



SAW Components

Data Sheet B7301

Data Sheet

An abstract graphic featuring the word "EPCOS" in large, glowing, 3D letters. The letters are white with a bright, circular highlight in the center of each, giving them a three-dimensional appearance. They are set against a dark, textured background that includes a faint, glowing globe and circuitry patterns, suggesting a high-tech or electronic theme.



SAW Components

B7301

Low-Loss Filter for Mobile Communication

400,0 MHz

Preliminary Data Sheet



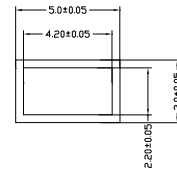
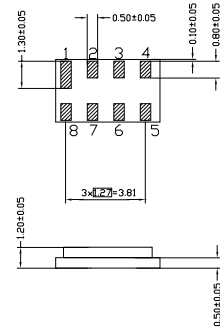
Chip Sized SAW Package DCS8A

Features

- Low-loss IF filter for mobile telephone
- Channel selection in GSM, PCN, PCS systems
- Chip Sized SAW Package
- Balanced and unbalanced operation possible
- expansion coil for minimum insertion attenuation and optimum bandwidth adjustment

Terminals

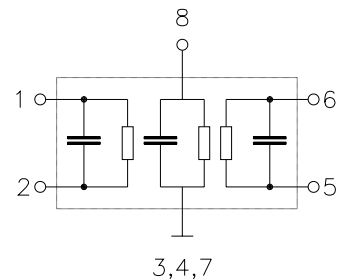
- Gold-plated Ni



Dimensions in mm, approx. weight 0,05 g

Pin configuration

- | | |
|---------|----------------------------------|
| 1 | Input |
| 2 | Input ground or balanced input |
| 6 | Output |
| 5 | Output ground or balanced output |
| 3, 4, 7 | Ground |
| 8 | Expansion coil |



Electrostatic Sensitive Device (ESD)

Maximum ratings

Operable temperature range	T_A	- 30/+ 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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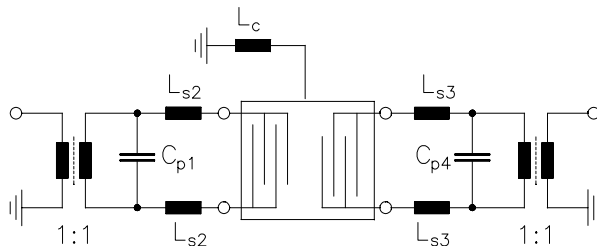
Characteristics

Operating temperature range:	$T = -25\text{ °C} \dots +80\text{ °C}$
Terminating source impedance:	$Z_S = 600\Omega \parallel 90\text{ nH}$
Terminating load impedance:	$Z_L = 600\Omega \parallel 90\text{ nH}$

		min.	typ.	max.	
Nominal frequency	f_N	—	400,00	—	MHz
Maximum insertion attenuation (Including losses in matching circuit)	$\alpha_{\max}$	—	4,3	6,0	dB
Amplitude ripple (p-p) $f_N - 83,0\text{ kHz} \dots f_N + 83,0\text{ kHz}$	$\Delta\alpha$	—	0,2	2,0	dB
Group delay ripple (p-p) $f_N - 83,0\text{ kHz} \dots f_N + 83,0\text{ kHz}$	$\Delta\tau$	—	0,4	1,0	μs
Relative attenuation (relative to $\alpha_{\max}$)	α_{rel}				
$f_N - 30,00\text{ MHz} \dots f_N - 1,50\text{ MHz}$		37	53	—	dB
$f_N - 1,50\text{ MHz} \dots f_N - 0,80\text{ MHz}$		22	46	—	dB
$f_N - 0,80\text{ MHz} \dots f_N - 0,60\text{ MHz}$		12	48	—	dB
$f_N - 0,60\text{ MHz} \dots f_N - 0,40\text{ MHz}$		9	25	—	dB
$f_N + 0,40\text{ MHz} \dots f_N + 0,60\text{ MHz}$		9	18	—	dB
$f_N + 0,60\text{ MHz} \dots f_N + 0,80\text{ MHz}$		12	31	—	dB
$f_N + 0,80\text{ MHz} \dots f_N + 1,50\text{ MHz}$		22	39	—	dB
$f_N + 1,50\text{ MHz} \dots f_N + 30,00\text{ MHz}$		37	50	—	dB
Impedance within pass band					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	$600 \parallel 1,75$	—	$\Omega \parallel \text{pF}$
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	$600 \parallel 1,75$	—	$\Omega \parallel \text{pF}$
Temperature coefficient of frequency ¹⁾	TC_f	—	-0,039	—	ppm/K ²
Frequency inversion point	T_0	—	36	—	°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 , low pass example (actual element values depend on PCB layout. S-parameters of transformers TOKO B5FL available on request):



$$\begin{aligned}
 L_c &= 39\text{ nH} \\
 C_{p1} &= C_{p4} = 6,8\text{ pF} \\
 L_{s2} &= L_{s3} = 33\text{ nH}
 \end{aligned}$$



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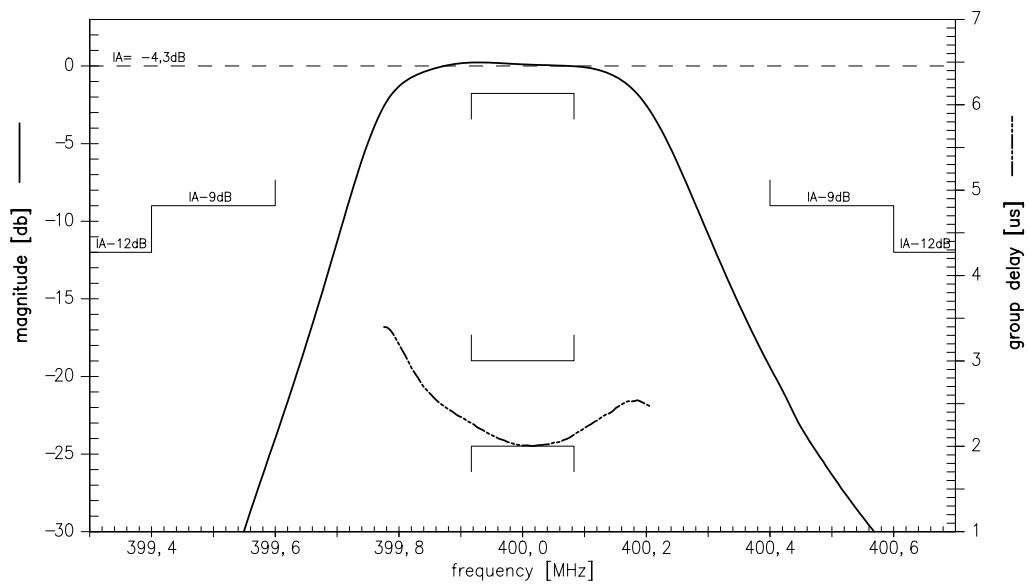
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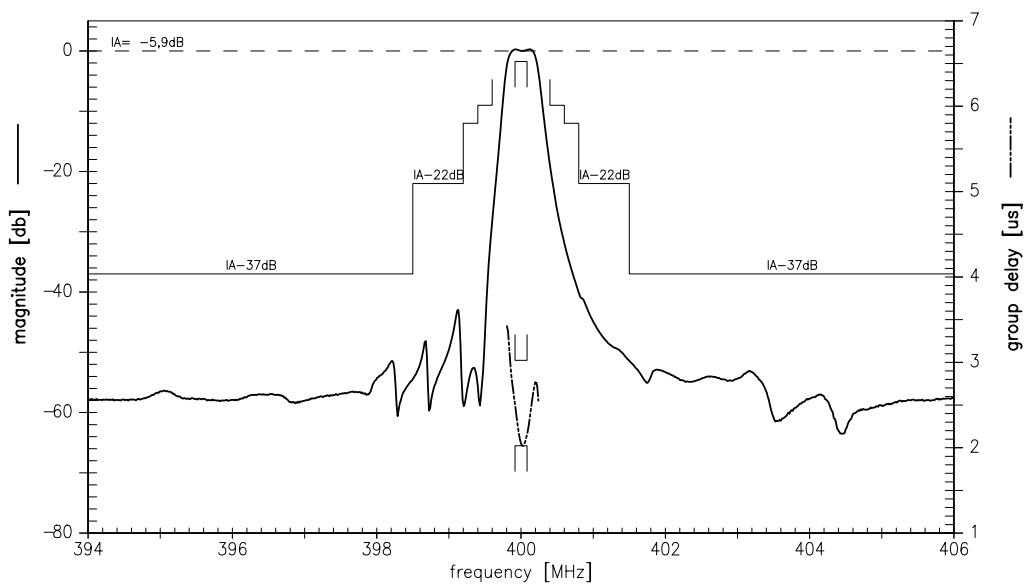
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Transfer function (pass band):



Transfer function (wide band):





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