EPCOS

# *SAW Components*

*Data Sheet B3605*

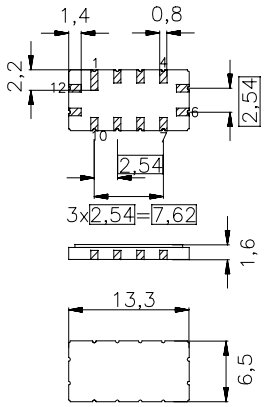
Ceramic package **QCC12**

### Features

- High performance IF bandpass filter
- Constant group delay
- Hermetically sealed ceramic package
- Filter surface passivated

### Terminals

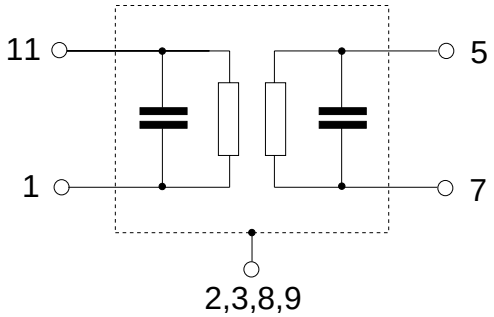
- Gold plated




Dimensions in mm, approx. weight 0,4 g

### Pin configuration

| | |
|---|---|
| 11 | Input |
| 1 | Input - ground |
| 5 | Output |
| 7 | Output - ground |
| 2, 3, 8, 9 | Case - ground |
| 4, 6, 10, 12 | Ground |




| Type | Ordering code | Marking and Package according to | Packing according to |
|---|---|---|---|
| B3605 | B39700-B3605-Z510 | C61157-A7-A55 | F61074-V8163-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 | $V_{DC}$ | 0 | V | |
| Source power | $P_s$ | 10 | dBm | source impedance 50 Ω |

Data Sheet

## Characteristics

Operating temperature: T = -40 ˚C... 85 ˚C
Terminating source impedance: $Z_S$ = 50 Ω and matching circuit(Unbalanced)
Terminating load impedance: $Z_L$ = 50 Ω and matching circuit(Unbalanced)
Group delay aperture 80 kHz

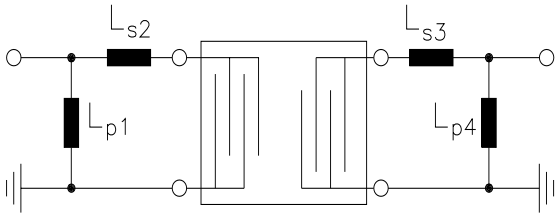
| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** (Center between 6dB points) | $f_C$ | 69,50 | 70,00 | 70,50 | MHz |
| **Insertion attenuation** at $f_C$ | $\alpha_C$ | — | 9,6 | 10,8 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 67,00 ... 73,00 MHz | | — | 0,6 | 1,0 | dB |
| **Phase ripple** (p-p) | $\Delta\varphi$ | | | | |
| 65,50 ... 74,50 MHz | | — | 15,0 | 18,0 | ° |
| **Pass bandwidth** | | | | | |
| $\alpha_{rel} \leq$ 1 dB | $B_{1dB}$ | 8,1 | 8,3 | — | MHz |
| $\alpha_{rel} \leq$ 3 dB | $B_{3dB}$ | 9,1 | 9,3 | — | MHz |
| $\alpha_{rel} \leq$ 30 dB | $B_{30dB}$ | — | 12,8 | 13,2 | MHz |
| **Relative attenuation** (relative to $\alpha_C$) | $\alpha_{rel}$ | | | | |
| 50,00 ... 62,50 MHz | | 43 | 47 | — | dB |
| 62,50 ... 63,00 MHz | | 34 | 38 | — | dB |
| 77,00 ... 77,50 MHz | | 28 | 36 | — | dB |
| 77,50 ... 90,00 MHz | | 35 | 41 | — | dB |
| **Group delay** at $f_C$ | $\tau_C$ | — | 1,1 | — | µs |
| **Group delay ripple** (p-p) | $\Delta\tau$ | | | | |
| 65,50 ... 74,50 MHz | | — | 80 | 200 | ns |
| **Temperature coefficient of frequency** | $TC_f$ | — | – 87 | — | ppm/K |

## Characteristics

Operating temperature: T = -40 ˚C... 85 ˚C
Terminating source impedance: $Z_S$ = 50 Ω and matching circuit(Balanced)
Terminating load impedance: $Z_L$ = 50 Ω and matching circuit(Balanced)
Group delay aperture 80 kHz

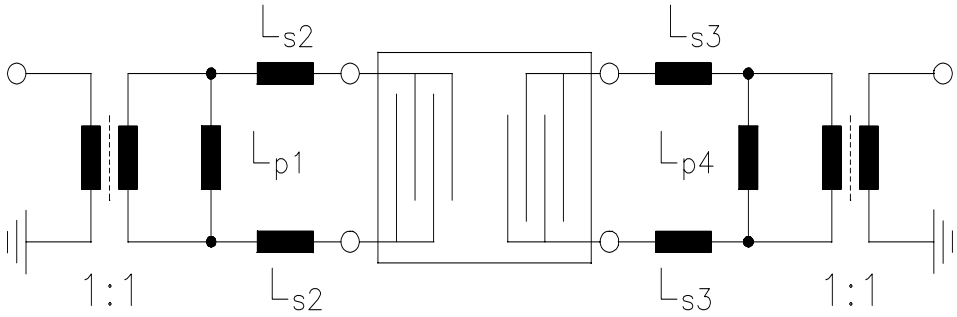
| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency** (Center between 6dB points) | $f_C$ | 69,50 | 70,00 | 70,50 | MHz |
| **Insertion attenuation** at $f_C$ | $\alpha_C$ | — | 9,8 | 10,8 | dB |
| **Amplitude ripple** (p-p) | $\Delta\alpha$ | | | | |
| 67,00 ... 73,00 MHz | | — | 0,6 | 1,0 | dB |
| **Phase ripple** (p-p) | $\Delta\varphi$ | | | | |
| 65,50 ... 74,50 MHz | | — | 17,0 | 20,0 | ° |
| **Pass bandwidth** | | | | | |
| $\alpha_{rel} \leq$ 1 dB | $B_{1dB}$ | 8,1 | 8,3 | — | MHz |
| $\alpha_{rel} \leq$ 3 dB | $B_{3dB}$ | 9,1 | 9,3 | — | MHz |
| $\alpha_{rel} \leq$ 30 dB | $B_{30dB}$ | — | 12,8 | 13,2 | MHz |
| **Relative attenuation** (relative to $\alpha_C$) | $\alpha_{rel}$ | | | | |
| 50,00 ... 62,50 MHz | | 43 | 45 | — | dB |
| 62,50 ... 63,00 MHz | | 34 | 38 | — | dB |
| 77,00 ... 77,50 MHz | | 26 | 35 | — | dB |
| 77,50 ... 90,00 MHz | | 35 | 38 | — | dB |
| **Group delay** at $f_C$ | $\tau_C$ | — | 1,1 | — | µs |
| **Group delay ripple** (p-p) | $\Delta\tau$ | | | | |
| 65,50 ... 74,50 MHz | | — | 80 | 200 | ns |
| **Temperature coefficient of frequency** | $TC_f$ | — | – 87 | — | ppm/K |

**Matching circuit: unbalanced - unbalanced**




$L_{s1}$=180nH
$L_{s2}$=100nH
$L_{s3}$=18nH
$L_{s4}$=270nH

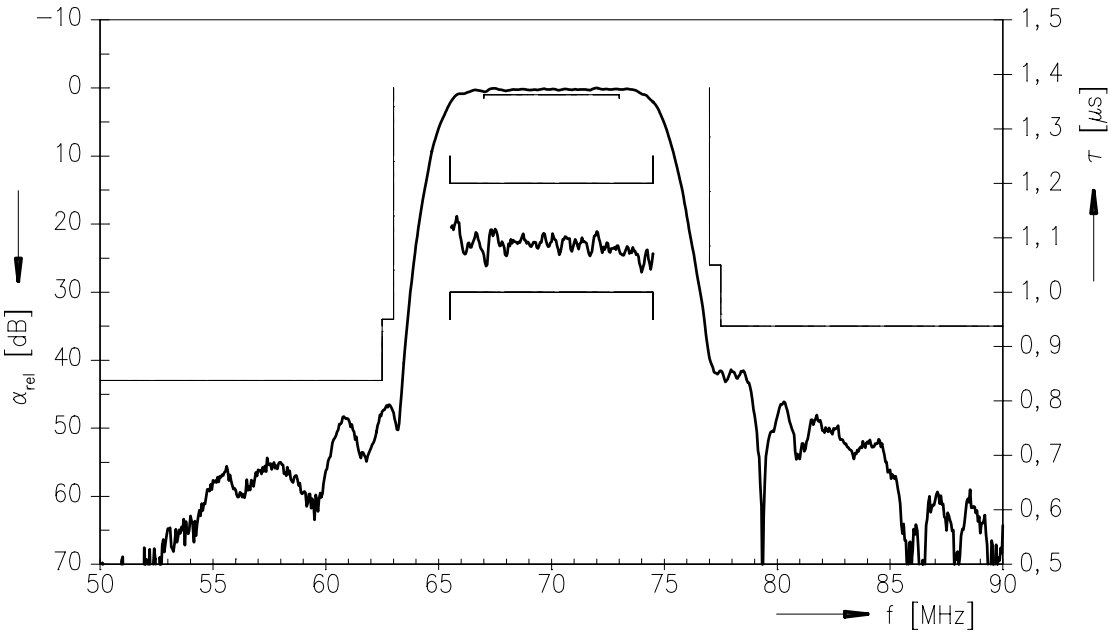
**Matching circuit: balanced - balanced**



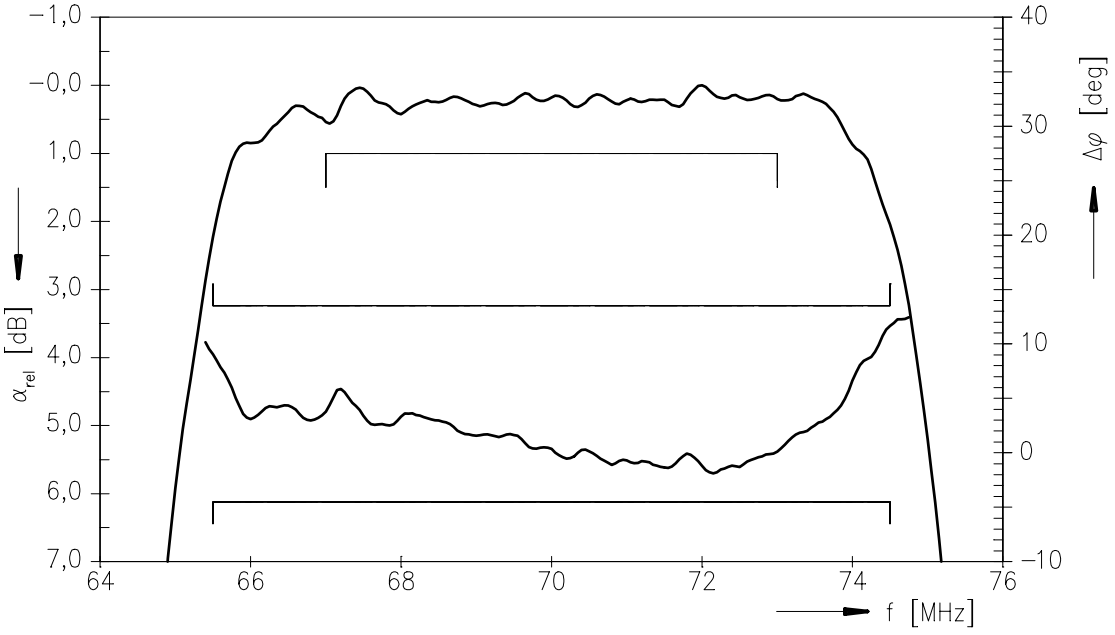

$L_{s1}$=180nH
$L_{s2}$=56nH
$L_{s3}$=10nH
$L_{s4}$=270nH

**Note: Component values depend on PCB layout.**

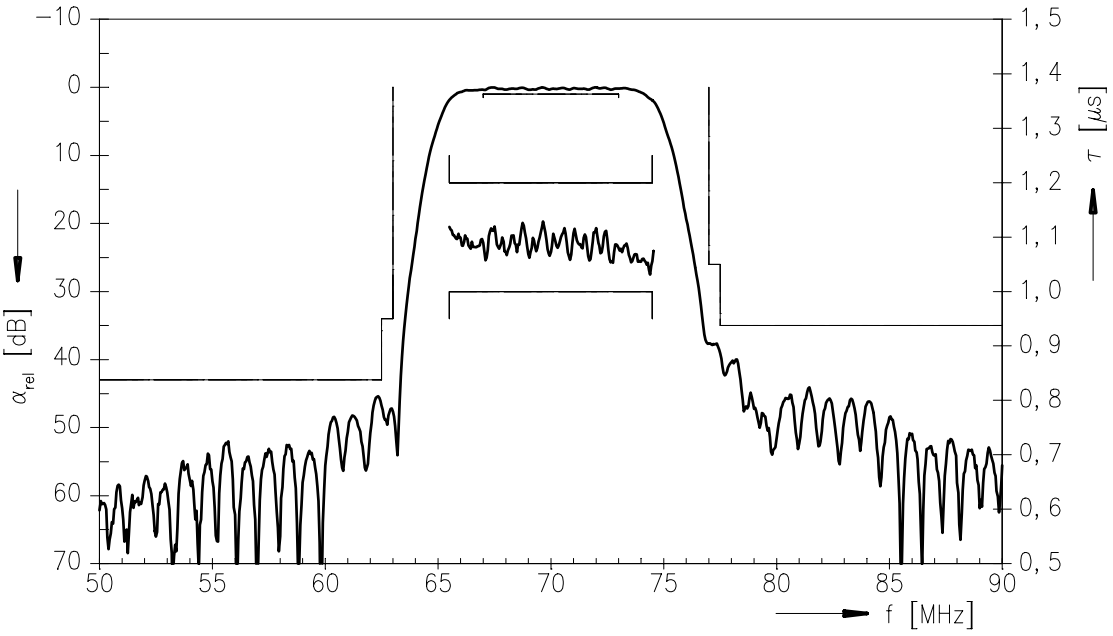
**Normalized frequency response(unbalanced-unbalanced)**



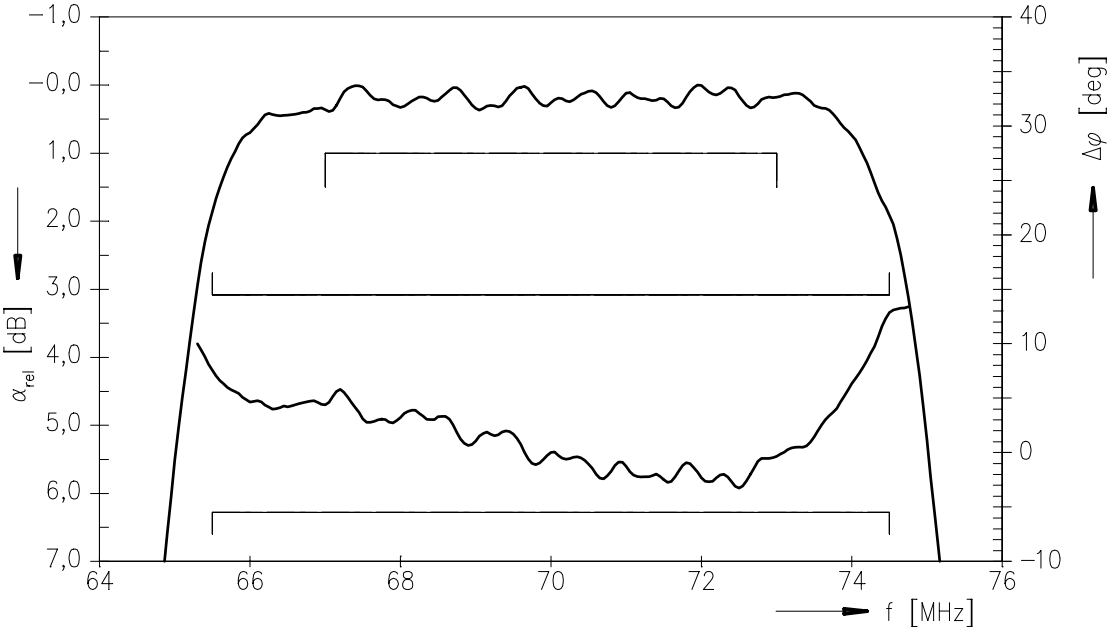

**Normalized frequency response**



**Normalized frequency response(balanced-balanced)**




**Normalized frequency response**



**Attachment**

**1) For a duration < 50 ms source power may be raised to 20 dBm.**

**2) Pyroelectric pulse amplitude < 50 mV.**

**3) If external impedances are the same, input port and output port may be reversed without any changes of the performance.**

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