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EPCOS

# SAW Components

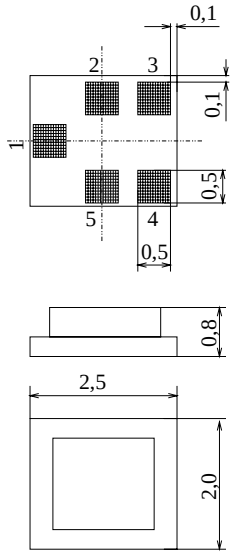
*Data Sheet B7706*

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
- Suitable for GPRS class 1 to 12
- Ceramic Package for **S**urface **M**ounted **T**echnology (**SMT**)

## Chip sized SAW package QCS5A



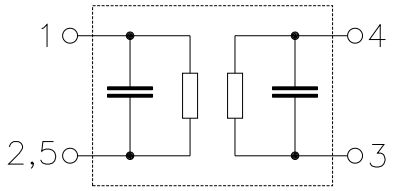

Dimensions in mm, approx. weight 0,015 g

## 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

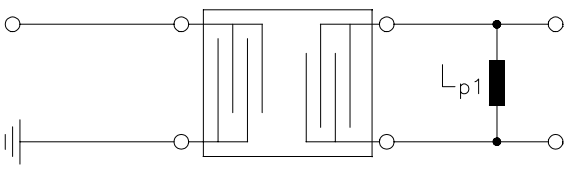
| | | | | |
|---|---|---|---|---|
| Operable temperature range | $T$ | – 30 / + 85 | ˚C | |
| Storage temperature range | $T_{stg}$ | – 40 / + 85 | ˚C | |
| DC voltage | $V_{DC}$ | 3 | V | |
| Input power at GSM850, GSM900, GSM1800 and GSM1900 Tx bands | $P_{IN}$ | 15 | dBm | peak power of GSM signal, duty cycle 4:8 |

## 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** ($\phi(S_{31})-\phi(S_{21})+180^\circ$) | | | | | |
| 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 | 24 | — | dB |
| 1050,0 ...6000,0 MHz | | 50 | 65 | — | dB |

**Test matching network**



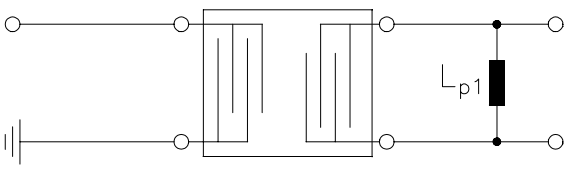

$L_{p1}$ = 100 nH
(20% tolerance, Q = 30 )

## 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**



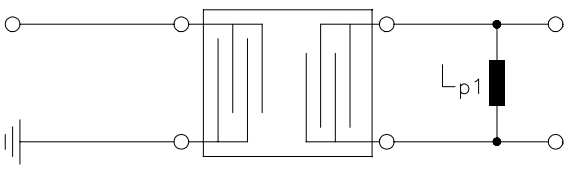

$L_{p1}$ = 100 nH
(20% tolerance, Q = 30 )

## 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

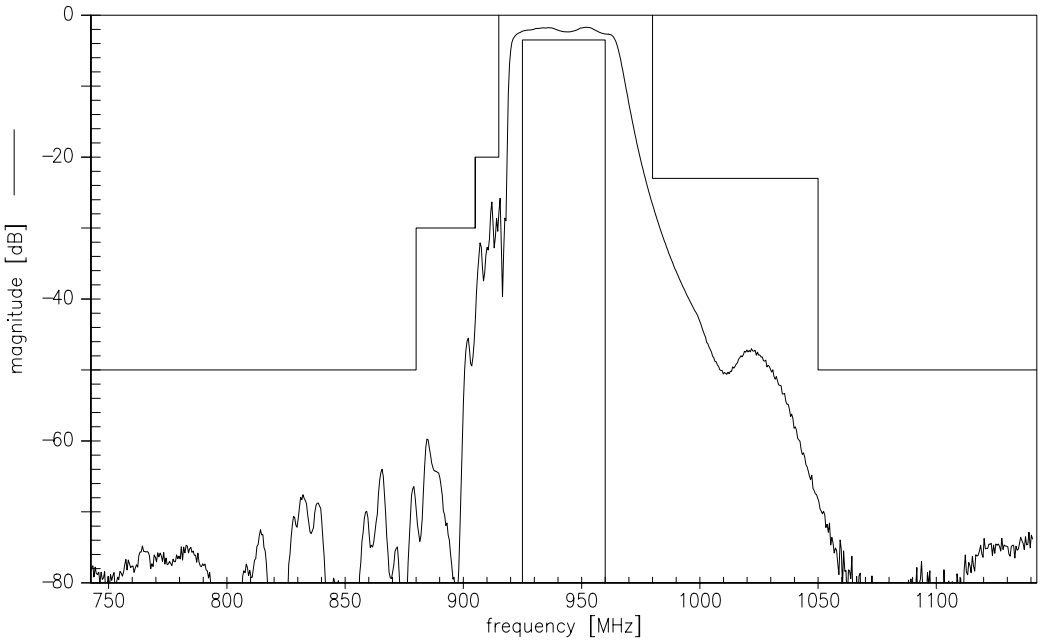
| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_C$ | — | 942,5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 925,0 ... 960,0 MHz | | — | 2,8 | 3,6 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 925,0 ... 960,0 MHz | | — | 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**

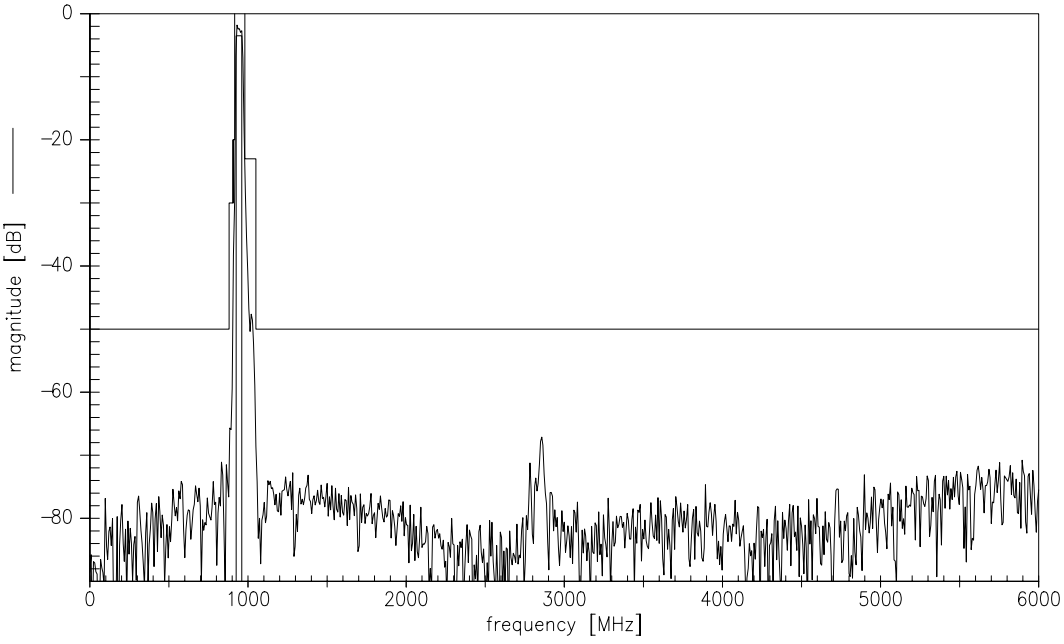



$L_{p1}$ = 100 nH
(20% tolerance, Q = 30 )

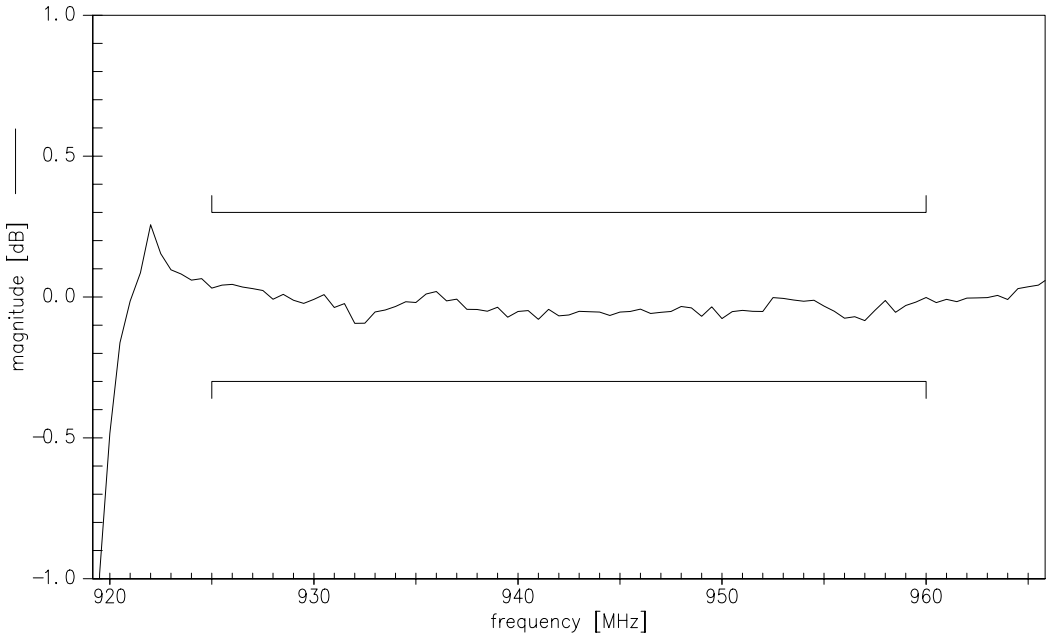
**Transfer function**



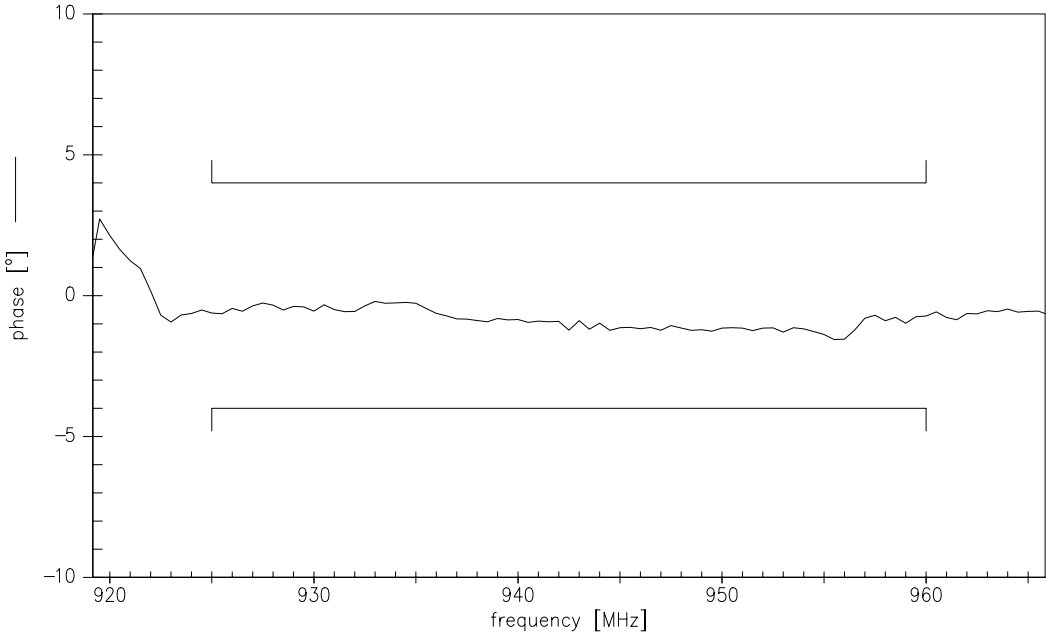

**Transfer function** (wideband)



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




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



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