# SAW Components

## SAW Rx Filter

GSM 850

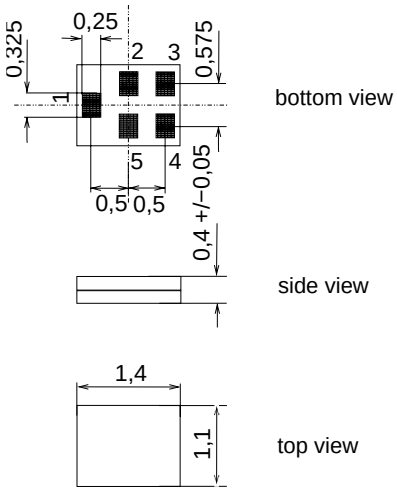
| | |
|---|---|
| **Series/Type:** | **B9400** |
| **Ordering code:** | **B39881-B9400-K610** |
| Date: | Dec 21, 2005 |
| Version: | 2.0 |

## Application

- Low-loss RF filter for mobile telephone GSM850 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 25 MHz
- Suitable for GPRS class 1 to 12

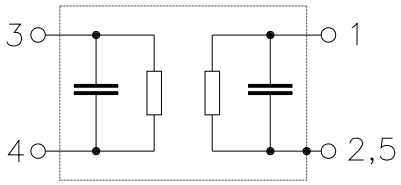
## Features

- Package size 1.4 x1.1 x 0.4 mm³
- RoHS compliant
- Approx. weight 0.003 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals




## 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 || 82 nH (balanced)

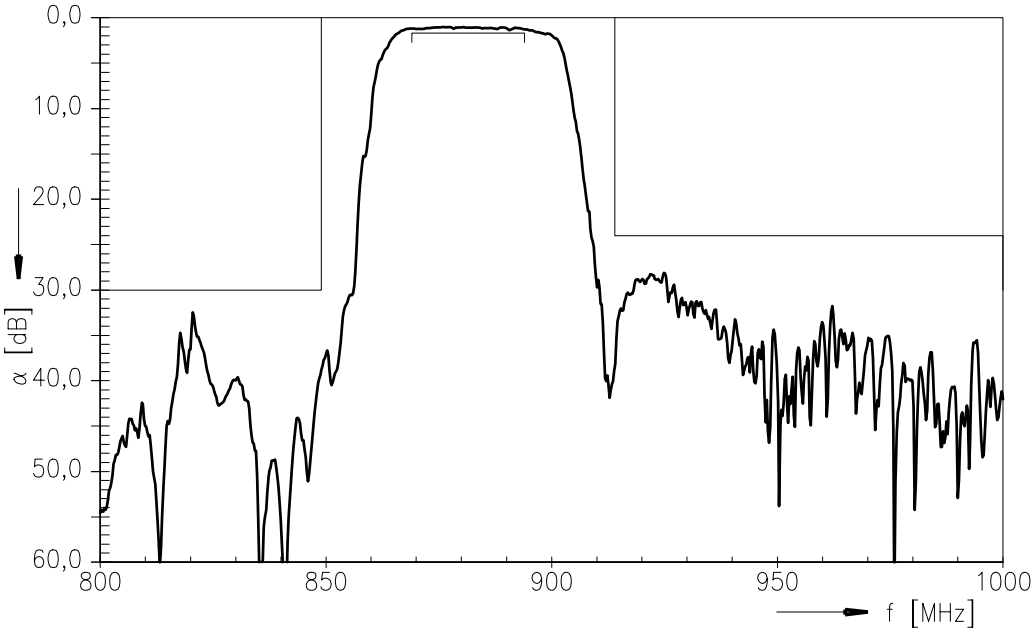
| | | B9400 | | | |
|---|---|---|---|---|---|
| | | **min.** | **typ. @ 25°C** | **max.** | |
| **Center frequency** | $f_C$ | — | 881.5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 869.0 ... 894.0 MHz | | — | 1.4 | 1.7 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 869.0 ... 894.0 MHz | | — | 0.4 | 0.8 | dB |
| **Input VSWR** | | | | | |
| 869.0 ... 894.0 MHz | | — | 1.4 | 1.9 | |
| **Output VSWR** | | | | | |
| 869.0 ... 894.0 MHz | | — | 1.4 | 1.9 | |
| **Output amplitude balance** ($\lvert S_{31}/S_{21}\rvert$) | | | | | |
| 869.0 ... 894.0 MHz | | –1.0 | -0.6/0.0 | 1.0 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180°$) | | | | | |
| 869.0 ... 894.0 MHz | | –10 | -3/+1.5 | 10 | ° |
| **Attenuation** | $\alpha$ | | | | |
| 0.0 ... 434.0 MHz | | 45 | 54 | — | dB |
| 434.0 ... 447.0 MHz | | 45 | 52 | — | dB |
| 447.0 ... 849.0 MHz | | 30 | 33 | — | dB |
| 914.0 ... 1000.0 MHz | | 24 | 28 | — | dB |
| 1000.0 ... 1738.0 MHz | | 28 | 32 | — | dB |
| 1738.0 ...6000.0 MHz | | 36 | 40 | — | dB |

**Maximum ratings**

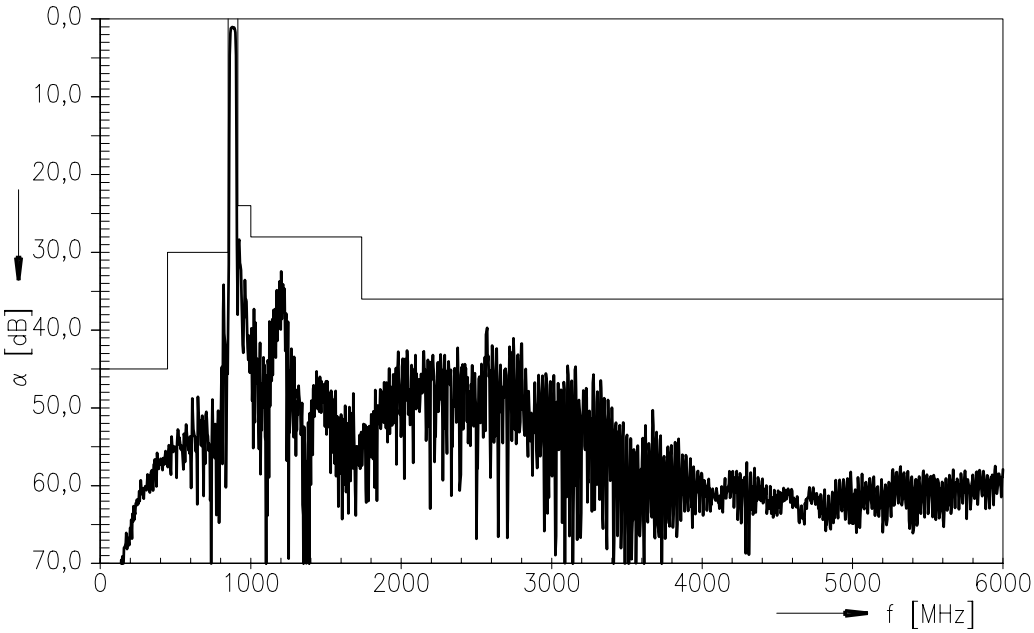
| | | | | |
|---|---|---|---|---|
| Operable temperature range | T | –30/+85 | ˚C | |
| Storage temperature range | $T_{stg}$ | –40/+85 | ˚C | |
| DC voltage | $V_{DC}$ | 5 | V | |
| ESD voltage | $V_{ESD}$ | 100 [1)] | V | machine model, 10 pulses |
| Input Power at | | | | |
| GSM850, GSM900 | $P_{IN}$ | 15 | dBm | effective 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**

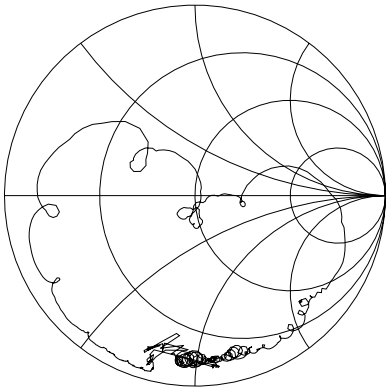


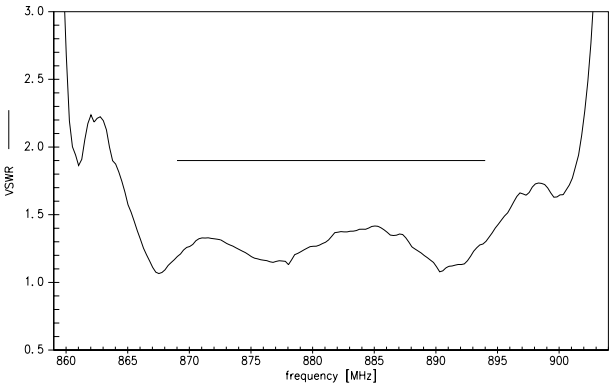

**Transfer function**



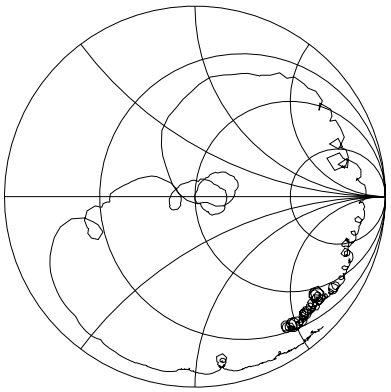
**Smith chart / VSWR**

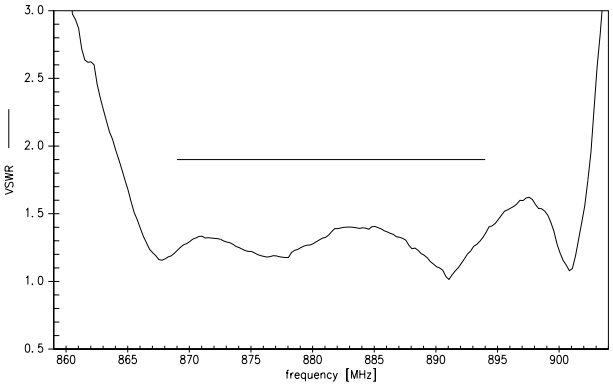
**$S_{11}$ function**






**$S_{22}$ function**





| | | |
|---|---|---|
| **Type** | B9400 | |
| **Ordering code** | B39881-B9400-K610 | |
| **Marking and Package** | C61157-A8-A1 | |
| **Packaging** | F61074-V8212-Z000 | |
| **Date Codes** | L_1126 | |
| **S-Parameters** | B9400_NB.s3p<br>B9400_WB.s3p | |
| **Soldering profile** | S_6001 | |

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