



# SAW Components

Preliminary Data Sheet LL19A

Data Sheet

A large, stylized, and somewhat abstract graphic of the EPCOS logo. The word "EPCOS" is rendered in a bold, sans-serif font, with the letters appearing to be part of a larger, curved structure that resembles a stylized triangle or a series of overlapping planes. The graphic is in grayscale and has a soft, glowing effect.



## SAW Components

LL19A

## Low-Loss Filter

403,25 MHz

## Preliminary Data Sheet

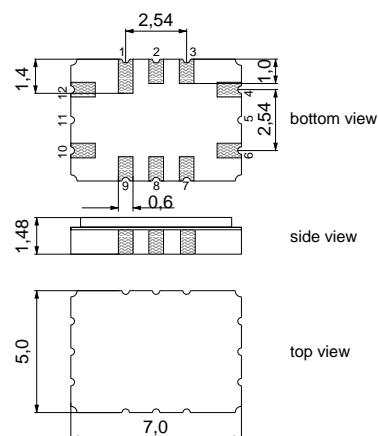
### Features

- Low-loss filter
- Temperature stable
- Ceramic SMD package

### Terminals

- Gold-plated

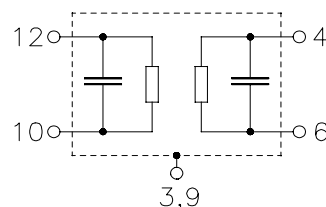
Ceramic package QCC12C



Dimensions in mm, approx. weight 0,2 g

### Pin configuration

10	Input
12	Input ground or bal. input
4	Output
6	Output ground or bal. output
3, 9	Case - ground
1, 2, 7, 8	To be grounded



Type	Ordering code	Marking and Package according to	Packing according to
LL19A		C61157-A7-A95	F61074-V8170-Z000

Electrostatic Sensitive Device (ESD)

### Maximum ratings

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



# SAW Components

LL19A

## Low-Loss Filter

403,25 MHz

### Preliminary Data Sheet

#### Characteristics

Operating temperature:

$T = -25 \dots +85 \text{ }^{\circ}\text{C}$

Terminating source impedance:

$Z_S = 75 \text{ } \Omega$  and matching network

Terminating load impedance:

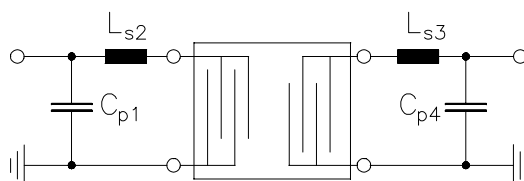
$Z_L = 75 \text{ } \Omega$  and matching network

		min.	typ.	max.	
<b>Nominal frequency</b>	$f_N$	—	403,25	—	MHz
<b>Insertion attenuation at <math>f_N</math> (<math>T=25 \text{ }^{\circ}\text{C}</math>)</b>	$\alpha_N$	6,5	8,0	9,5	dB
<b>Variation of insertion att. (rel. to <math>\alpha_N</math>)</b>	$\alpha_{rel}$	—	$\pm 0,7$	$\pm 0,9$	dB
<b>Frequency response</b>					
3 dB Lower frequency	$f_{L \text{ 3dB}}$	—	402,3	402,75	MHz
3 dB Upper frequency	$f_{U \text{ 3dB}}$	403,75	404,2	—	MHz
35 dB Lower frequency	$f_{L \text{ 35dB}}$	400,25	400,9	—	MHz
35 dB Upper frequency	$f_{U \text{ 35dB}}$	—	405,6	406,25	MHz
<b>Amplitude ripple (peak to adjacent valley)</b> $f_N \pm 100 \text{ kHz}$		—	0,1	0,5	dB
<b>Relative attenuation</b>	$\alpha_{rel}$				
$f_N - 200,0 \text{ MHz} \dots f_N - 10,0 \text{ MHz}$		40	55	—	dB
$f_N - 10,0 \text{ MHz} \dots f_N - 3,0 \text{ MHz}$		35	50	—	dB
$f_N + 3,0 \text{ MHz} \dots f_N + 10,0 \text{ MHz}$		35	48	—	dB
$f_N + 10,0 \text{ MHz} \dots f_N + 200,0 \text{ MHz}$		40	50	—	dB
<b>Temperature coefficient of frequency <sup>1)</sup></b>	$TC_f$	—	$-0,036$	—	ppm/K <sup>2</sup>
<b>Turnover temperature</b>	$T_0$	—	40	—	$^{\circ}\text{C}$

<sup>1)</sup> Temperature dependance of  $f_c$ :  $f_c(T_A) = f_c(T_0)(1 + TC_f(T_A - T_0)^2)$

**SAW Components****LL19A****Low-Loss Filter****403,25 MHz****Preliminary Data Sheet****Matching network to 75  $\Omega$** 

(Element values depend on PCB layout)

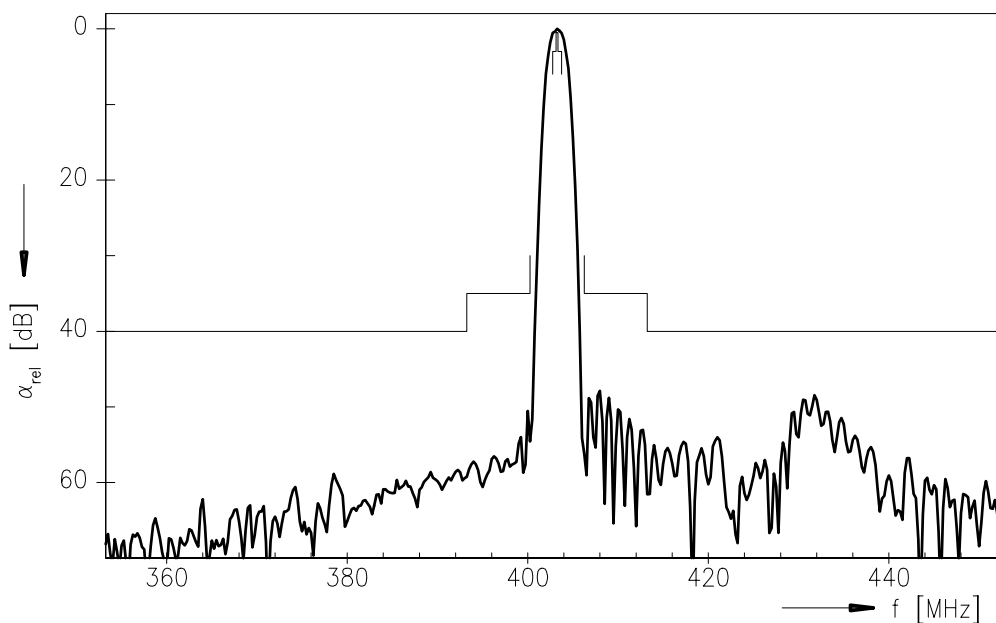
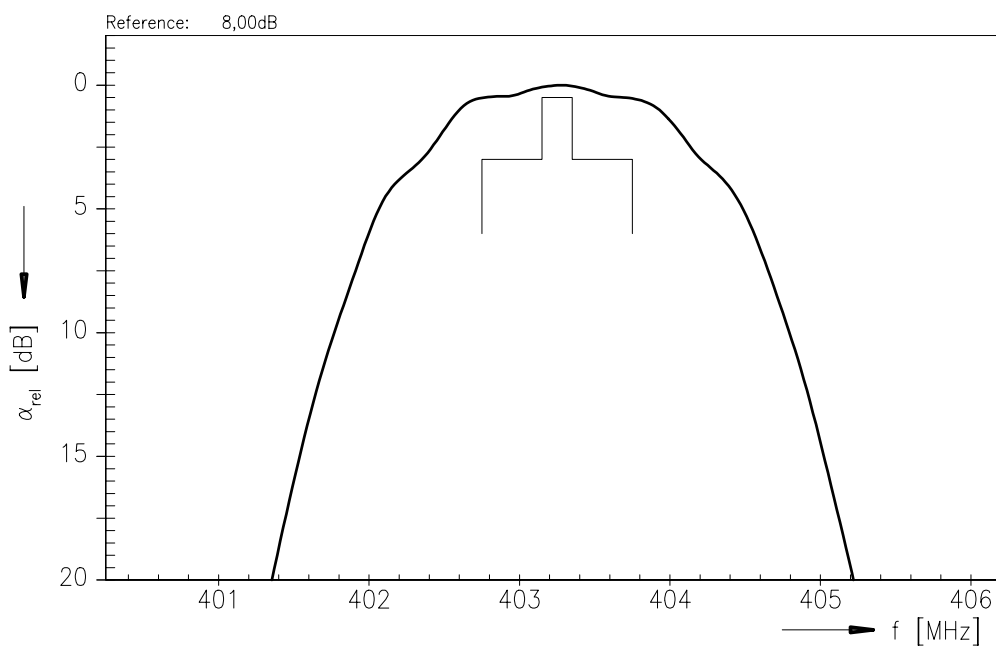


$$C_{p1} = 15 \text{ pF}$$

$$L_{s2} = 22 \text{ nH}$$

$$L_{s3} = 18 \text{ nH} // 1,0 \text{ pF}$$

$$C_{p4} = 15 \text{ pF}$$

**SAW Components****LL19A****Low-Loss Filter****403,25 MHz****Preliminary Data Sheet****Normalized frequency response****Normalized frequency response**



**SAW Components**

**LL19A**

**Low-Loss Filter**

**403,25 MHz**

**Preliminary Data Sheet**

**Published by EPCOS AG**

**Surface Acoustic Wave Components Division, SAW MC IS**

**P.O. Box 80 17 09, 81617 Munich, GERMANY**

© EPCOS AG 2003. Reproduction, publication and dissemination of this brochure and the information contained therein without EPCOS' prior express consent is prohibited.

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.