



## IF Filters for CDMA Cellular Phones

**Series/Type:**        **B7305**

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39191B7305A810	B39191B5006H310	2005-05-13	2005-06-30	2005-09-30

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# SAW Components

Data Sheet B7305





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B7305

IF Filter for Mobile Communication

190 MHz

Data Sheet



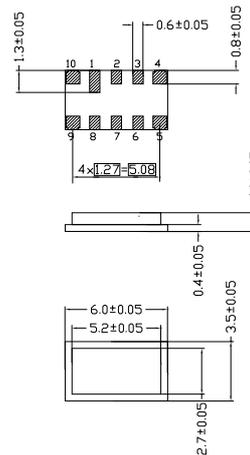
DCS10A Chip-Size SAW Filter Package

**Features**

- IF filter for mobile telephone
- Channel selection in W-CDMA systems
- Chip-Size SAW Filter Package
- Balanced and unbalanced operation possible
- Package for Surface Mounted Technology (SMT)

**Terminals**

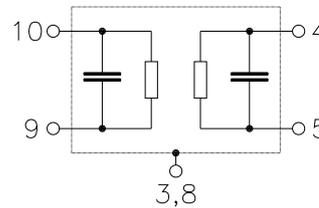
- Gold-plated Ni



Dimensions in mm, approx. weight 0,1 g

**Pin configuration**

- 9 Input
- 10 Balanced input or input ground
- 4 Output
- 5 Balanced output or output ground
- 1, 2, 6, 7 To be grounded
- 3, 8 Case – ground



Type	Ordering code	Marking and Package according to	Packing according to
B7305	B39191-B7305-A810	C61157-A7-A66	F61074-V8103-Z000

Electrostatic Sensitive Device (ESD)

**Maximum ratings**

Operating temperature range	$T$	-20 / +85	°C	
Storage temperature range	$T_{stg}$	-40 / +85	°C	
DC voltage	$V_{DC}$	0	V	
Source power	$P_s$	10	dBm	



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Characteristics<sup>1)</sup>

Operating temperature range:  $T = 25\text{ °C}$   
 Terminating source impedance:  $Z_S = 0,9\text{ k}\Omega \parallel 60\text{ nH}$   
 Terminating load impedance:  $Z_L = 1,1\text{ k}\Omega \parallel 90\text{ nH}$

		min.	typ.	max.	
<b>Nominal frequency</b>	$f_N$	—	190,0	—	MHz
<b>Minimum insertion attenuation</b> (including losses in matching circuit)	$\alpha_{\min}$		8,8	9,2	dB
<b>Passband width</b> $\alpha_{\text{rel}} \leq 2,0\text{ dB}$	$B_{2,0\text{dB}}$	3,84	4,2	—	MHz
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
$f_N - 2,00\text{ MHz} \dots f_N + 2,00\text{ MHz}$		—	1,5	1,8	dB
$f_N - 1,92\text{ MHz} \dots f_N + 1,92\text{ MHz}$		—	0,9	1,5	dB
$f_N - 1,5\text{ MHz} \dots f_N + 1,5\text{ MHz}$		—	0,7	1,1	dB
<b>Deviation of phase from linearity (rms)</b>	$\Delta\phi$				
$f_N - 1,92\text{ MHz} \dots f_N + 1,92\text{ MHz}$		—	1,5	2,0	°
<b>Group delay deviation</b>	ns				
$f_N - 1,92\text{ MHz} \dots f_N + 1,92\text{ MHz}$		—	110	150	
<b>Relative attenuation (relative to <math>\alpha_{\min}</math>)</b>	$\alpha_{\text{rel}}$				
DC ... $f_N - 20,0\text{ MHz}$		45,0	50,0	—	dB
$f_N - 20,0\text{ MHz} \dots f_N - 10,0\text{ MHz}$		35,0	41,0	—	dB
$f_N - 10,0\text{ MHz} \dots f_N - 5,0\text{ MHz}$		30,0	34,0	—	dB
$f_N + 5,0\text{ MHz} \dots f_N + 10,0\text{ MHz}$		27,0	31,0	—	dB
$f_N + 10,0\text{ MHz} \dots f_N + 20,0\text{ MHz}$		32,0	36,0	—	dB
$f_N + 20,0\text{ MHz} \dots 350,0\text{ MHz}$		37,0	42,0	—	dB
<b>Temperature coefficient of frequency<sup>2)</sup></b>	$TC_f$	—	-20	—	ppm/K

1) The specifications on this page hold for balanced / balanced operation (cf. test matching network 2 on p. 5). The specified minimum insertion attenuation does not include the losses in the transformers of the test circuit.

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



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**Characteristics** <sup>1)</sup>

Operating temperature range:  $T = -20 \dots +85 \text{ }^\circ\text{C}$   
 Terminating source impedance:  $Z_S = 0,9 \text{ k}\Omega \parallel 60 \text{ nH}$   
 Terminating load impedance:  $Z_L = 1,1 \text{ k}\Omega \parallel 90 \text{ nH}$

		<b>min.</b>	<b>typ.</b>	<b>max.</b>	
<b>Nominal frequency</b>	$f_N$	—	190,0	—	MHz
<b>Minimum insertion attenuation</b> (including losses in matching circuit)	$\alpha_{\min}$		8,8	9,8	dB
<b>Passband width</b> $\alpha_{\text{rel}} \leq 2.0 \text{ dB}$	$B_{2,2\text{dB}}$	3,84	4,2	—	MHz
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$				
$f_N - 2,00 \text{ MHz} \dots f_N + 2,00 \text{ MHz}$			1,5	2,4	
$f_N - 1,92 \text{ MHz} \dots f_N + 1,92 \text{ MHz}$		—	0,9	2,1	dB
$f_N - 1,5 \text{ MHz} \dots f_N + 1,5 \text{ MHz}$		—	0,7	1,1	dB
<b>Deviation of phase from linearity (rms)</b>	$\Delta\varphi$				
$f_N - 1,92 \text{ MHz} \dots f_N + 1,92 \text{ MHz}$		—	1,5	2,5	°
<b>Group delay deviation</b>	ns				
$f_N - 1,92 \text{ MHz} \dots f_N + 1,92 \text{ MHz}$		—	110	180	
<b>Relative attenuation (relative to <math>\alpha_{\min}</math>)</b>	$\alpha_{\text{rel}}$				
DC ... $f_N - 20,0 \text{ MHz}$		45,0	50,0	—	dB
$f_N - 20,0 \text{ MHz} \dots f_N - 10,0 \text{ MHz}$		32,0	41,0	—	dB
$f_N - 10,0 \text{ MHz} \dots f_N - 5,0 \text{ MHz}$		28,0	34,0	—	dB
$f_N + 5,0 \text{ MHz} \dots f_N + 10,0 \text{ MHz}$		27,0	31,0	—	dB
$f_N + 10,0 \text{ MHz} \dots f_N + 20,0 \text{ MHz}$		30,5	36,0	—	dB
$f_N + 20,0 \text{ MHz} \dots 350 \text{ MHz}$		37,0	42,0	—	dB
<b>Temperature coefficient of frequency</b> <sup>2)</sup>	$TC_f$	—	-20	—	ppm/K

<sup>1)</sup> The specifications on this page hold for balanced / balanced operation (cf. test matching network 2 on p. 5). The specified minimum insertion attenuation does not include the losses in the transformers of the test circuit.

<sup>2)</sup> Temperature dependence of  $f_c$ :  $f_c(T) = f_c(T_0)(1 + TC_f(T - T_0))$



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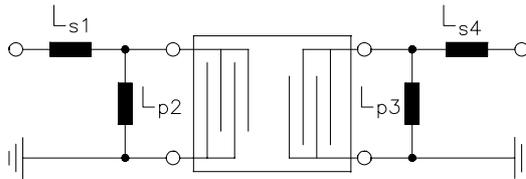
IF Filter for Mobile Communication

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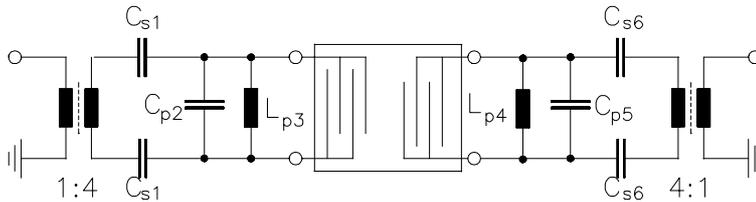


**Test matching network 1 for unbalanced operation in 50-Ω environment** (element values depend on PCB layout):



- Ls1 = 180 nH
- Lp2 = 100 nH
- Lp3 = 150 nH
- Ls4 = 200 nH
- Coils: Coilcraft 1008HQ

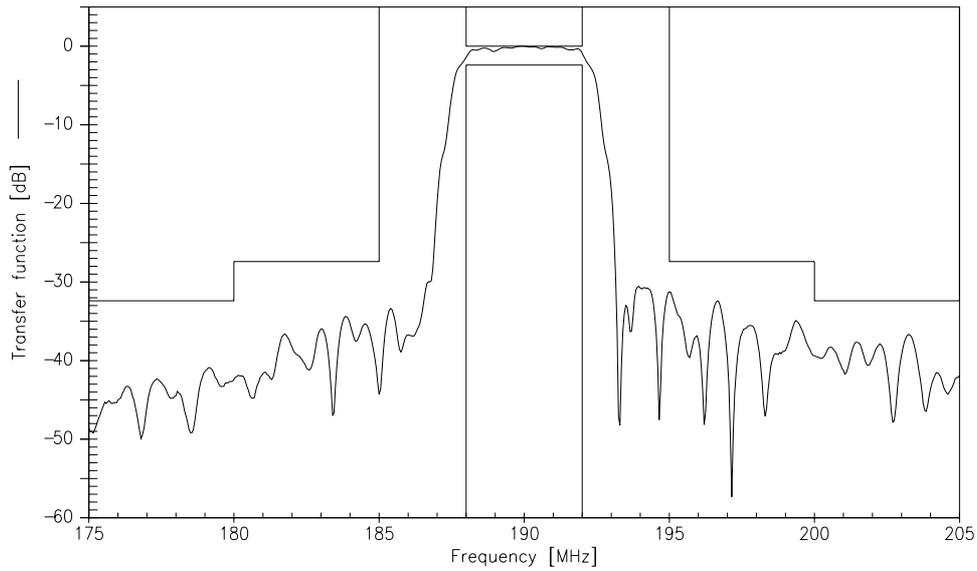
**Test matching network 2 for balanced operation in 50-Ω environment** (element values depend on PCB layout):



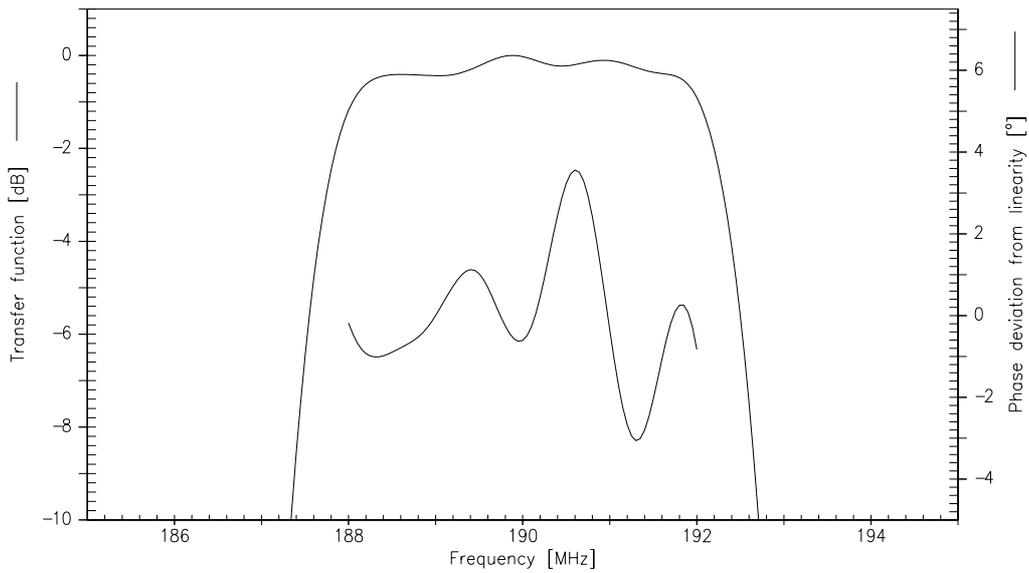
- Cs1 = Cs6 = 4.7 pF
- Cp2 = Cp5 = tbd
- Lp3 = 47 nH
- Lp4 = 68 nH
- Coils: Coilcraft 1008HQ
- Transformers: 1:4 Toko 616DB1004



Transfer function:



Transfer function and phase characteristics (pass band):





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