



SAW Components

Data Sheet B7653

Data Sheet

An abstract, grayscale graphic featuring a globe with a grid of latitude and longitude lines. Overlaid on the globe is a large, stylized, 3D-effect word "EPCOS" in a light gray color. The word is tilted and appears to be floating or emerging from the globe. The background is dark and textured with some light streaks.



SAW Components

B7653

Low-Loss Dual Band Filter for Mobile Communication

881,5 & 1960,0 MHz

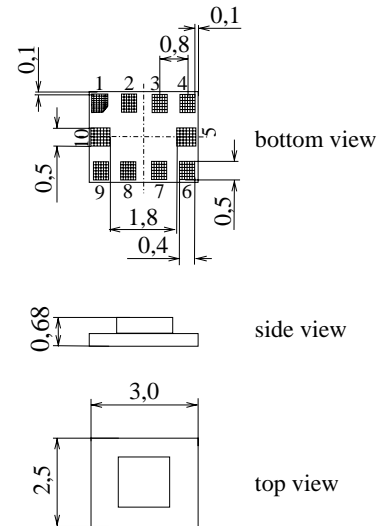
Data Sheet



Chip Sized Saw Package QCS10C

Features

- Low-loss 2-in-1 RF filter for mobile telephone AMPS and PCS bands, receive path
- Usable passband:
Filter 1 (AMPS): 25 MHz
Filter 2 (PCS): 60 MHz
- Unbalanced to balanced operation for both filters
- Impedance transformation from 50 Ω to 200 Ω for AMPS filter
- Suitable for GPRS class 1 to 12
- Package for **S**urface **M**ounted **T**echnology (**SMT**)



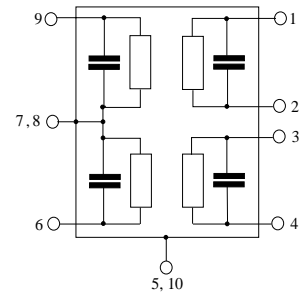
Terminals

- Ni, gold-plated

Pin configuration

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

Dimensions in mm, approx. weight 0,015g



| Type | Ordering code | Marking and Package according to | Packing according to |
|-------|-------------------|----------------------------------|----------------------|
| B7653 | B39202-B7653-G210 | C61157-A7-A129 | F6104-V8156-Z000 |

Electrostatic Sensitive Device (ESD)

Maximum ratings

| | | | | |
|--|------------------|------------|--------------------|---|
| Operable temperature range | T | - 20 /+ 70 | $^{\circ}\text{C}$ | peak power of GSM signal, duty cycle 4:8 |
| Storage temperature range | T_{stg} | - 40 /+ 85 | $^{\circ}\text{C}$ | |
| DC voltage | V_{DC} | 5 | V | |
| ESD voltage | V_{ESD} | 50 | V | |
| Input power at GSM850, GSM900, GSM1800, GSM1900 Tx bands: | P_{IN} | 15 | dBm | |
| Filter 1 (AMPS-Rx) | P_{IN} | 13 | dBm | |
| Filter 2 (PCS-Rx) | | | | |



SAW Components

B7653

Low-Loss Dual Band Filter for Mobile Communication

881,5 & 1960,0 MHz

Data Sheet



Characteristics of Filter 1 (AMPS)

Operating temperature range: $T = -20$ to $+70$ °C
Terminating source impedance: $Z_S = 50 \Omega$
Terminating load impedance: $Z_L = 200 \Omega \parallel 56 \text{ nH}$

| | | | min. | typ. | max. | |
|---|-----------------|-----------------------|------|-------|-------|-----|
| Center frequency | f_c | | — | 881,5 | — | MHz |
| Maximum insertion attenuation | α_{\max} | 869,0 ... 894,0 MHz | — | 3,0 | 3,5* | dB |
| Amplitude ripple (p-p) | $\Delta\alpha$ | 869,0 ... 894,0 MHz | — | 1,5 | 2,0 | dB |
| Input return loss | | 869,0 ... 894,0 MHz | 8,0 | 12,0 | — | dB |
| Output return loss | | 869,0 ... 894,0 MHz | 8,0 | 11,0 | — | dB |
| Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$) | | 869,0 ... 894,0 MHz | -5,0 | — | +10,0 | ° |
| Output amplitude balance ($ S_{31}/S_{21} $) | | 869,0 ... 894,0 MHz | -1,1 | — | +0,7 | dB |
| Inter-band isolation | α_{\min} | 1930,0 ... 1990,0 MHz | 30,0 | 40,0 | — | dB |
| Attenuation | α_{\min} | 10,0 ... 600,0 MHz | 45,0 | 54,0 | — | dB |
| | | 600,0 ... 849,0 MHz | 35,0 | 40,0 | — | dB |
| | | 914,0 ... 916,0 MHz | 20,0 | 24,0 | — | dB |
| | | 916,0 ... 1000,0 MHz | 23,0 | 27,0 | — | dB |
| | | 1738,0 ... 1788,0 MHz | 40,0 | 48,0 | — | dB |
| | | 2607,0 ... 2682,0 MHz | 40,0 | 48,0 | — | dB |
| | | 3476,0 ... 3576,0 MHz | 38,0 | 46,0 | — | dB |
| Tx band suppression | α_{\min} | 824,0 ... 849,0 MHz | 35,0 | — | — | dB |

* 3,0 dB (2,6 dB typ.) for temperature range 25 ± 10 °C



SAW Components

B7653

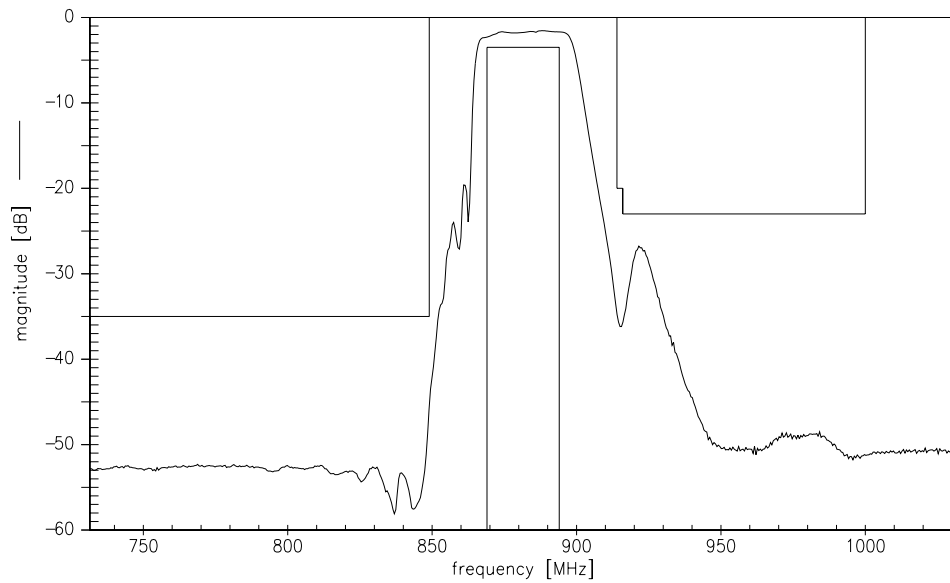
Low-Loss Dual Band Filter for Mobile Communication

881,5 & 1960,0 MHz

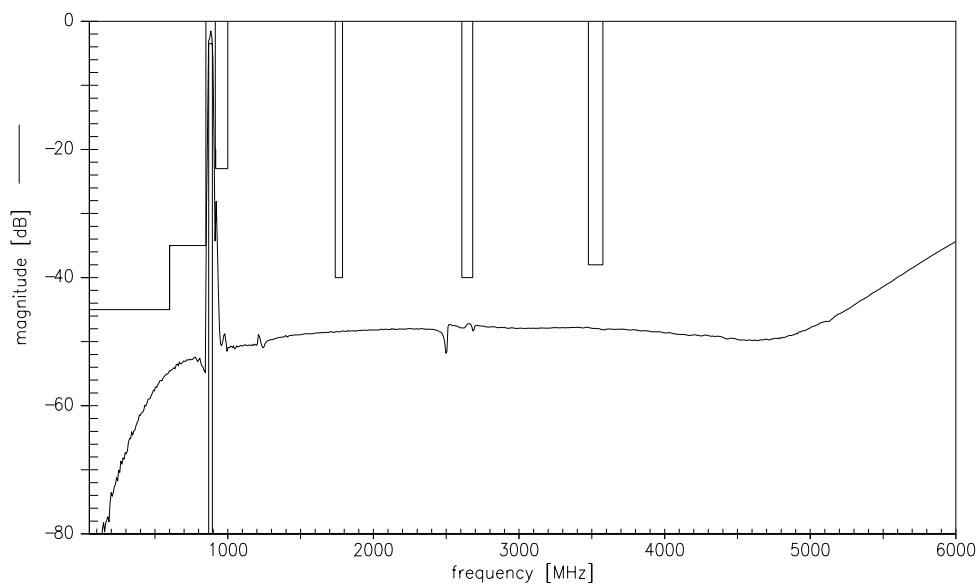
Data Sheet



Transfer function Filter 1 (AMPS)



Transfer function Filter 1 (AMPS) - wideband





SAW Components

B7653

Low-Loss Dual Band Filter for Mobile Communication

881,5 & 1960,0 MHz

Data Sheet



Characteristics of Filter 2 (PCS)

Operating temperature range: $T = -20$ to $+70$ °C

Terminating source impedance: $Z_S = 50 \Omega$

Terminating load impedance: $Z_L = 50 \Omega$

| | | min. | typ. | max. | |
|---|-----------------------|--------|--------|--------|-----|
| Center frequency | f_c | — | 1960,0 | — | MHz |
| Maximum insertion attenuation | α_{\max} | — | 3,3 | 3,8* | dB |
| | 1930,0 ... 1990,0 MHz | | | | |
| Amplitude ripple | | — | 1,3 | 2,2 | dB |
| | 1930,0 ... 1990,0 MHz | | | | |
| Input return loss | | 8,0 | 10,0 | — | dB |
| | 1930,0 ... 1990,0 MHz | | | | |
| Output return loss | | 8,0 | 10,0 | — | dB |
| | 1930,0 ... 1990,0 MHz | | | | |
| Output phase balance ($\phi(S_{31}) - \phi(S_{21}) + 180^\circ$) | | -15,0 | — | +15,0 | ° |
| | 1930,0 ... 1990,0 MHz | | | | |
| Output amplitude balance ($ S_{31}/S_{21} $) | | -2,7** | — | +2,7** | dB |
| | 1930,0 ... 1990,0 MHz | | | | |
| Inter-band isolation | α_{\min} | 30,0 | 40,0 | — | dB |
| | 869,0 ... 894,0 MHz | | | | |
| Attenuation | α_{\min} | 30,0 | 36,0 | — | dB |
| | 10,0 ... 995,0 MHz | | | | |
| | 995,0 ... 1830,0 MHz | 22,0 | 30,0 | — | dB |
| | 1830,0 ... 1890,0 MHz | 13,0 | 17,0 | — | dB |
| | 1890,0 ... 1910,0 MHz | 8,0 | 10,0 | — | dB |
| | 2010,0 ... 2070,0 MHz | 12,0 | 14,0 | — | dB |
| | 2070,0 ... 3000,0 MHz | 20,0 | 28,0 | — | dB |
| | 3000,0 ... 5000,0 MHz | 25,0 | 35,0 | — | dB |
| | 5790,0 ... 5970,0 MHz | 30,0 | 39,0 | — | dB |
| Tx band suppression | α_{\min} | 13,0 | 17,0 | — | dB |
| | 1830,0 ... 1890,0 MHz | | | | |
| | 1890,0 ... 1910,0 MHz | 8,0 | 10,0 | — | dB |

* 3,5 dB (2,9 dB typ.) for temperature range 25 ± 10 °C

** -2,3 dB (min.) and 2,3 dB (max.) @ 25 °C



SAW Components

B7653

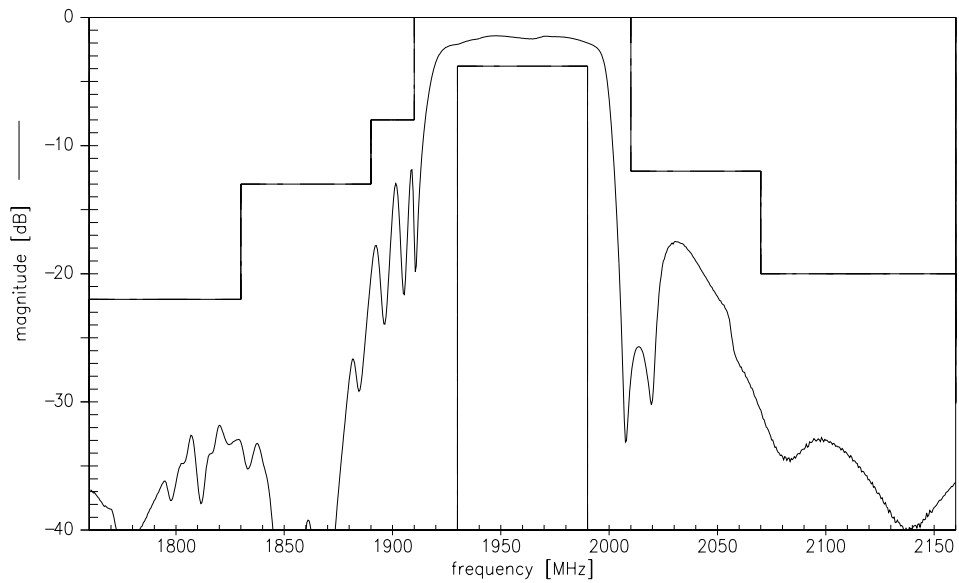
Low-Loss Dual Band Filter for Mobile Communication

881,5 & 1960,0 MHz

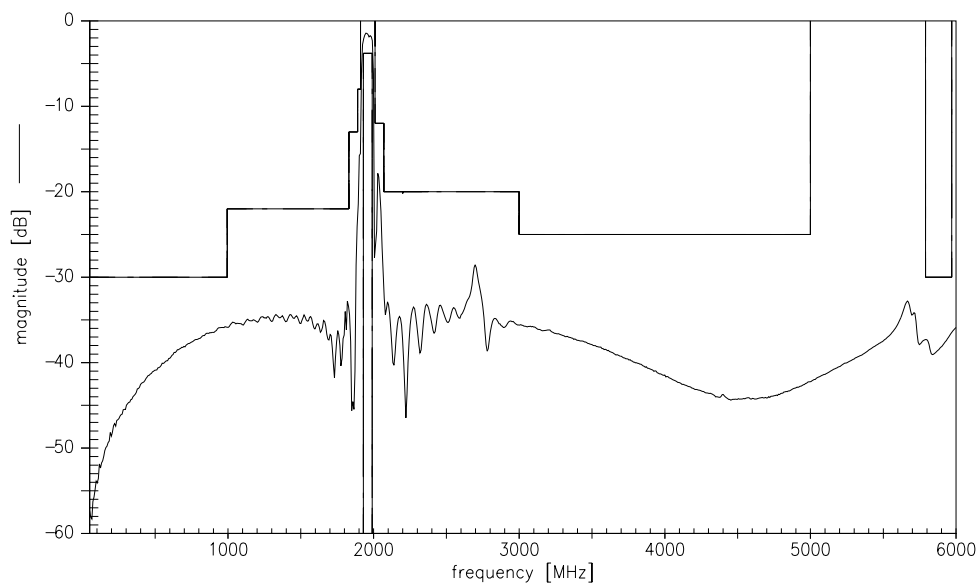
Data Sheet



Transfer function Filter 2 (PCS)



Transfer function Filter 2 (PCS) - wideband





SAW Components

B7653

Low-Loss Dual Band Filter for Mobile Communication

881,5 & 1960,0 MHz

Data Sheet



Published by EPCOS AG

Surface Acoustic Wave Components Division, SAW MC WT

P.O. Box 80 17 09, 81617 Munich, GERMANY

© EPCOS AG 2003. Reproduction, publication and dissemination of this brochure and the information contained therein without EPCOS' prior express consent is prohibited.

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.