EPCOS

# *SAW Components*

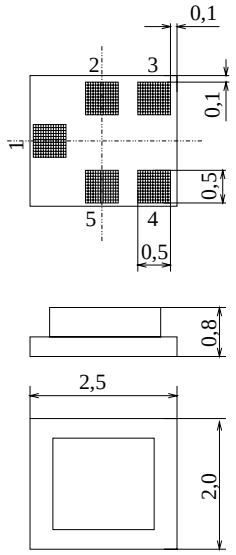
*Data Sheet B7706*

Data Sheet SMD

## Features

- Low-loss RF filter for mobile telephone EGSM system, receive path
- Usable passband 35 MHz
- Unbalanced to balanced operation
- Excellent symmetry between balanced ports
- Impedance transformation from 50 Ω to 200 Ω
- Ceramic Package for **S**urface **M**ounted **T**echnology (**SMT**)

**Chip sized SAW package QCS5A**



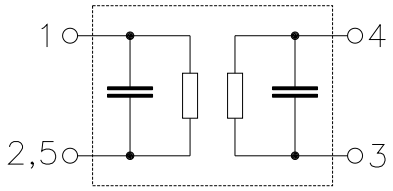

Dimensions in mm, approx. weight 0,015 g

## Terminals

- Ni, gold-plated

## Pin configuration

| | |
|---|---|
| 1 | Input, unbalanced |
| 3, 4 | Output, balanced |
| 2, 5 | Case ground |




| Type | Ordering code | Marking and Package according to | Packing according to |
|---|---|---|---|
| B7706 | B39941-B7706-B610 | C61157-A7-A71 | F61074-V8104-Z000 |

**E**lectrostatic **S**ensitive **D**evice (**ESD**)

## Maximum ratings

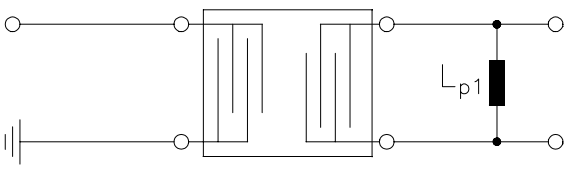
| | | | | |
|---|---|---|---|---|
| Operable temperature range | $T$ | – 10 / + 80 | ˚C | |
| Storage temperature range | $T_{stg}$ | – 40 / + 85 | ˚C | |
| DC voltage | $V_{DC}$ | 3 | V | |
| Input power max. | | | | |
| 880...915 MHz | $P_{IN}$ | 16 | | impedance 50/200 Ω; |
| 1710...1785 MHz | | 10 | dBm | effective input power in ON-state, |
| 1850...1910 MHz | | 15 | | GSM duty cycle 2 : 8 |
| 1920...1980 MHz | | 7 | dBm | continuous wave |
| elsewhere | | 0 | | continuous wave |

## Characteristics

Operating temperature: $T$ = 25 +- 2˚C
Terminating source impedance: $Z_S$ = 50 Ω
Terminating load impedance: $Z_L$ = 200 Ω including matching network

| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_C$ | — | 942,5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 925,0 ... 960,0 MHz | | — | 2,6 | 3,2 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 925,0 ... 960,0 MHz | | — | 1,3 | 1,9 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})$) | | | | | |
| 925,0 ... 960,0 MHz | | -4 | 0 | 4 | degree |
| **Output amplitude balance** ($\lvert S_{31}/S_{21}\rvert$) | | | | | |
| 925,0 ... 960,0 MHz | | -0,3 | 0 | 0,3 | dB |
| **Input VSWR** | | | | | |
| 925,0 ... 960,0 MHz | | — | 1,8 | 2,3 | |
| **Output VSWR** | | | | | |
| 925,0 ... 960,0 MHz | | — | 1,8 | 2,3 | |
| **Attenuation** | $\alpha$ | | | | |
| 0,0 ... 880,0 MHz | | 50 | 60 | — | dB |
| 880,0 ... 905,0 MHz | | 30 | 40 | — | dB |
| 905,0 ... 915,0 MHz | | 20 | 27 | — | dB |
| 980,0 ...1050,0 MHz | | 22 | 24 | — | dB |
| 1050,0 ...6000,0 MHz | | 50 | 65 | — | dB |

**Test matching network**



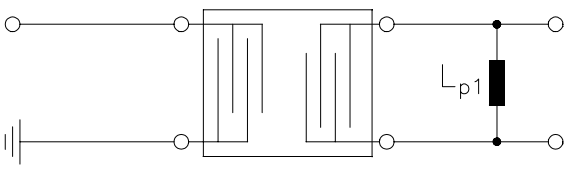

$L_{p1}$ = 100 nH
(20% tolerance, Q = 30 )

## Characteristics

Operating temperature range: $T$ = -10 to +80 ˚C
Terminating source impedance: $Z_S$ = 50 Ω
Terminating load impedance: $Z_L$ = 200 Ω including matching network

| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_C$ | — | 942,5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 925,0 ... 960,0 MHz | | — | 2,7 | 3,5 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 925,0 ... 960,0 MHz | | — | 1,4 | 2,2 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180^\circ$) | | | | | |
| 925,0 ... 960,0 MHz | | -4 | 0 | 4 | degree |
| **Output amplitude balance** ($\lvert S_{31}/S_{21}\rvert$) | | | | | |
| 925,0 ... 960,0 MHz | | -0,3 | 0 | 0,3 | dB |
| **Input VSWR** | | | | | |
| 925,0 ... 960,0 MHz | | — | 1,8 | 2,3 | |
| **Output VSWR** | | | | | |
| 925,0 ... 960,0 MHz | | — | 1,8 | 2,3 | |
| **Attenuation** | $\alpha$ | | | | |
| 0,0 ... 880,0 MHz | | 50 | 60 | — | dB |
| 880,0 ... 905,0 MHz | | 30 | 40 | — | dB |
| 905,0 ... 915,0 MHz | | 20 | 27 | — | dB |
| 980,0 ...1050,0 MHz | | 22 | 23 | — | dB |
| 1050,0 ...6000,0 MHz | | 50 | 65 | — | dB |

**Test matching network**



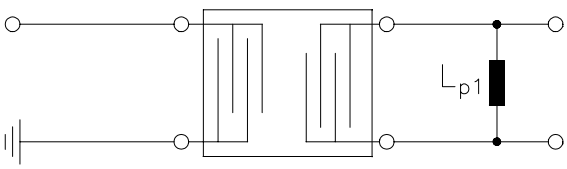

$L_{p1}$ = 100 nH
(20% tolerance, Q = 30 )

## Characteristics

Operating temperature range: $T$ = -30 to +85 ˚C
Terminating source impedance: $Z_S$ = 50 Ω
Terminating load impedance: $Z_L$ = 200 Ω including matching network

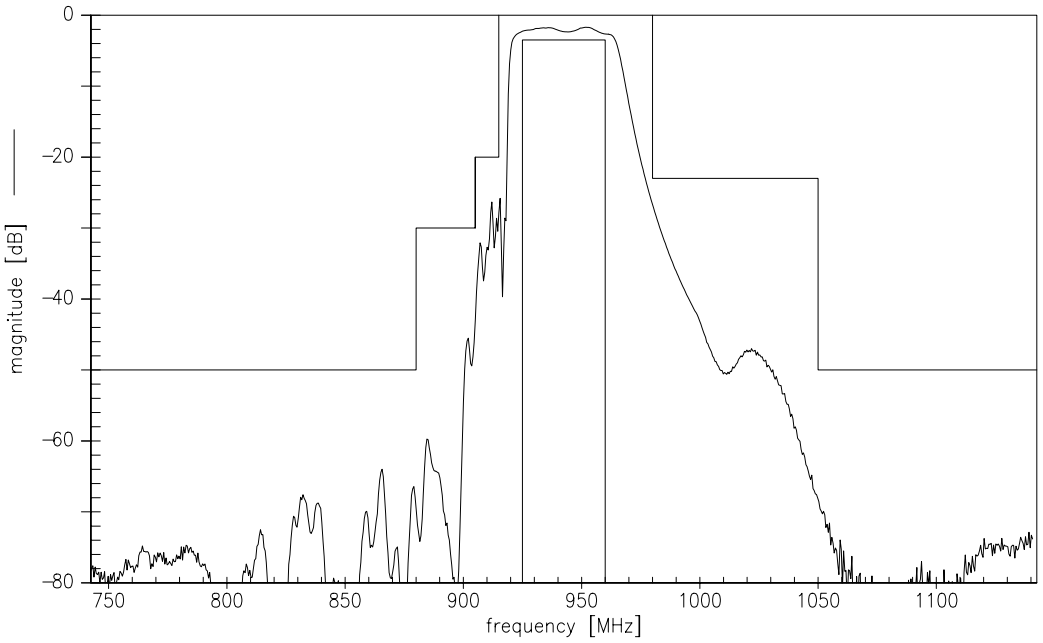
| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_C$ | — | 942,5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 925,0 ... 960,0 MHz | | — | 2,8 | 3,6 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 925,0 ... 960,0 MHz | | — | 1,5 | 2,3 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180^\circ$) | | | | | |
| 925,0 ... 960,0 MHz | | -10 | 0 | 10 | degree |
| **Output amplitude balance** ($\lvert S_{31}/S_{21}\rvert$) | | | | | |
| 925,0 ... 960,0 MHz | | -1 | 0 | 1 | dB |
| **Input VSWR** | | | | | |
| 925,0 ... 960,0 MHz | | — | 2,0 | — | |
| **Output VSWR** | | | | | |
| 925,0 ... 960,0 MHz | | — | 2,0 | — | |
| **Attenuation** | $\alpha$ | | | | |
| 0,0 ... 880,0 MHz | | 50 | 60 | — | dB |
| 880,0 ... 905,0 MHz | | 30 | 40 | — | dB |
| 905,0 ... 915,0 MHz | | 16 | 20 | — | dB |
| 980,0 ...1050,0 MHz | | 20 | 22 | — | dB |
| 1050,0 ...6000,0 MHz | | 50 | 65 | — | dB |

**Test matching network**

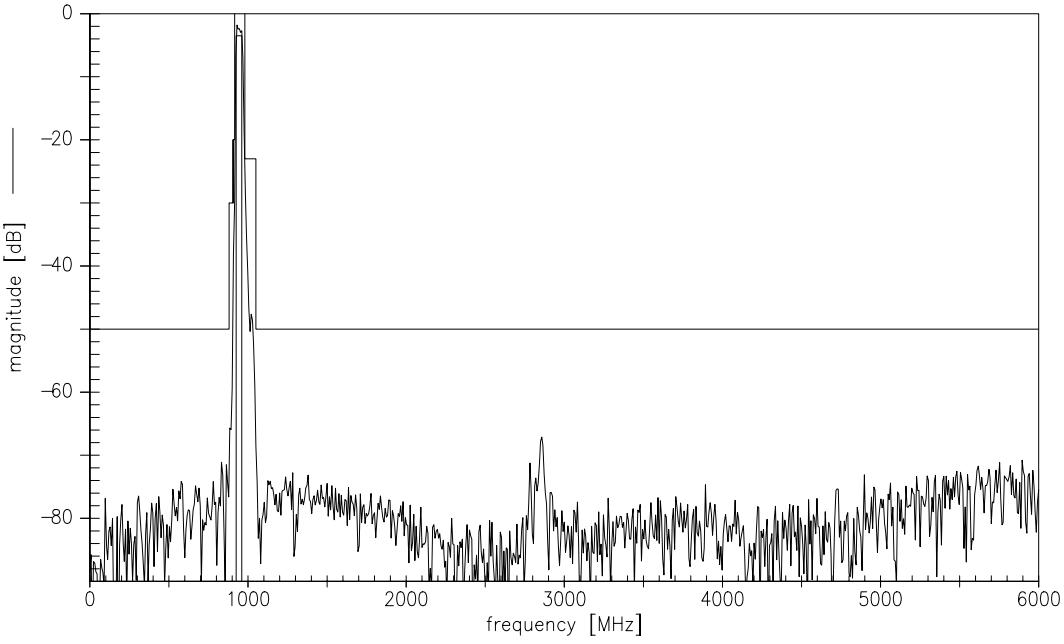



$L_{p1}$ = 100 nH
(20% tolerance, Q = 30 )

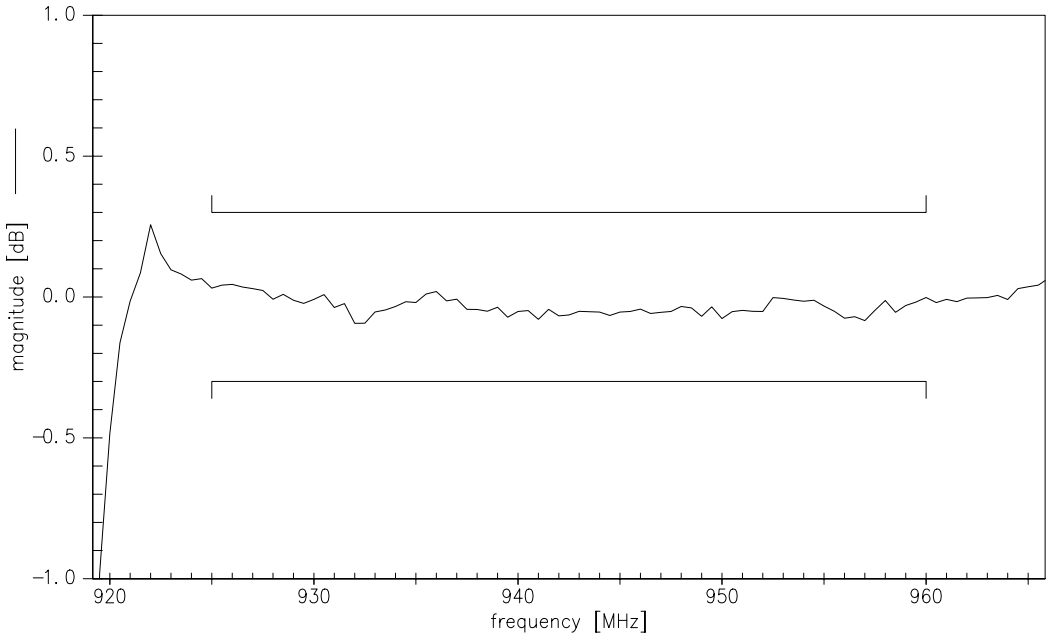
**Transfer function**



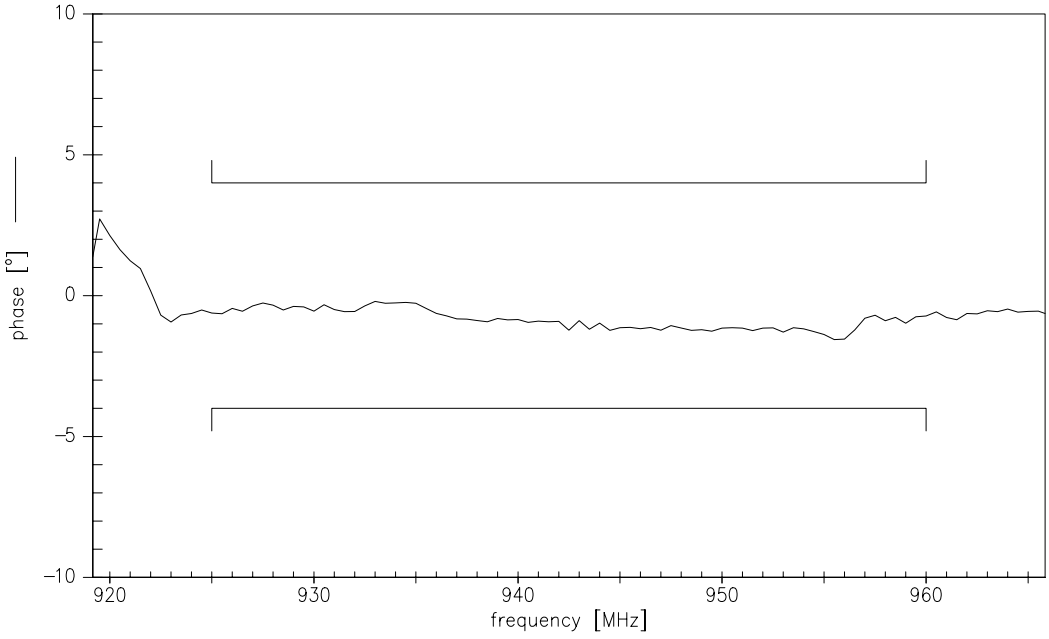

**Transfer function** (wideband)



**Output amplitude balance** ($|S_{31}/S_{21}|$)




**Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180^{\circ}$)



**Published by EPCOS AG**
**Surface Acoustic Wave Components Division, SAW MC WT**
**P.O. Box 80 17 09, D-81617 München**



The information contained in this brochure describes the type of component and shall not be considered as guaranteed characteristics. 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.