EPCOS

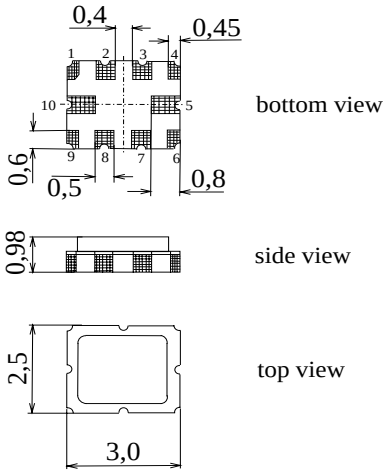
# *SAW Components*

*Data Sheet B4234*

Ceramic package **QCC10G**

### Features

- Low-loss RF filter for mobile telephone GSM 850/1900 system , receive path
- Usable passband:
  Filter 1 (GSM850): 25 MHz
  Filter 2 (GSM1900): 60 MHz
- Unbalanced to balanced operation of both filters
- Impedance transformation from 50 Ω to 150 Ω for both filters
- Suitable for GPRS class 1 to 12
- Ceramic package for **S**urface **M**ounted **T**echnology (**SMT**)
- RoHS compliant



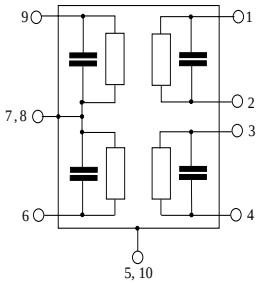

Dimensions in mm, approx. weight **27 mg**

### Terminals

- Ni, gold-plated

### Pin configuration

| | |
|---|---|
| 1, 2 | Output, balanced [ Filter 1 ] |
| 3, 4 | Output, balanced [ Filter 2 ] |
| 6 | Input [ Filter 2 ] |
| 7,8 | Case ground |
| 9 | Input [ Filter 1 ] |
| 5, 10 | Case ground |




| Type | Ordering code | Marking and Package according to | Packing according to |
|---|---|---|---|
| B4234 | B39202-B4234-H910 | C61157-A7-A142 | F61074-V8174-Z000 |

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

### 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* | V | Machine Model, 10 pulses |
| Input power at Tx bands: GSM850, GSM900 GSM1800, GSM1900 | $P_{IN}$ | 15 | dBm | peak power of GSM signal, duty cycle 4:8 |

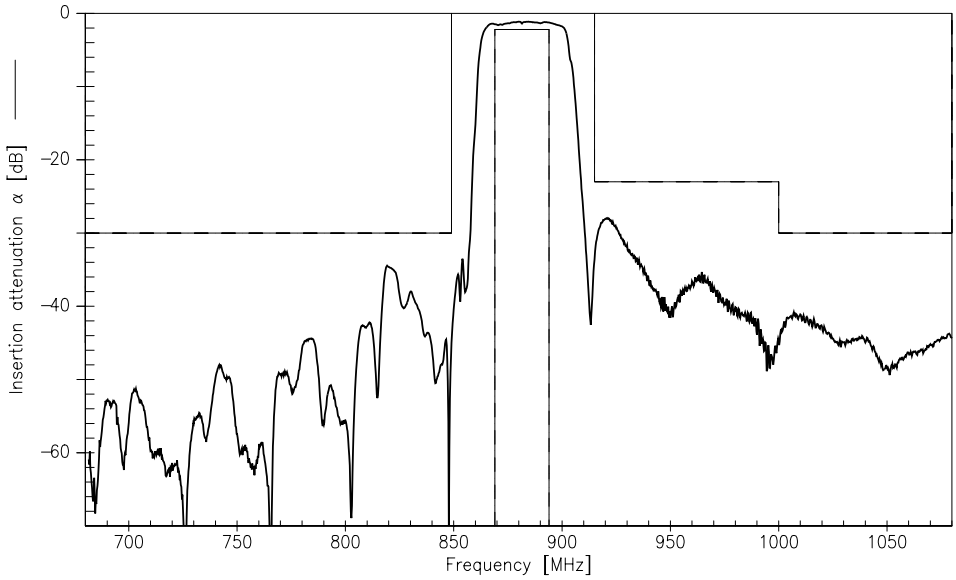
* - acc. to JESD22-A115A (Machine Model), 10 negative & 10 positive pulses

**Characteristics Filter 1 ( GSM850 )**

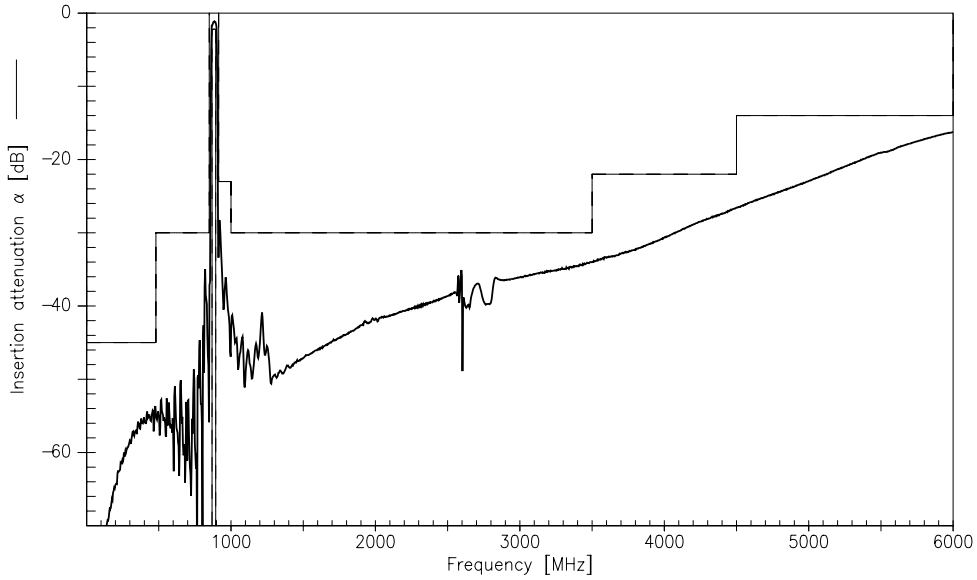
Operating temperature range: $T$ = -20 to +75˚C
Terminating source impedance: $Z_S$ = 50 Ω (unbalanced)
Terminating load impedance: $Z_L$ = 150 Ω (balanced) || 56 nH

| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_c$ | — | 881,5 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 869,0 ... 894,0 MHz | | — | 1,8 | 2,2 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 869,0 ... 894,0 MHz | | — | 0,6 | 1,0 | dB |
| **Input VSWR** | | | | | |
| 869,0 ... 894,0 MHz | | — | 1,8 | 2,1 | |
| **Output VSWR** | | | | | |
| 869,0 ... 894,0 MHz | | — | 1,8 | 2,1 | |
| **Output amplitude balance** ($\|S_{31}/S_{21}\|$) | | | | | |
| 869,0 ... 894,0 MHz | | -1,5 | | 1,0 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180^\circ$) | | | | | |
| 869,0 ... 894,0 MHz | | -10,0 | | 12,0 | degree |
| **Absolute attenuation** | $\alpha_{abs}$ | | | | |
| 10,0 ... 480,0 MHz | | 45,0 | 50,0 | — | dB |
| 480,0 ... 849,0 MHz | | 30,0 | 34,0 | — | dB |
| 915,0 ...1000,0 MHz | | 23,0 | 27,0 | — | dB |
| 1000,0 ...3500,0 MHz | | 30,0 | 34,0 | — | dB |
| 3500,0 ...4500,0 MHz | | 22,0 | 26,0 | — | dB |
| 4500,0 ...6000,0 MHz | | 14,0 | 17,0 | — | dB |

**Transfer function of filter 1 (narrow band)**




**Transfer function of filter 1 (wide band)**



**Characteristics Filter 2 ( GSM1900 )**

Operating temperature range: $T$ = +25 ± 2 °C
Terminating source impedance: $Z_S$ = 50 Ω (unbalanced)
Terminating load impedance: $Z_L$ = 150 Ω (balanced) || 12 nH

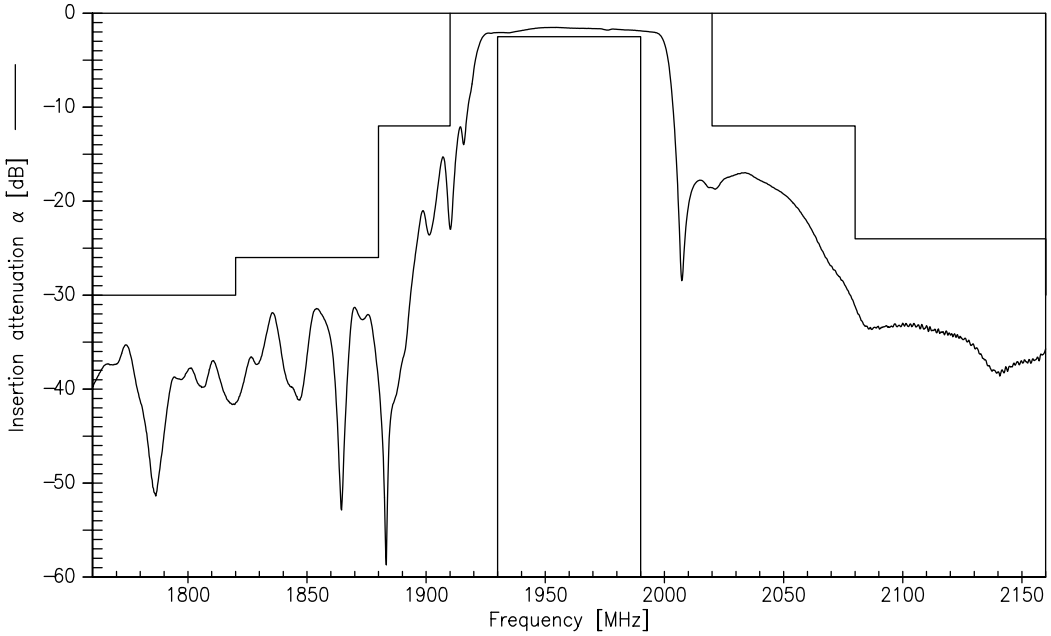
| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_c$ | — | 1960,0 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 1930,0 ...1990,0 MHz | | — | 2,2 | 2,5 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 1930,0 ...1990,0 MHz | | — | 0,6 | 1,0 | dB |
| **Input VSWR** | | | | | |
| 1930,0 ...1990,0 MHz | | — | 1,7 | 2,0 | |
| **Output VSWR** | | | | | |
| 1930,0 ...1990,0 MHz | | — | 1,7 | 2,0 | |
| **Output amplitude balance** ($\lvert S_{31}/S_{21}\rvert$) | | | | | |
| 1930,0 ...1990,0 MHz | | -1,3 | | 1,3 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180°$) | | | | | |
| 1930,0 ...1990,0 MHz | | -12,0 | | 8,0 | degree |
| **Absolute attenuation** | $\alpha_{abs}$ | | | | |
| 10,0 ...1510,0 MHz | | 40,0 | 43,0 | — | dB |
| 1510,0 ...1820,0 MHz | | 30,0 | 34,0 | — | dB |
| 1820,0 ...1880,0 MHz | | 26,0 | 30,0 | — | dB |
| 1880,0 ...1910,0 MHz | | 12,0 | 16,0 | — | dB |
| 2020,0 ...2080,0 MHz | | 12,0 | 17,0 | — | dB |
| 2080,0 ...2400,0 MHz | | 24,0 | 29,0 | — | dB |
| 2400,0 ...4500,0 MHz | | 30,0 | 32,0 | — | dB |
| 4500,0 ...6000,0 MHz | | 22,0 | 25,0 | — | dB |

**Characteristics Filter 2 ( GSM1900 )**

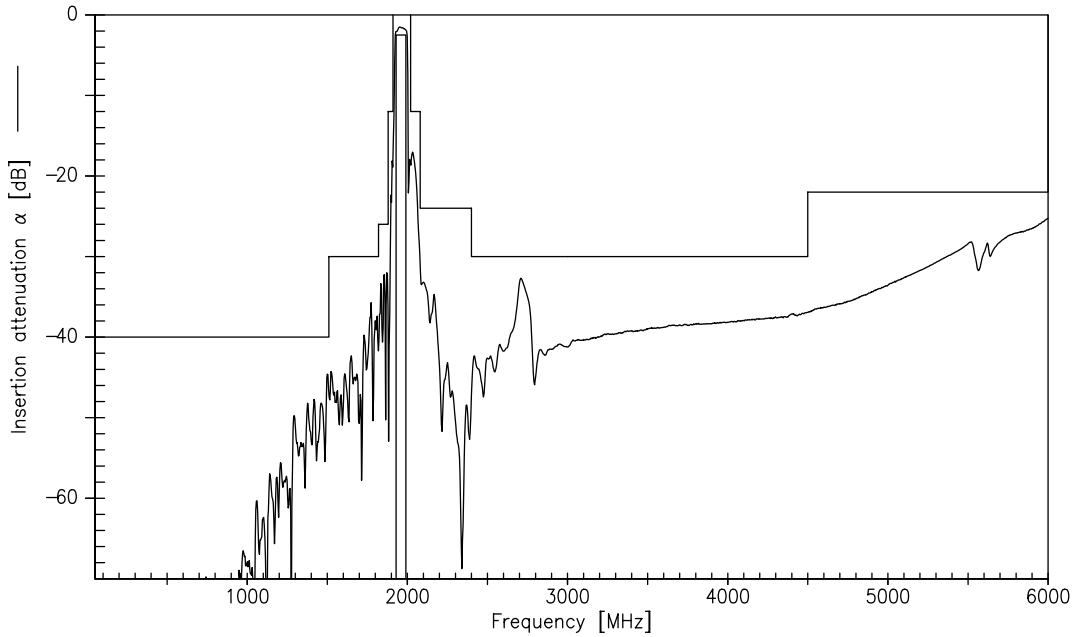
Operating temperature range: $T$ = -20 to +75˚C
Terminating source impedance: $Z_S$ = 50 Ω (unbalanced)
Terminating load impedance: $Z_L$ = 150 Ω (balanced) || 12 nH

| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** | $f_c$ | — | 1960,0 | — | MHz |
| **Maximum insertion attenuation** | $\alpha_{max}$ | | | | |
| 1930,0 ...1990,0 MHz | | — | 2,3 | 2,7 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 1930,0 ...1990,0 MHz | | — | 0,6 | 1,0 | dB |
| **Input VSWR** | | | | | |
| 1930,0 ...1990,0 MHz | | — | 1,9 | 2,2 | |
| **Output VSWR** | | | | | |
| 1930,0 ...1990,0 MHz | | — | 1,9 | 2,2 | |
| **Output amplitude balance** ($\|S_{31}/S_{21}\|$) | | | | | |
| 1930,0 ...1990,0 MHz | | -1,3 | | 1,3 | dB |
| **Output phase balance** ($\phi(S_{31})-\phi(S_{21})+180^\circ$) | | | | | |
| 1930,0 ...1990,0 MHz | | -12,0 | | 8,0 | degree |
| **Absolute attenuation** | $\alpha_{abs}$ | | | | |
| 10,0 ...1510,0 MHz | | 40,0 | 43,0 | — | dB |
| 1510,0 ...1820,0 MHz | | 30,0 | 34,0 | — | dB |
| 1820,0 ...1880,0 MHz | | 26,0 | 30,0 | — | dB |
| 1880,0 ...1910,0 MHz | | 10,0 | 13,0 | — | dB |
| 2020,0 ...2080,0 MHz | | 12,0 | 17,0 | — | dB |
| 2080,0 ...2400,0 MHz | | 24,0 | 29,0 | — | dB |
| 2400,0 ...4500,0 MHz | | 30,0 | 32,0 | — | dB |
| 4500,0 ...6000,0 MHz | | 22,0 | 25,0 | — | dB |

**Transfer function of filter 2 (narrow band)**




**Transfer function of filter 2 (wide band)**



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