$f_N - 1,60 \text{ MHz} \dots f_N - 1,50 \text{ MHz}$		50	66	—	dB
$f_N - 1,50 \text{ MHz} \dots f_N - 0,60 \text{ MHz}$		38	50	—	dB
$f_N - 0,60 \text{ MHz} \dots f_N - 0,40 \text{ MHz}$		28	41	—	dB
$f_N - 0,40 \text{ MHz} \dots f_N - 0,20 \text{ MHz}$		7	19	—	dB
$f_N + 0,20 \text{ MHz} \dots f_N + 0,40 \text{ MHz}$		7	13	—	dB
$f_N + 0,40 \text{ MHz} \dots f_N + 0,60 \text{ MHz}$		28	34	—	dB
$f_N + 0,60 \text{ MHz} \dots f_N + 1,50 \text{ MHz}$		38	50	—	dB
$f_N + 1,50 \text{ MHz} \dots f_N + 1,60 \text{ MHz}$		50	57	—	dB
$f_N + 1,60 \text{ MHz} \dots f_N + 3,00 \text{ MHz}$		50	65	—	dB
$f_N + 3,00 \text{ MHz} \dots f_N + 25,00 \text{ MHz}$		50	63	—	dB
Impedance within the passband					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	730 $\parallel$ 2,9	—	$\Omega \parallel \text{pF}$
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	730 $\parallel$ 2,9	—	$\Omega \parallel \text{pF}$
Temperature coefficient of frequency ¹⁾	TC_f	—	- 0,036	—	ppm/K ²
Frequency inversion point	T_0	—	20	—	°C

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



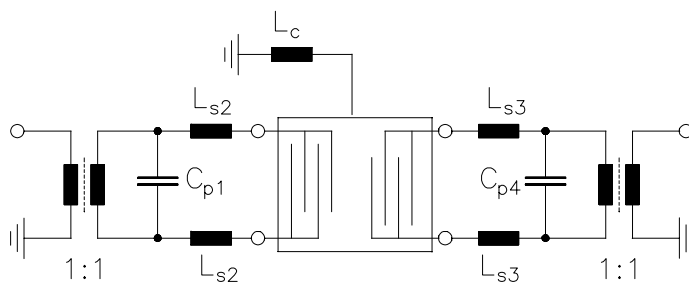
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Test matching network to 50 Ω (element values depend on PCB layout):



$C_{p1} = 8,2 \text{ pF}$
 $L_{s2} = 65 \text{ nH}$
 $L_{s3} = 65 \text{ nH}$
 $C_{p4} = 8,2 \text{ pF}$
 $L_c = 120 \text{ nH}$



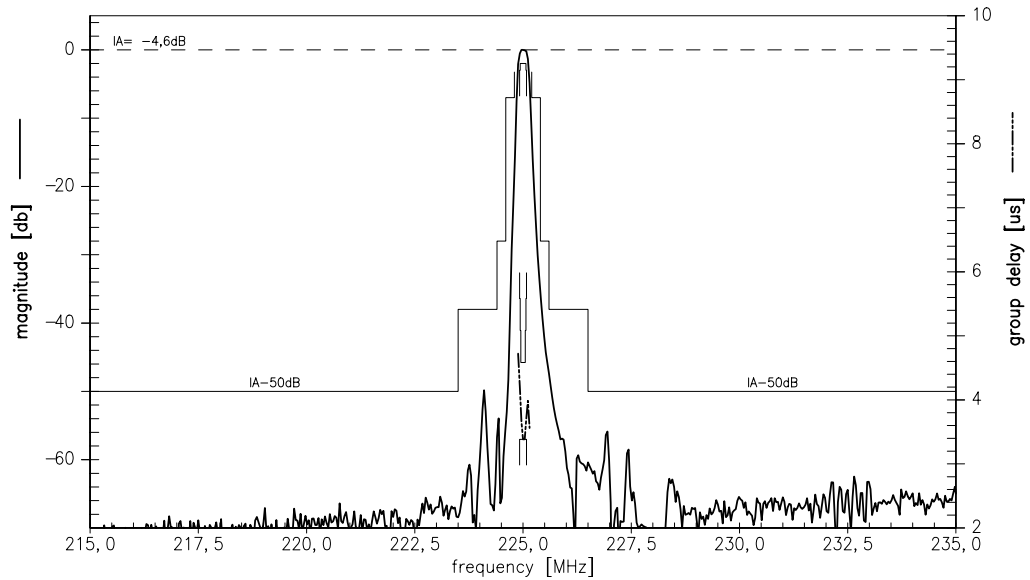
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Transfer function:



Transfer function (pass band):

