



# SAW Components

Data Sheet B7638





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B7638

Low-Loss Filter for Mobile Communication

836,5 / 881,5 MHz

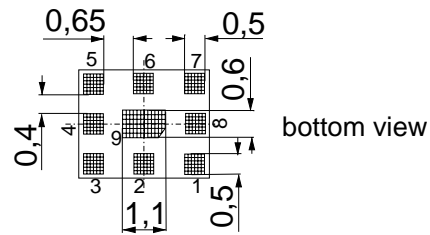
Data Sheet



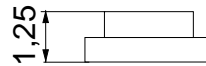
Chip Sized SAW Package QCS9D

Features

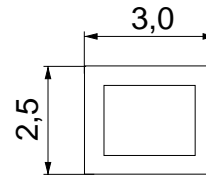
- Low-loss duplexer for cellular band mobile telephone systems
- 50 Ω ports by integrated matching network
- Package for Surface Mounted Technology (SMT)
- Small size and low height
- RoHS compliant



bottom view



side view



top view

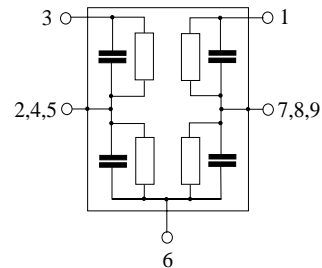
Dimensions in mm, approx. weight 0,035 g

Terminals

Ni, gold-plated

Pin configuration

- 3 TX Input
- 1 RX Output
- 6 Antenna
- 2, 4, 5 Ground
- 7, 8, 9 Ground



| Type  | Ordering code     | Marking and Package according to | Packing according to |
|-------|-------------------|----------------------------------|----------------------|
| B7638 | B39881-B7638-L710 | C61157-A3-A12                    | F61074-V8211-Z000    |

Electrostatic Sensitive Device (ESD)

Maximum ratings

|                            |           |                     |    |   |
|----------------------------|-----------|---------------------|----|---|
| Operable temperature range | $T$       | - 30/+ 85           | °C | machine model, 10 pulses<br>source and load impedance 50 Ω<br>} continuous wave |
| Storage temperature range  | $T_{stg}$ | - 40/+ 85           | °C |   |
| DC voltage                 | $V_{DC}$  | 5                   | V  |   |
| ESD voltage                | $V_{ESD}$ | 100 <sup>1)</sup>   | V  |   |
| Input power max.           | $P_{IN}$  |                     |    |   |
|                            |           | 824,0 ... 849,0 MHz | 30 | dBm   |
|                            |           | elsewhere           | 10 | dBm   |

1) -acc. to JESD22-115A (Machine Model), 10 negative & 10 positive pulses



Data Sheet



Characteristics

Operating temperature range  $T = 25 \pm 2^\circ\text{C}$   
 Terminating impedance  $Z_{\text{ANT}} = 50 \Omega$ ;  $Z_{\text{RX}} = 50 \Omega$ ;  $Z_{\text{TX}} = 50 \Omega$

| Characteristics TX - ANT      |                         | min. | typ.   | max. |     |
|-------------------------------|-------------------------|------|--------|------|-----|
| Center frequency              | $f_c$                   | —    | 836,50 | —    | MHz |
| Maximum insertion attenuation | $\alpha_{\text{max}}$   |      |        |      |     |
|                               | 824,00 ... 849,00 MHz   | —    | 1,8    | 2,1  | dB  |
| Amplitude ripple (p-p)        | $\Delta\alpha$          |      |        |      |     |
|                               | 824,00 ... 849,00 MHz   | —    | 0,8    | 1,1  | dB  |
| Return loss                   |                         |      |        |      |     |
|                               | 824,00 ... 849,00 MHz   | 10   | 12     | —    | dB  |
| Attenuation                   | $\alpha$                |      |        |      |     |
|                               | 100,00 ... 698,00 MHz   | 35   | 39     | —    | dB  |
|                               | 698,00 ... 746,00 MHz   | 36   | 38     | —    | dB  |
|                               | 746,00 ... 804,00 MHz   | 30   | 38     | —    | dB  |
|                               | 869,00 ... 894,00 MHz   | 46   | 50     | —    | dB  |
|                               | 954,00 ... 1570,00 MHz  | 30   | 36     | —    | dB  |
|                               | 1570,00 ... 1698,00 MHz | 40   | 50     | —    | dB  |
|                               | 1698,00 ... 2547,00 MHz | 30   | 38     | —    | dB  |
|                               | 2547,00 ... 3000,00 MHz | 20   | 27     | —    | dB  |

| Characteristics ANT - RX                |                         | min. | typ.   | max. |        |
|---|-------------------------|------|--------|------|--------|
| Center frequency                        | $f_c$                   | —    | 881,50 | —    | MHz    |
| Maximum insertion attenuation           | $\alpha_{\text{max}}$   |      |        |      |        |
|   | 869,00 ... 894,00 MHz   | —    | 2,2    | 2,6  | dB     |
| Amplitude ripple (p-p)                  | $\Delta\alpha$          |      |        |      |        |
|   | 869,00 ... 894,00 MHz   | —    | 0,9    | 1,3  | dB     |
| Return loss                             |                         |      |        |      |        |
|   | 869,00 ... 894,00 MHz   | 9    | 11     | —    | dB     |
| Attenuation                             | $\alpha$                |      |        |      |        |
|   | 100,00 ... 804,00 MHz   | 35   | 43     | —    | dB     |
|   | 824,00 ... 849,00 MHz   | 54   | 61     | —    | dB     |
|   | 954,00 ... 1648,00 MHz  | 35   | 45     | —    | dB     |
|   | 1648,00 ... 1698,00 MHz | 40   | 51     | —    | dB     |
|   | 1698,00 ... 2547,00 MHz | 40   | 50     | —    | dB     |
|   | 2547,00 ... 3000,00 MHz | 35   | 45     | —    | dB     |
| TX band phase @ RX port reference plane |                         |      |        |      |        |
|   | 824,00 ... 849,00 MHz   | 130  | —      | 230  | degree |



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| Characteristics TX - RX                   |             | min. | typ. | max. |    |
|---|-------------|------|------|------|----|
| Isolation between TX and RX path $\alpha$ |             |      |      |      |    |
| 100,00 ...                                | 800,00 MHz  | 50   | 57   | —    | dB |
| 824,00 ...                                | 849,00 MHz  | 56   | 59   | —    | dB |
| 869,00 ...                                | 894,00 MHz  | 47   | 50   | —    | dB |
| 954,00 ...                                | 1700,00 MHz | 45   | 51   | —    | dB |



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Characteristics

Operating temperature range  $T = -30$  to  $85^{\circ}\text{C}$   
 Terminating impedance  $Z_{\text{ANT}} = 50 \Omega$ ;  $Z_{\text{RX}} = 50 \Omega$ ;  $Z_{\text{TX}} = 50 \Omega$

| Characteristics TX - ANT      |                         | min. | typ.   | max. |     |
|-------------------------------|-------------------------|------|--------|------|-----|
| Center frequency              | $f_c$                   | —    | 836,50 | —    | MHz |
| Maximum insertion attenuation | $\alpha_{\text{max}}$   |      |        |      |     |
|                               | 824,00 ... 849,00 MHz   | —    | 2,0    | 2,3  | dB  |
| Amplitude ripple (p-p)        | $\Delta\alpha$          |      |        |      |     |
|                               | 824,00 ... 849,00 MHz   | —    | 1,0    | 1,3  | dB  |
| Return loss                   |                         |      |        |      |     |
|                               | 824,00 ... 849,00 MHz   | 9    | 11     | —    | dB  |
| Attenuation                   | $\alpha$                |      |        |      |     |
|                               | 100,00 ... 698,00 MHz   | 35   | 39     | —    | dB  |
|                               | 698,00 ... 746,00 MHz   | 36   | 38     | —    | dB  |
|                               | 746,00 ... 804,00 MHz   | 30   | 38     | —    | dB  |
|                               | 869,00 ... 894,00 MHz   | 45   | 48     | —    | dB  |
|                               | 954,00 ... 1570,00 MHz  | 30   | 36     | —    | dB  |
|                               | 1570,00 ... 1698,00 MHz | 40   | 50     | —    | dB  |
|                               | 1698,00 ... 2547,00 MHz | 30   | 38     | —    | dB  |
|                               | 2547,00 ... 3000,00 MHz | 20   | 27     | —    | dB  |

| Characteristics ANT - RX                |                         | min. | typ.   | max. |        |
|---|-------------------------|------|--------|------|--------|
| Center frequency                        | $f_c$                   | —    | 881,50 | —    | MHz    |
| Maximum insertion attenuation           | $\alpha_{\text{max}}$   |      |        |      |        |
|   | 869,00 ... 894,00 MHz   | —    | 2,4    | 2,8  | dB     |
| Amplitude ripple (p-p)                  | $\Delta\alpha$          |      |        |      |        |
|   | 869,00 ... 894,00 MHz   | —    | 1,3    | 1,7  | dB     |
| Return loss                             |                         |      |        |      |        |
|   | 869,00 ... 894,00 MHz   | 8    | 10     | —    | dB     |
| Attenuation                             | $\alpha$                |      |        |      |        |
|   | 100,00 ... 804,00 MHz   | 35   | 43     | —    | dB     |
|   | 824,00 ... 849,00 MHz   | 54   | 59     | —    | dB     |
|   | 954,00 ... 1648,00 MHz  | 35   | 46     | —    | dB     |
|   | 1648,00 ... 1698,00 MHz | 40   | 51     | —    | dB     |
|   | 1698,00 ... 2547,00 MHz | 40   | 50     | —    | dB     |
|   | 2547,00 ... 3000,00 MHz | 35   | 45     | —    | dB     |
| TX band phase @ RX port reference plane |                         |      |        |      |        |
|   | 824,00 ... 849,00 MHz   | 130  | —      | 230  | degree |



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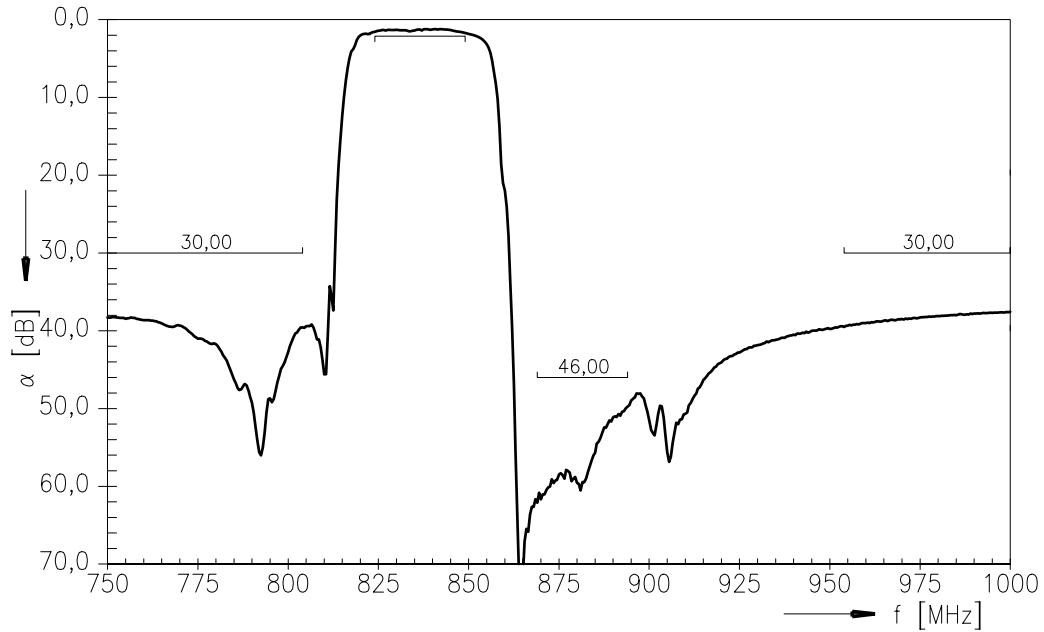
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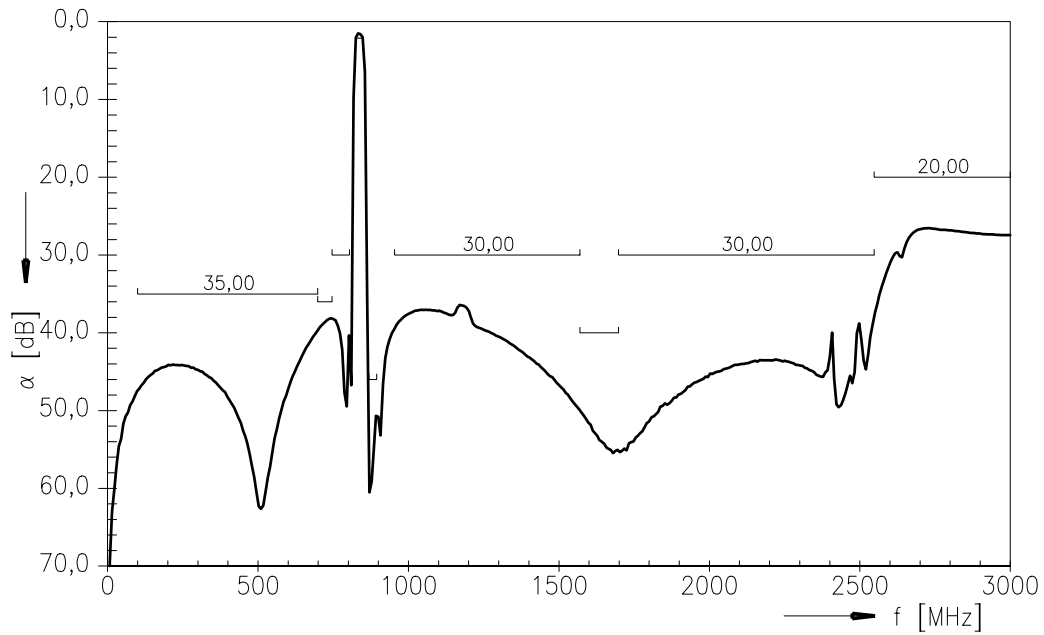
| Characteristics TX - RX                   |             | min. | typ. | max. |    |
|---|-------------|------|------|------|----|
| Isolation between TX and RX path $\alpha$ |             |      |      |      |    |
| 100,00 ...                                | 800,00 MHz  | 50   | 56   | —    | dB |
| 824,00 ...                                | 849,00 MHz  | 55   | 57   | —    | dB |
| 869,00 ...                                | 894,00 MHz  | 47   | 49   | —    | dB |
| 954,00 ...                                | 1700,00 MHz | 45   | 51   | —    | dB |



Frequency Response TX - ANT

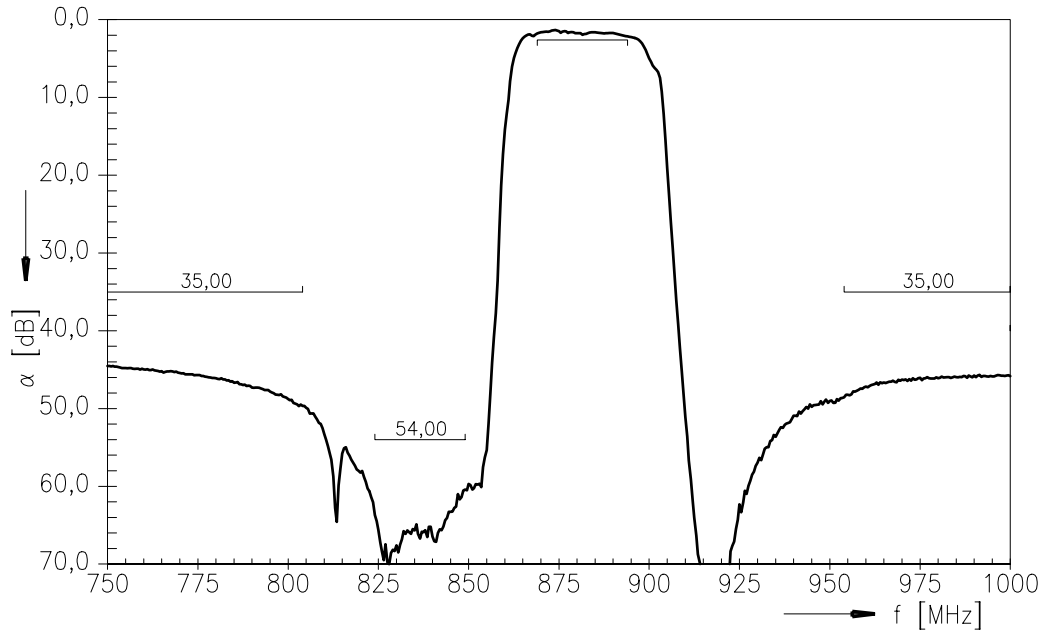


Frequency Response TX - ANT (wideband)

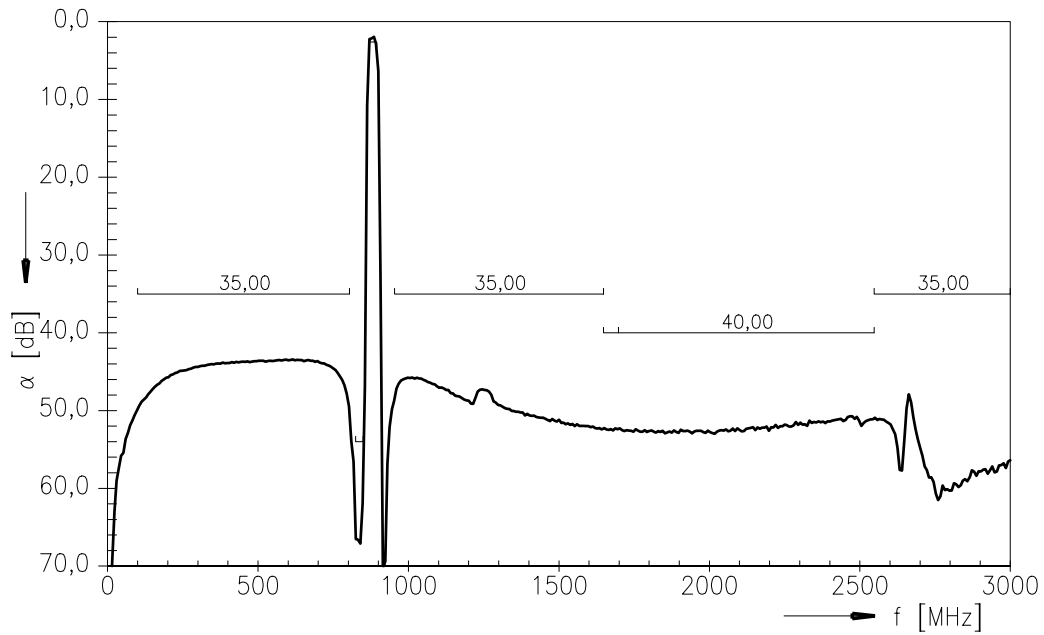




Frequency Response ANT - RX



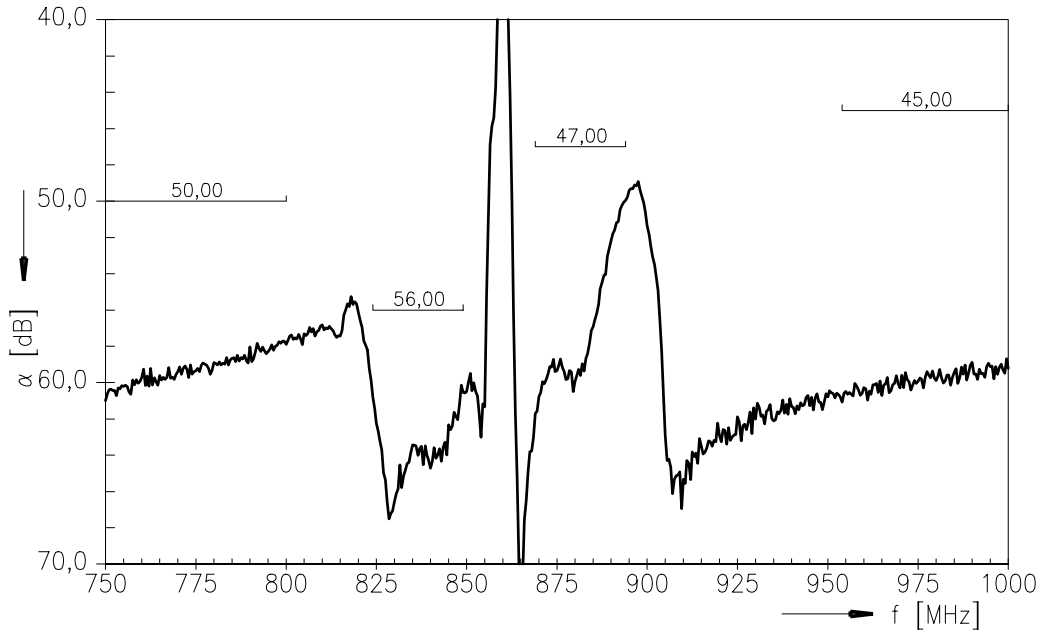
Frequency Response ANT - RX (wideband)



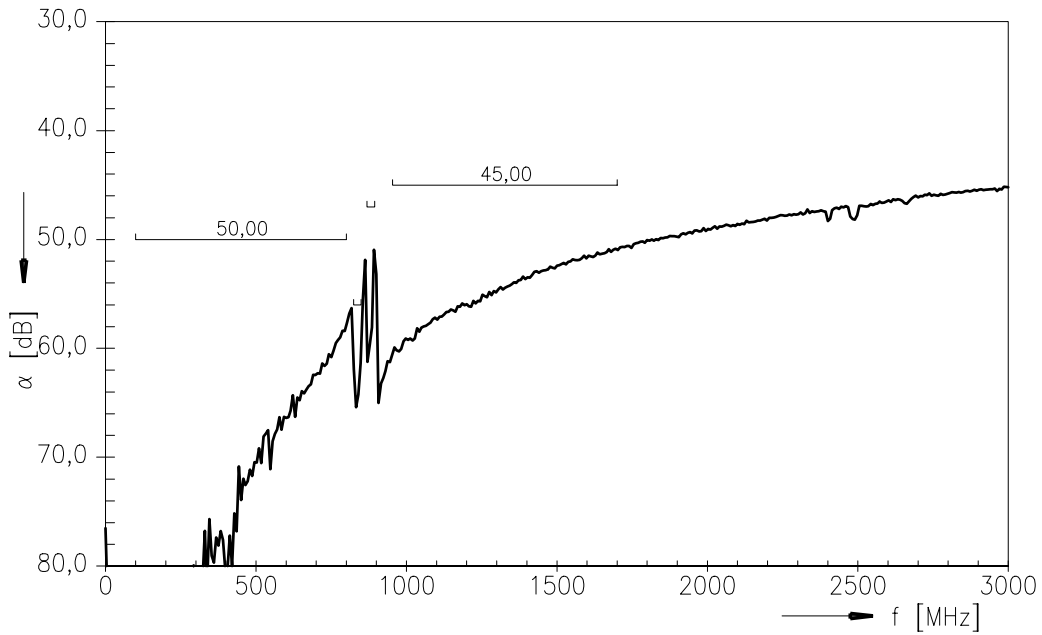




Frequency Response TX - RX



Frequency Response TX - RX (wideband)





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