# SAW filters for mobile communications

## Series/Type: B8307

The following products presented in this data sheet are being withdrawn.

| Ordering Code | Substitute Product | Date of Withdrawal | Deadline Last Orders | Last Shipments |
|---|---|---|---|---|
| B39232B8307P810 | B39242B9498P810 | 2015-11-20 | 2016-03-01 | 2016-06-30 |

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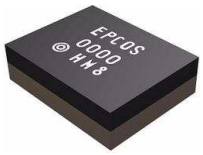
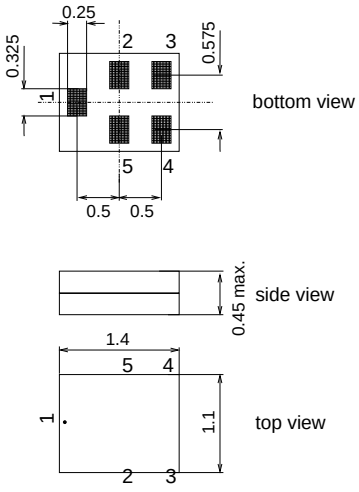
## Application

- Low-loss RF filter for mobile telephone TD-SCDMA systems
- Usable passband 50 MHz
- Unbalanced to balanced operation
- Impedance transformation from 50 Ω to 100 Ω



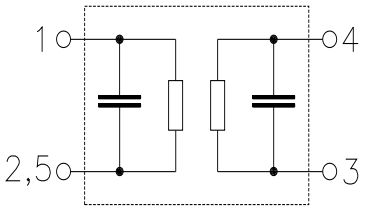

## Features

- Package size 1.4 x 1.1 mm²
- max. Package height 0.45 mm
- RoHS compatible
- Approx. weight 0.003 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitive **L**evel 3




## Pin configuration

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



Data sheet SMD

## Characteristics

Temperature range for specification: $T$ = -30 ˚C to +85 ˚C
Terminating source impedance: $Z_S$ = 50 Ω
Terminating load impedance: $Z_L$ = 100 Ω (balanced)

| | | min. | typ. @ 25˚C | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_C$ | — | 2345.0 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 2320.0 ... 2370.0 MHz | | — | 1.6 | 2.4 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 2320.0 ... 2370.0 MHz | | — | 0.6 | 1.4 | dB |
| **Input VSWR** | | | | | |
| 2320.0 ... 2370.0 MHz | | — | 1.8 | 2.1 | |
| **Output VSWR** | | | | | |
| 2320.0 ... 2370.0 MHz | | — | 1.9 | 2.2 | |
| **CMRR** ($\lvert S_{21}-S_{31}\rvert$ / $\lvert S_{21}+S_{31}\rvert$) | | | | | |
| 2320.0 ... 2370.0 MHz | | 20 | 25 | — | dB |
| **Attenuation** | $\alpha$ | | | | |
| 0.1 ... 2215.0 MHz | | 35 | 50 | — | dB |
| 2215.0 ... 2240.0 MHz | | 35 | 41 | — | dB |
| 2240.0 ... 2280.0 MHz | | 20 | 31 | — | dB |
| 2412.0 ... 2472.0 MHz | $\alpha_{WLAN}$ 1) | 22 | 27 | — | dB |
| 2410.0 ... 2485.0 MHz | | 20 | 25 | — | dB |
| 2485.0 ... 6000.0 MHz | | 25 | 36 | — | dB |

**Annotation for characteristics section**

1) Attenuation of WLAN signal ("Powertransferfunction", $\alpha_{WLAN}$) is determined by

$$\int_{\infty}^{\infty} \left| S_{ds21}(f) H_{RECT}(f - f_{Carrier}) \right|^2 df$$

$f_{Carrier}$ according to IEEE802.11 n (e.g. for WLAN, $f_{Carrier}$ ranges from 2412 MHz (lowest channel) to 2472 MHz (highest channel)). $H_{RECT}(f)$ is the transfer function of a rectangular shaped filter (BW=18MHz) with the following normalization:

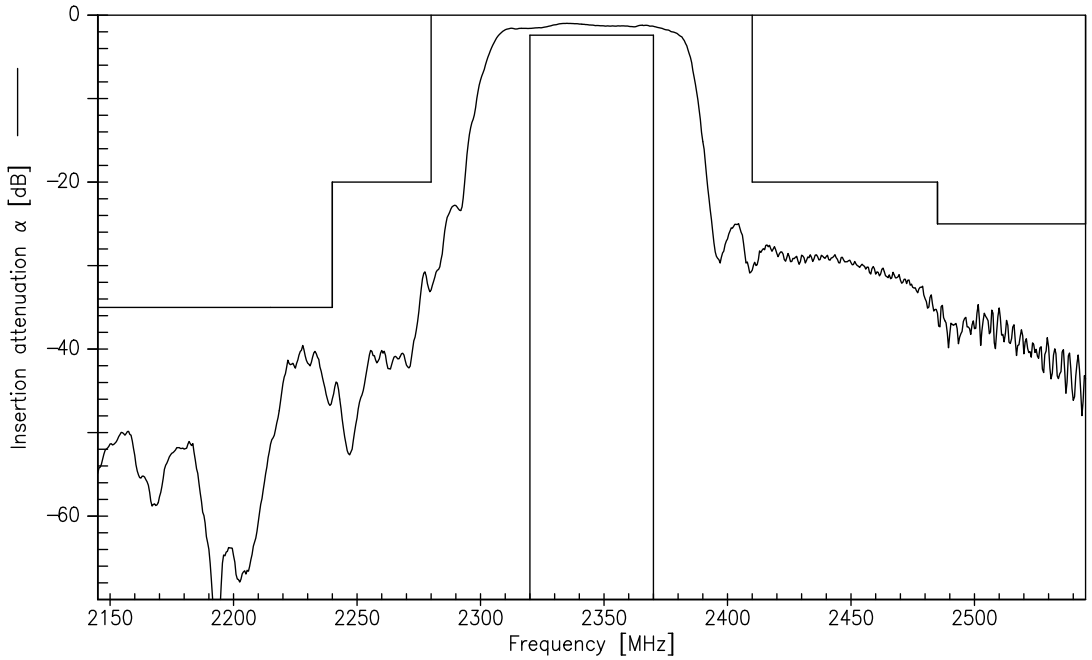
$$\int_{\infty}^{\infty} \left| H_{RECT}(f) \right|^2 df = 1$$

**Maximum ratings**

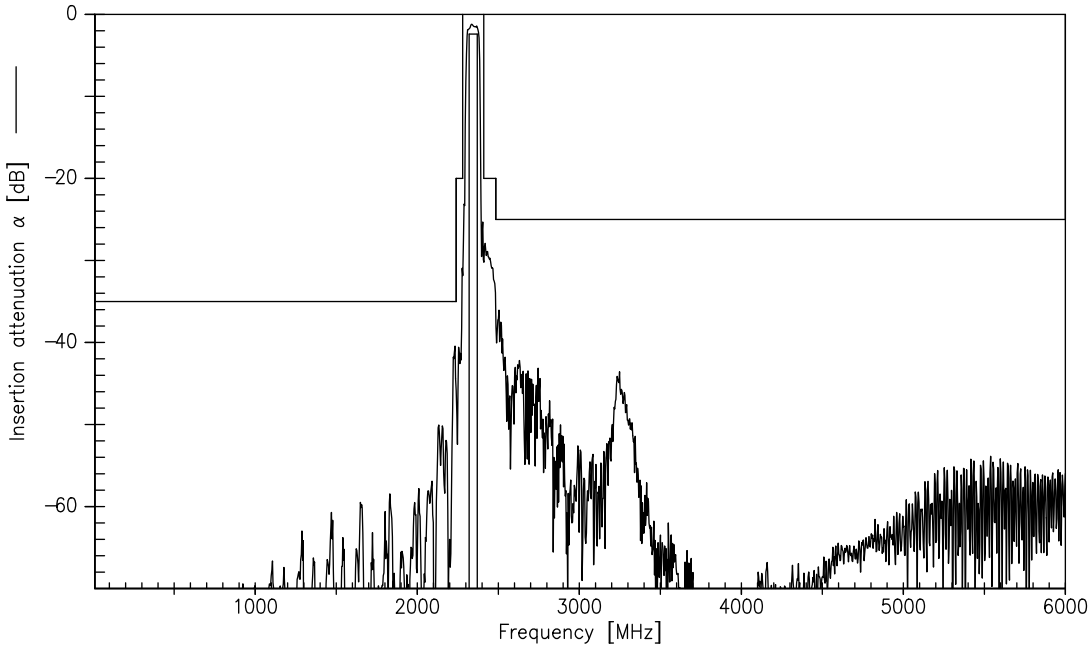
| | | | | |
|---|---|---|---|---|
| Operable temperature range | T | –40/+85 | ˚C | |
| Storage temperature range | $T_{stg}$ | –40/+85 | ˚C | |
| DC voltage | $V_{DC}$ | 5 | V | |
| ESD voltage | $V_{ESD}$ | 50 1) | V | machine model, 1 pulse |
| Input Power at 2320.0...2370.0 MHz | $P_{IN}$ | 11 | dBm | effective power in the on-state duty cycle 4:8 |

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

**Transfer function** (narrowband)

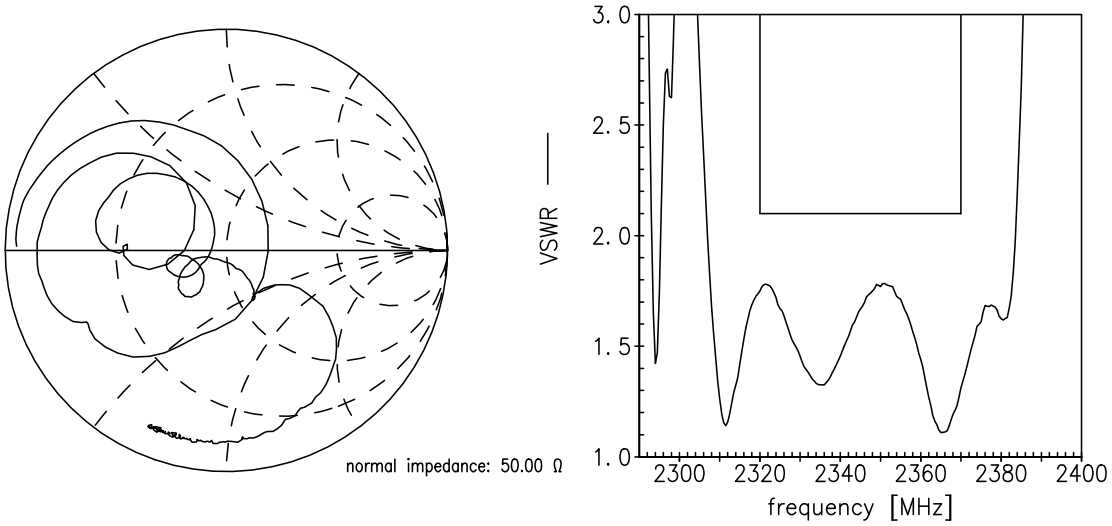



**Transfer function** (wideband)

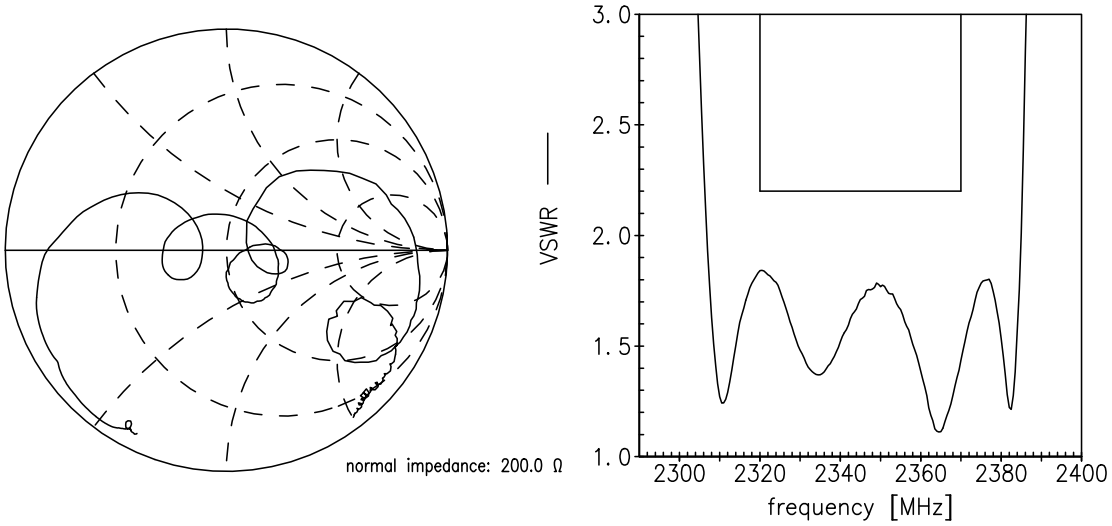


**Smith charts**

**$S_{11}$ function**




**$S_{22}$ function**



| | |
|---|---|
| **Type** | B8307 |
| **Ordering code** | B39232B8307P810 |
| **Marking and package** | C61157-A8-A14 |
| **Packaging** | F61074-V8237-Z000 |
| **Date codes** | L_1126 |
| **S-parameters** | B8307_NB.s3p, B8307_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." |
| **Matching coils** | See Inductor pdf-catalog<br>http://www.tdk.co.jp/tefe02/coil.htm#aname1<br>and Data Library for circuit simulation<br>http://www.tdk.co.jp/etvcl/index.htm |

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