Siemens Matsushita Components

SAW Components
Low Loss Filter

B4828
276,00 MHz

Data Sheet

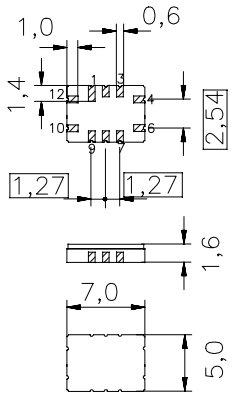
Ceramic package **QCC12B**

Features

- Low-loss IF filter for mobile telephone
- Channel selection in GSM, PCN, PCS systems
- Ceramic SMD package
- Balanced and unbalanced operation possible

Terminals

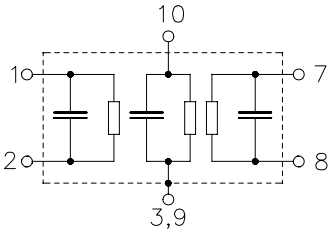
- Gold-plated Ni



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	Not connected



Type	Ordering code	Marking and Package according to	Packing according to
B4828	B39281-B4828-Z910	C61157-A7-A48	F61074-V8038-Z000

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

Maximum ratings

Operable temperature range	T	– 20/+ 70	˚C
Storage temperature range	T_{stg}	– 25/+ 85	˚C
DC voltage	V_{DC}	0	V
Source power	P_s	10	dBm

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Characteristics

Operating temperature: T = 25 °C
Terminating source impedance: Z_S = 400 Ω || -2,4 pF
Terminating load impedance: Z_L = 400 Ω || -2,4 pF

		min.	typ.	max.	
Nominal frequency	f_N	—	276,00	—	MHz
Minimum insertion attenuation (Including losses in matching circuit)	α_{min}	3,0	3,7	5,0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
f_N - 85,0 kHz ... f_N + 93,0 kHz		—	0,5	1,5	dB
f_N - 120,0 kHz ... f_N + 120,0 kHz		—	1,0	3,0	dB
Group delay ripple (p-p)	$\Delta\tau$				
f_N - 70,0 kHz ... f_N + 70,0 kHz		—	0,3	1,2	µs
f_N - 120,0 kHz ... f_N + 120,0 kHz		—	0,8	2,0	µs
Relative attenuation (relative to α_{min})	α_{rel}				
f_N - 100,00 MHz ... f_N - 3,00 MHz		45	64	—	dB
f_N - 3,00 MHz ... f_N - 1,60 MHz		38	62	—	dB
f_N - 1,60 MHz ... f_N - 0,60 MHz		30	47	—	dB
f_N - 0,60 MHz ... f_N - 0,40 MHz		25	53	—	dB
f_N - 0,40 MHz ... f_N - 0,33 MHz		18	30	—	dB
f_N - 0,33 MHz ... f_N - 0,30 MHz		10	20	—	dB
f_N + 0,30 MHz ... f_N + 0,33 MHz		10	20	—	dB
f_N + 0,33 MHz ... f_N + 0,40 MHz		18	23	—	dB
f_N + 0,40 MHz ... f_N + 0,60 MHz		25	29	—	dB
f_N + 0,60 MHz ... f_N + 1,60 MHz		30	42	—	dB
f_N + 1,60 MHz ... f_N + 3,00 MHz		38	44	—	dB
f_N + 3,00 MHz ... f_N + 100,00 MHz		45	66	—	dB
Impedance within the passband					
Input: $Z_{IN} = R_{IN} \parallel C_{IN}$		—	400 || 2,4	—	Ω || pF
Output: $Z_{OUT} = R_{OUT} \parallel C_{OUT}$		—	400 || 2,4	—	Ω || pF
Temperature coefficient of frequency [1]	TC_f	—	– 0,036	—	ppm/K²
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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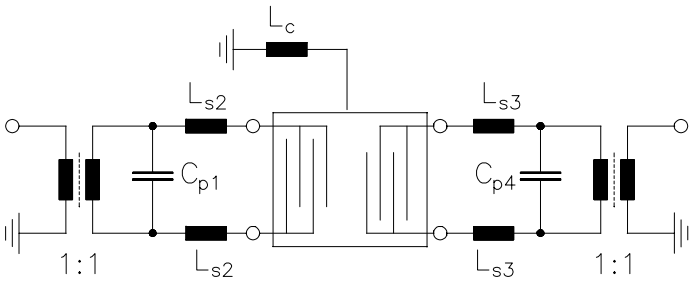
Characteristics

Operating temperature range: T = -20 to 70 °C
Terminating source impedance: Z_S = 400 Ω || -2,4 pF
Terminating load impedance: Z_L = 400 Ω || -2,4 pF

		min.	typ.	max.	
Nominal frequency	f_N	—	276,00	—	MHz
Minimum insertion attenuation (Including losses in matching circuit)	α_{min}	3,0	3,7	5,0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
f_N - 85,0 kHz ... f_N + 75,0 kHz		—	0,5	1,5	dB
f_N - 120,0 kHz ... f_N + 100,0 kHz		—	1,0	3,0	dB
Group delay ripple (p-p)	$\Delta\tau$				
f_N - 70,0 kHz ... f_N + 70,0 kHz		—	0,3	1,2	µs
f_N - 120,0 kHz ... f_N + 120,0 kHz		—	0,8	2,0	µs
Relative attenuation (relative to α_{min})	α_{rel}				
f_N - 100,00 MHz ... f_N - 3,00 MHz		45	64	—	dB
f_N - 3,00 MHz ... f_N - 1,60 MHz		38	62	—	dB
f_N - 1,60 MHz ... f_N - 0,60 MHz		30	47	—	dB
f_N - 0,60 MHz ... f_N - 0,40 MHz		25	53	—	dB
f_N - 0,40 MHz ... f_N - 0,33 MHz		14	30	—	dB
f_N - 0,33 MHz ... f_N - 0,30 MHz		10	20	—	dB
f_N + 0,30 MHz ... f_N + 0,33 MHz		10	20	—	dB
f_N + 0,33 MHz ... f_N + 0,40 MHz		18	23	—	dB
f_N + 0,40 MHz ... f_N + 0,60 MHz		25	29	—	dB
f_N + 0,60 MHz ... f_N + 1,60 MHz		30	42	—	dB
f_N + 1,60 MHz ... f_N + 3,00 MHz		38	44	—	dB
f_N + 3,00 MHz ... f_N + 100,00 MHz		45	66	—	dB
Impedance within the passband					
Input: $Z_{IN} = R_{IN} \parallel C_{IN}$		—	400 || 2,4	—	Ω || pF
Output: $Z_{OUT} = R_{OUT} \parallel C_{OUT}$		—	400 || 2,4	—	Ω || pF
Temperature coefficient of frequency [1]	TC_f	—	– 0,036	—	ppm/K²
Frequency inversion point	T_0	—	20	—	°C

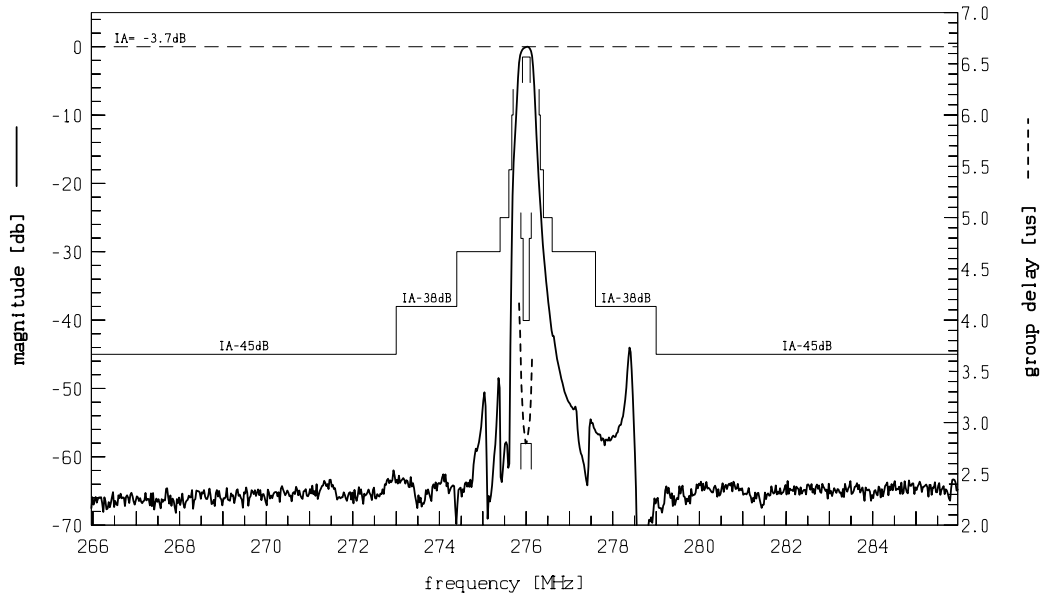
[1] Temperature dependence of f_c: $f_c(T) = f_c(T_0)(1 + TC_f(T - T_0)^2)$

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



C_{p1} = 3,9 pF
L_{s2} = 43 nH
L_{s3} = 43 nH
C_{p4} = 3,9 pF
L_c = 68 nH

Transfer function:



Transfer function (pass band):