# SAW Components

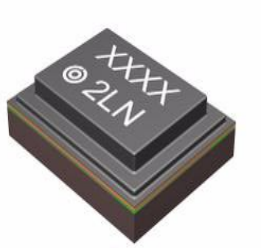
## SAW Rx filter

Automotive telematics

| | |
|---|---|
| **Series/type:** | **B4306** |
| **Ordering code:** | **B39182B4306F210** |
| Date: | March 23, 2011 |
| Version: | 2.0 |

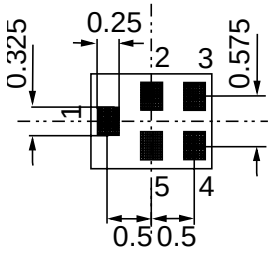
## Application

- Low-loss RF filter for mobile telephone GSM 1800 systems, receive path (RX)
- Impedance transform from 50 Ω to 150 Ω
- Unbalanced to balanced operation
- Very low insertion attenuation
- Low amplitude ripple
- Usable passband 75 MHz
- Suitable for GPRS class 1 to 12

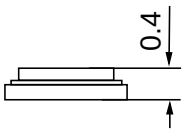



## Features

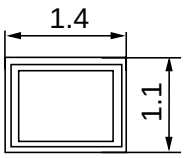
- Package size 1.4 x1.1 x 0.4 mm³
- Package code QCS5M
- RoHS compatible
- Approximate weight 0.003 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- AEC-Q200 qualified component family (operable temperature range –40˚C to +85˚C)
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)




bottom view



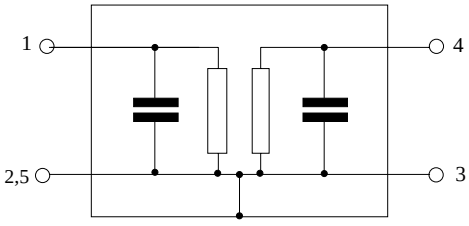

side view




top view

## Pin configuration

- 1 Input, unbalanced
- 3,4 Output, balanced
- 2,5 To be grounded



## Characteristics

Operating temperature range: $T$ = –20 to +75 °C
Terminating source impedance: $Z_S$ = 50Ω
Terminating load impedance: $Z_L$ = 150 Ω || 18 nH (balanced)

| | | min. | typ. @ 25°C | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_C$ | — | 1842.5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 1805.0 ... 1880.0 MHz | | — | 1.8 | 2.4 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 1805.0 ... 1880.0 MHz | | — | 0.7 | 1.5 | dB |
| **VSWR** | | | | | |
| Input 1805.0 ... 1880.0 MHz | | — | 1.9 | 2.3 | |
| Output 1805.0 ... 1880.0 MHz | | — | 1.9 | 2.3 | |
| **CMRR** ($\lvert S_{21}-S_{31}\rvert$ / $\lvert S_{21}+S_{31}\rvert$) | | | | | |
| 1805.0 ... 1880.0 MHz | | 19[1)] | 24 | — | dB |
| **Attenuation** | $\alpha$ | | | | |
| 0.0 ... 902.0 MHz | | 45 | 50 | — | dB |
| 902.0 ... 940.0 MHz | | 45 | 51 | — | dB |
| 940.0 ... 1440.0 MHz | | 35 | 41 | — | dB |
| 1440.0 ... 1705.0 MHz | | 28 | 36 | — | dB |
| 1705.0 ... 1785.0 MHz | | 12 | 18 | — | dB |
| 1920.0 ... 1980.0 MHz | | 18 | 23 | — | dB |
| 1980.0 ... 2030.0 MHz | | 23 | 26 | — | dB |
| 2030.0 ... 2400.0 MHz | | 28 | 31 | — | dB |
| 2400.0 ... 2500.0 MHz | | 30 | 37 | — | dB |
| 2500.0 ... 2775.0 MHz | | 28 | 32 | — | dB |
| 2775.0 ... 3760.0 MHz | | 40 | 47 | — | dB |
| 3760.0 ... 6000.0 MHz | | 35 | 40 | — | dB |

1) A CMRR of 19.6 dB corresponds to a phase imbalance of ±10° together with an amplitude imbalance of ±1.0 dB

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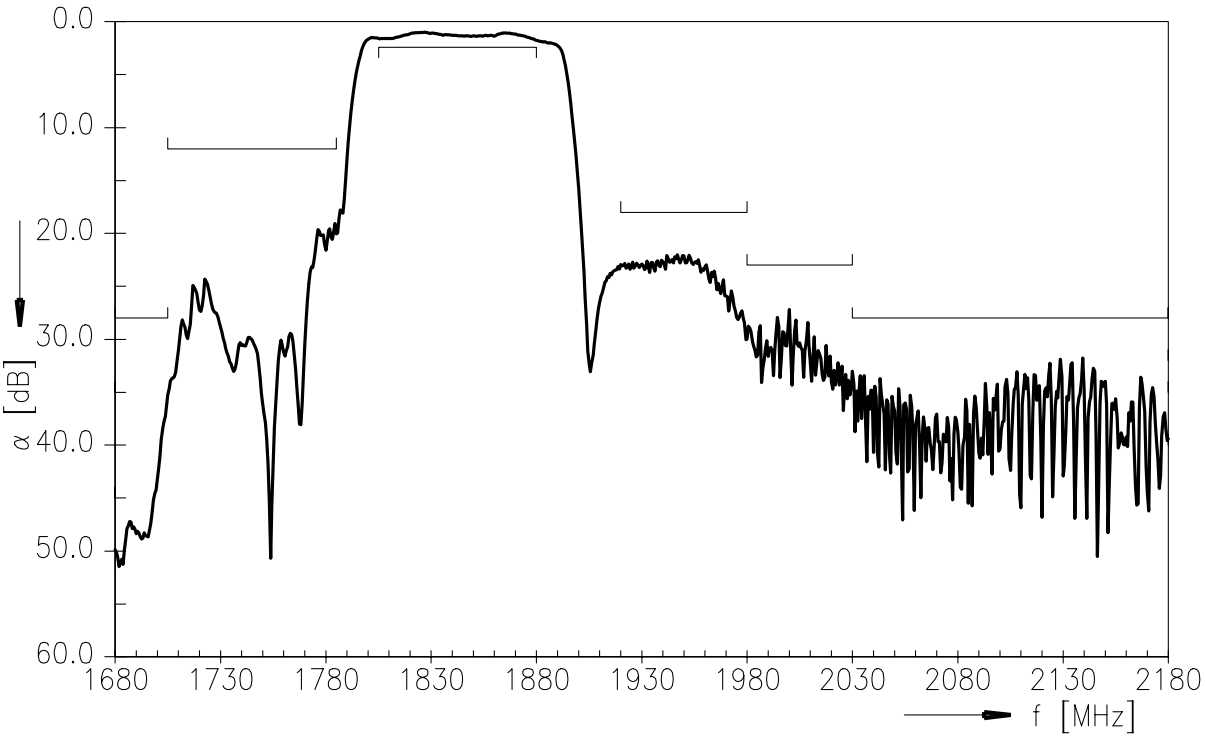
## Maximum ratings

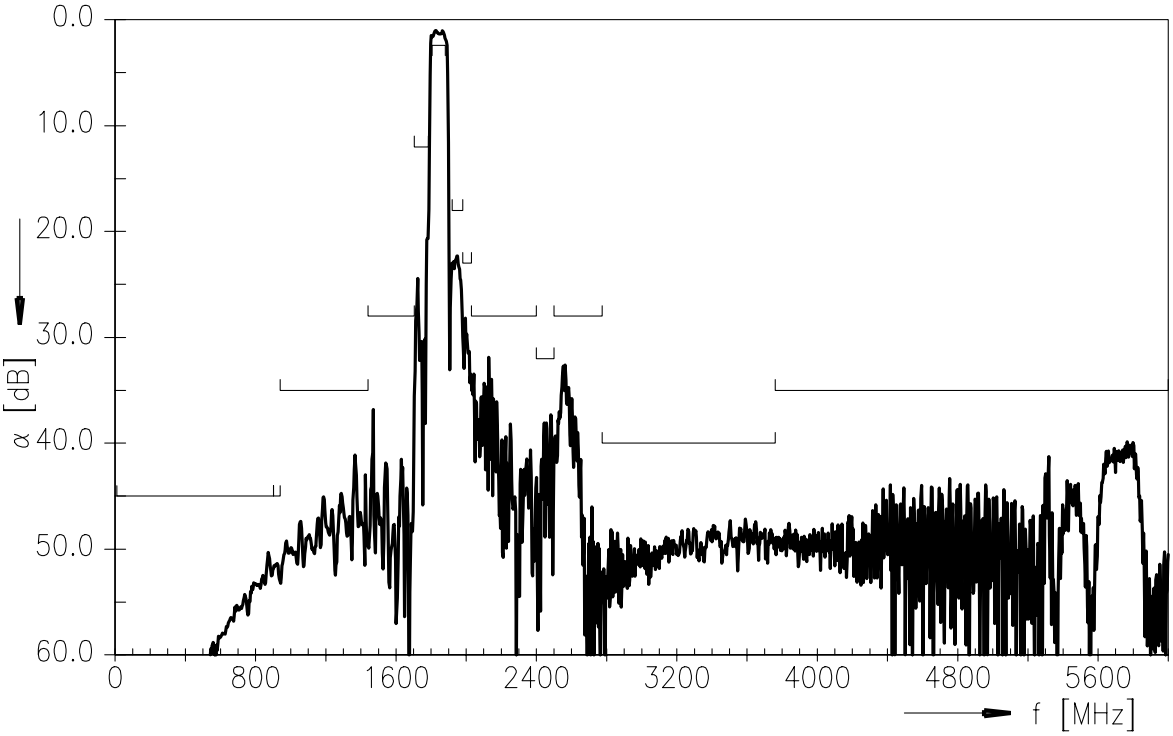
| | | | | |
|---|---|---|---|---|
| Operable temperature range | T | –40/+85 | ˚C | |
| Storage temperature range | $T_{stg}$ | –40/+85 | ˚C | |
| DC voltage | $V_{DC}$ | 0 | V | |
| ESD voltage | $V_{ESD}$ | 50[1)] | V | machine model, 10 pulses |
| Input Power at | | | | |
| GSM850, GSM900 | $P_{IN}$ | 15 | dBm | effecftive power in the on-state, |
| GSM1800, GSM1900 | $P_{IN}$ | 15 | dBm | duty cycle 4:8 |
| Tx bands | | | | |

1) acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

**Transfer function**

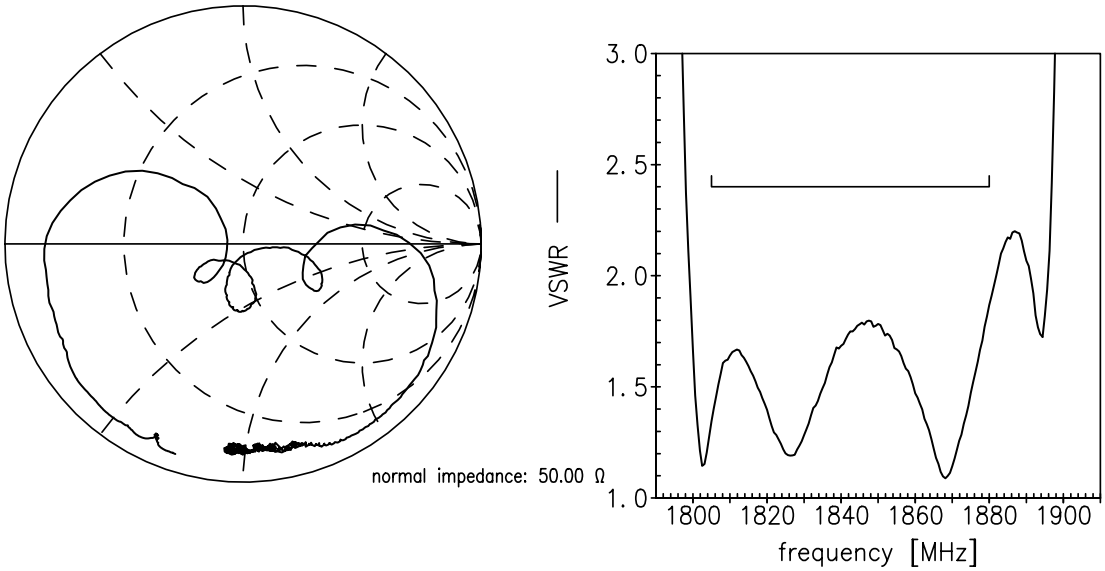



**Transfer function** (wideband)

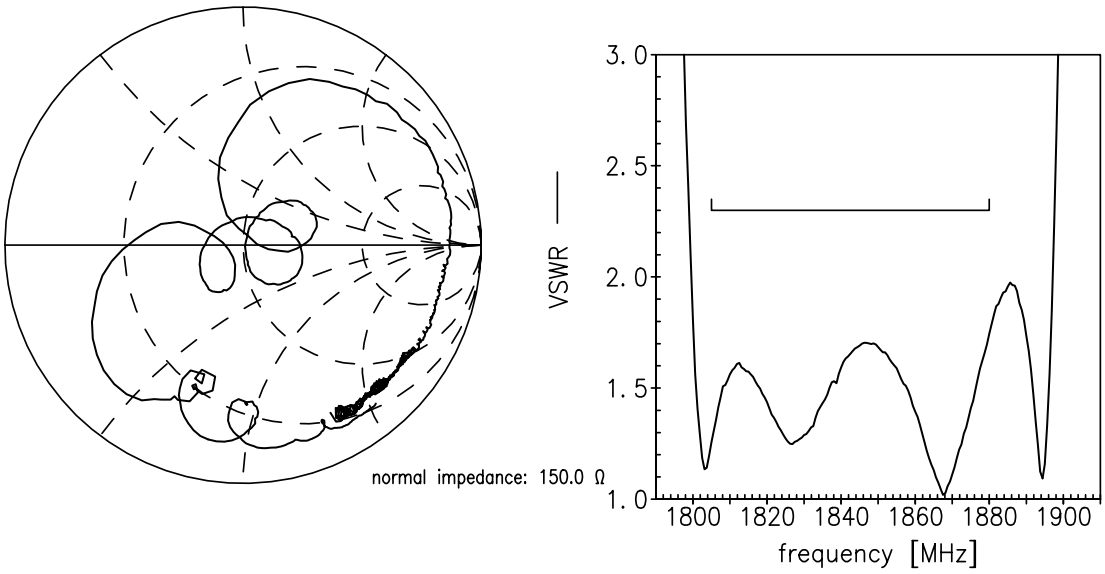


**Smith chart**

**$S_{11}$ function**




**$S_{22}$ function**



## References

| | |
|---|---|
| **Type** | B4306 |
| **Ordering code** | B39182B4306F210 |
| **Marking and package** | C61157-A8-A8 |
| **Packaging** | F61074-V8212-Z000 |
| **Date codes** | L_1126 |
| **S-parameters** | B4306_NB.s3p, B4306_WB.s3p<br>see file header for port/pin assignment table |
| **Soldering profile** | S_6001 |
| **RoHS compatible** | defined as compatible with the following documents:<br>"DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment." |
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