



# *SAW Components*

*Data Sheet B3848*

Data Sheet

A large, stylized, 3D-rendered graphic of the word "EPCOS" in a light gray, sans-serif font. The letters are slightly tilted and appear to be floating or emerging from a dark, textured background that resembles a globe or a complex circuit board pattern.



## SAW Components

B3848

## Low-Loss Filter

208,0 MHz

### Data Sheet

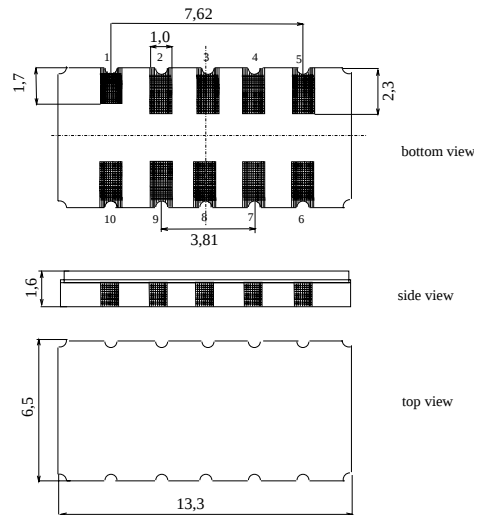
#### Features

- Low-loss IF filter for GSM EDGE base station
- Usable bandwidth 400 kHz
- Very low group delay ripple
- Temperature stable
- Ceramic SMD package

#### Terminals

- Gold plated

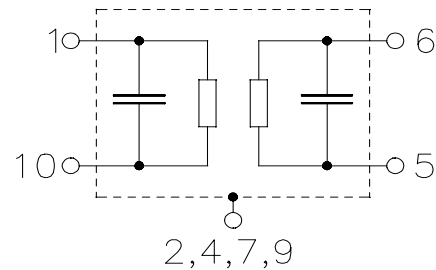
#### Ceramic package DCC12A



Dimensions in mm, approx. weight 0,4 g

#### Pin configuration

|            |               |
|------------|---------------|
| 10         | Input         |
| 1          | Input ground  |
| 5          | Output        |
| 6          | Output ground |
| 3, 8       | Ground        |
| 2, 4, 7, 9 | Case ground   |



| Type  | Ordering code     | Marking and Package according to | Packing according to |
|-------|-------------------|----------------------------------|----------------------|
| B3848 | B39211-B3848-H510 | C61157-A7-A94                    | F61074-V8163-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 |  |



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#### Characteristics

Operating temperature range:

$T = -10 \dots 85 \text{ }^{\circ}\text{C}$

Terminating source impedance:

$Z_S = 50 \text{ } \Omega$  and matching network

Terminating load impedance:

$Z_L = 50 \text{ } \Omega$  and matching network

|                                                            |                                           | min.             | typ.  | max. |               |
|------------------------------------------------------------|-------------------------------------------|------------------|-------|------|---------------|
| <b>Nominal frequency</b>                                   | $f_N$                                     | —                | 208,0 | —    | MHz           |
| <b>Minimum insertion attenuation</b>                       | $\alpha_{\min}$                           | —                | 6,5   | 7,5  | dB            |
| <b>Pass bandwidth</b>                                      |                                           |                  |       |      |               |
|                                                            | $\alpha_{\text{rel}} \leq 1,0 \text{ dB}$ | $B_{1\text{dB}}$ | 400   | 590  | kHz           |
|                                                            | $\alpha_{\text{rel}} \leq 3,0 \text{ dB}$ | $B_{3\text{dB}}$ | —     | 850  | kHz           |
| <b>Amplitude ripple</b> (peak to adjacent valley)          |                                           |                  |       |      |               |
|                                                            | $f_N \pm 200 \text{ kHz}$                 | —                | 0,1   | —    | dB            |
| <b>Amplitude variation</b> (p-p)                           | $\Delta\alpha$                            |                  |       |      |               |
|                                                            | $f_N \pm 200 \text{ kHz}$                 | —                | 0,5   | 1,0  | dB            |
| <b>Absolute group delay</b>                                | $\tau$                                    |                  |       |      |               |
|                                                            | @ $f_N$                                   | 0,7              | 1,3   | 1,7  | $\mu\text{s}$ |
| <b>Group delay ripple</b> (p-p)                            | $\Delta\tau$                              |                  |       |      |               |
|                                                            | $f_N \pm 200 \text{ kHz}$                 | —                | 50    | 120  | ns            |
| <b>Relative attenuation</b> (relative to $\alpha_{\min}$ ) | $\alpha_{\text{rel}}$                     |                  |       |      |               |
| $f_N \pm 0,4 \text{ MHz}$ ... $f_N \pm 0,6 \text{ MHz}$    |                                           | 0                | 2     | —    | dB            |
| $f_N \pm 0,6 \text{ MHz}$ ... $f_N \pm 1,2 \text{ MHz}$    |                                           | 8                | 10    | —    | dB            |
| $f_N \pm 1,2 \text{ MHz}$ ... $f_N \pm 1,8 \text{ MHz}$    |                                           | 20               | 30    | —    | dB            |
| $f_N \pm 1,8 \text{ MHz}$ ... $f_N \pm 3,4 \text{ MHz}$    |                                           | 25               | 40    | —    | dB            |
| $f_N \pm 3,4 \text{ MHz}$ ... $f_N \pm 6,0 \text{ MHz}$    |                                           | 34               | 50    | —    | dB            |
| $f_N \pm 6,0 \text{ MHz}$ ... $f_N \pm 9,5 \text{ MHz}$    |                                           | 40               | 50    | —    | dB            |
| $f_N \pm 9,5 \text{ MHz}$ ... $f_N \pm 13,0 \text{ MHz}$   |                                           | 43               | 60    | —    | dB            |
| $10,0 \text{ MHz}$ ... $f_N - 30,0 \text{ MHz}$            |                                           | 55               | 60    | —    | dB            |
| $f_N - 30,0 \text{ MHz}$ ... $f_N - 13,0 \text{ MHz}$      |                                           | 50               | 55    | —    | dB            |
| $f_N + 13,0 \text{ MHz}$ ... $f_N + 30,0 \text{ MHz}$      |                                           | 45               | 50    | —    | dB            |
| $f_N + 30,0 \text{ MHz}$ ... $450,0 \text{ MHz}^1)$        |                                           | 50               | 55    | —    | dB            |
| <b>VSWR</b> (Input and output in pass band)                |                                           | —                | 1,3   | 2,3  |               |



|                 |           |
|-----------------|-----------|
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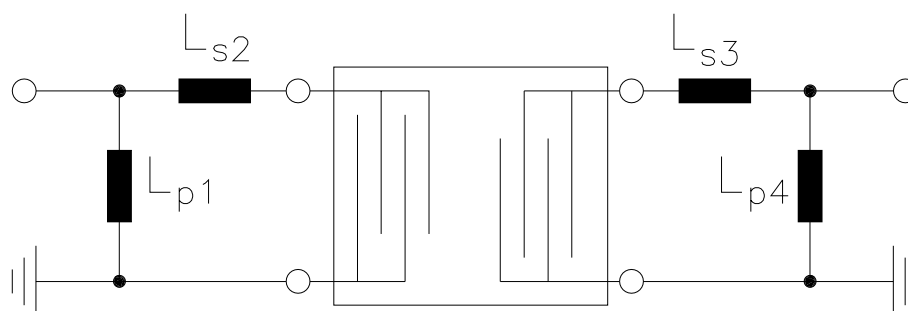
|                                                    |        | min. | typ.    | max. |                    |
|----------------------------------------------------|--------|------|---------|------|--------------------|
| Temperature coefficient of frequency <sup>2)</sup> | $TC_f$ | —    | – 0,036 | —    | ppm/K <sup>2</sup> |
| Turnover temperature                               | $T_0$  | —    | 40      | —    | °C                 |

1) Narrowband responses (typ. 40 dB) at 338 and 380 MHz

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

## Matching network to 50 Ω

(Element values depend upon PCB layout)



$$L_{p1} = 15 \text{ nH}$$

$$L_{s2} = 27 \text{ nH}$$

$$L_{s3} = 8,2 \text{ nH}$$

$$L_{p4} = 15 \text{ nH}$$



SAW Components

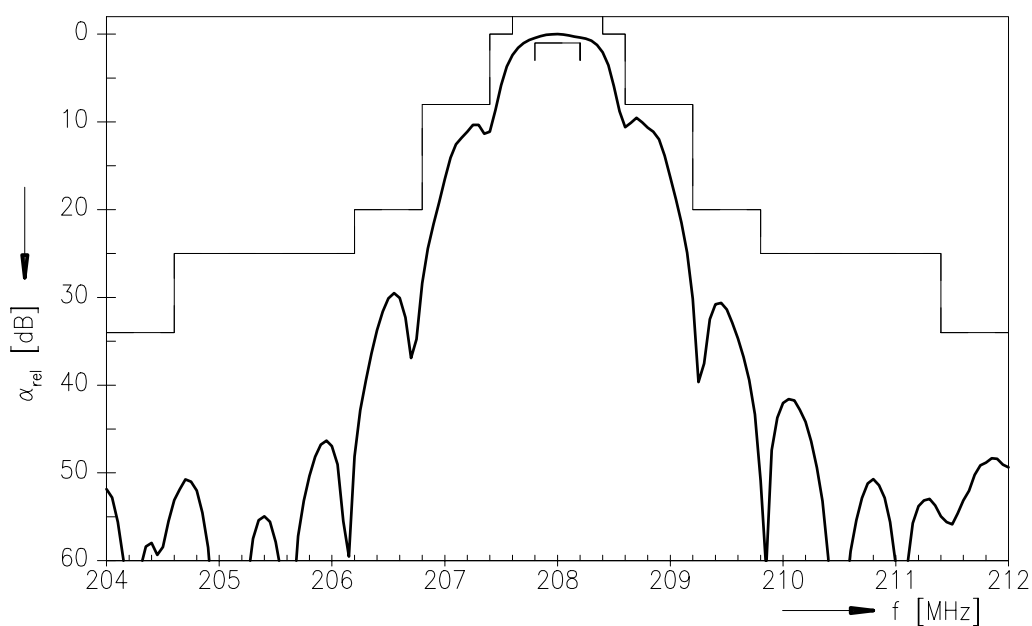
B3848

Low-Loss Filter

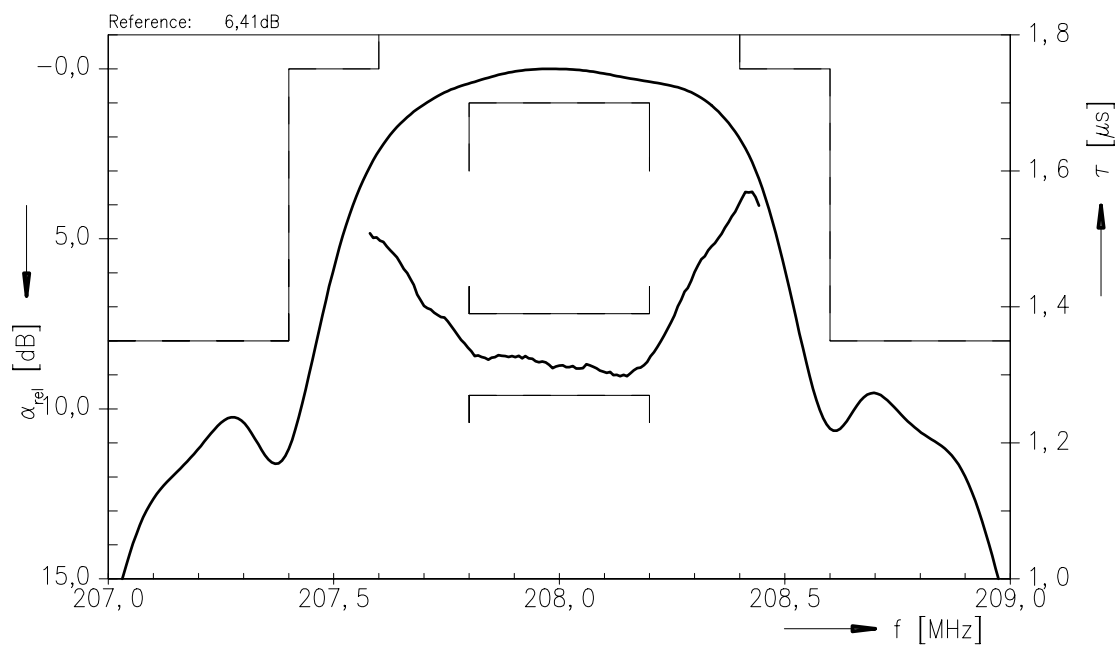
208,0 MHz

## Data Sheet

### Normalized frequency response



### Normalized frequency response (pass band)





|                        |                  |
|------------------------|------------------|
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