



## **SAW Components**

### **SAW IF filter**

Clean up filter

|                       |                        |
|-----------------------|------------------------|
| <b>Series/type:</b>   | <b>B5217</b>           |
| <b>Ordering code:</b> | <b>B39491B5217H310</b> |
| <b>Date:</b>          | <b>Oct 22, 2010</b>    |
| <b>Version:</b>       | <b>2.1</b>             |

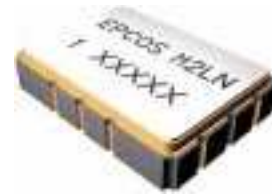


Data Sheet



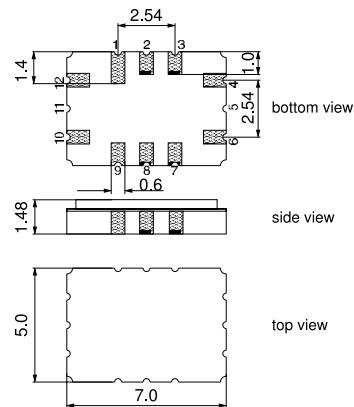
Application

- Low-loss IF filter
- VCXO clean up filter
- Temperature stable



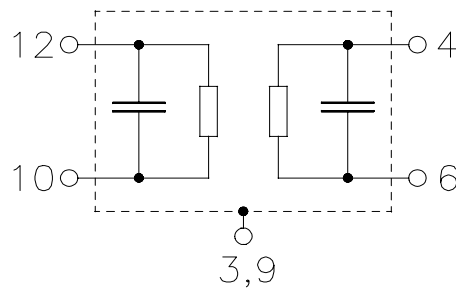
Features

- Package size 7.0 x 5.0 x 1.35 mm<sup>3</sup>
- Package code QCC12C
- RoHS compatible
- Approx. weight 0.25 g
- Ceramic package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Filter surface passivated



Pin configuration

- 10 Input
- 12 Input ground
- 4 Output
- 6 Output ground
- 3, 9 Case ground
- 1, 2, 7, 8 To be grounded





Data Sheet



Characteristics

Operating temperature range:  $T = -40$  to  $85$  °C  
 Terminating source impedance:  $Z_S = 50 \Omega$  and matching network  
 Terminating load impedance:  $Z_L = 50 \Omega$  and matching network

|  |                | min. | typ.<br>@ 25 | max.      |                    |
|--|----------------|------|--------------|-----------|--------------------|
| <b>Nominal frequency</b>   | $f_N$          | —    | 491.52       | —         | MHz                |
| <b>Insertion attenuation at <math>f_N</math> (<math>T=25</math>°C)</b> | $\alpha_n$     | 6.0  | 7.0          | 8.0       | dB                 |
| <b>Variation of Insertion att. (rel. to <math>\alpha_n</math>)</b>     | $\alpha_{rel}$ | —    | —            | $\pm 0.9$ | dB                 |
| <b>Passband bandwidth</b>  |                |      |              |           |                    |
| $\alpha_{rel} \leq 3$ dB   | $B_{3dB}$      | 1.0  | 1.67         | —         | MHz                |
| <b>Amplitude ripple (p-p)</b>  | $\Delta\alpha$ |      |              |           |                    |
| $f_N \pm 0.1$ MHz  |                | —    | 0.3          | 0.5       | dB                 |
| <b>Group delay ripple (p-p)</b>  | $\Delta\tau$   |      |              |           |                    |
| $f_N \pm 0.1$ MHz  |                | —    | 10           | 70        | ns                 |
| <b>Relative attenuation (relative to <math>\alpha_n</math>)</b>        | $\alpha_{rel}$ |      |              |           |                    |
| $f_N - 200.0$ MHz ... $f_N - 10.00$ MHz                                |                | 40   | 46           | —         | dB                 |
| $f_N - 10.00$ MHz ... $f_N - 3.000$ MHz                                |                | 35   | 44           | —         | dB                 |
| $f_N - 3.000$ MHz ... $f_N - 1.000$ MHz                                |                | —    | 4.5          | —         | dB                 |
| $f_N - 1.000$ MHz ... $f_N - 0.800$ MHz                                |                | —    | 1.5          | —         | dB                 |
| $f_N + 0.800$ MHz ... $f_N + 1.000$ MHz                                |                | —    | 1.5          | —         | dB                 |
| $f_N + 1.000$ MHz ... $f_N + 3.000$ MHz                                |                | —    | 4.5          | —         | dB                 |
| $f_N + 3.000$ MHz ... $f_N + 10.00$ MHz                                |                | 35   | 43           | —         | dB                 |
| $f_N + 10.00$ MHz ... $f_N + 200.00$ MHz                               |                | 40   | 48           | —         | dB                 |
| <b>Temperature coefficient of frequency<sup>1)</sup></b>               | $TC_f$         | —    | -0.036       | —         | ppm/K <sup>2</sup> |
| <b>Turnover temperature</b>  | $T_0$          | —    | 25           | —         | °C                 |

1) Temperature dependance of  $f_c$ :  $f_c(T_A) = f_c(T_0)(1 + TC_f(T_A - T_0)^2)$



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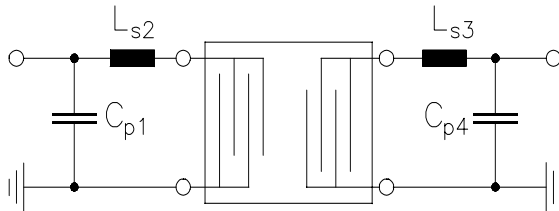
SAW IF filter

491.52 MHz

Data Sheet



Matching network to 50  $\Omega$



$C_{p1} = 10 \text{ pF}$   
 $L_{s2} = 33 \text{ nH}$   
 $L_{s3} = 27 \text{ nH}$   
 $C_{p4} = 10 \text{ pF}$

Element values depend upon board layout

Maximum ratings

|                            |                  |         |     |  |
|----------------------------|------------------|---------|-----|--|
| Operable temperature range | T                | -40/+85 | °C  |  |
| Storage temperature range  | T <sub>stg</sub> | -40/+85 | °C  |  |
| DC voltage                 | V <sub>DC</sub>  | 0       | V   |  |
| Input power                | P <sub>IN</sub>  | 10      | dBm |  |



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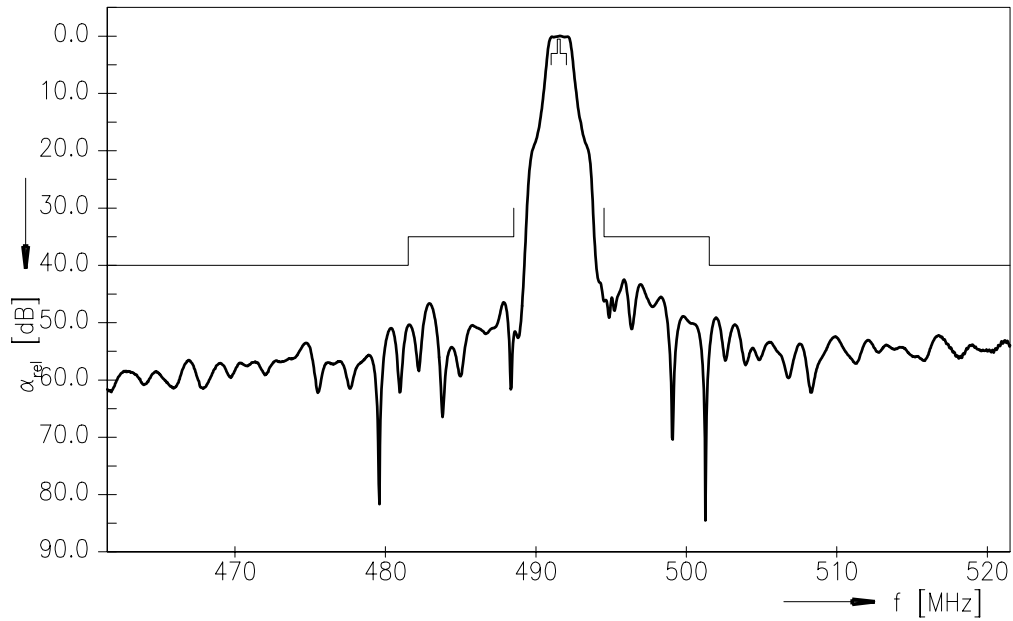
SAW IF filter

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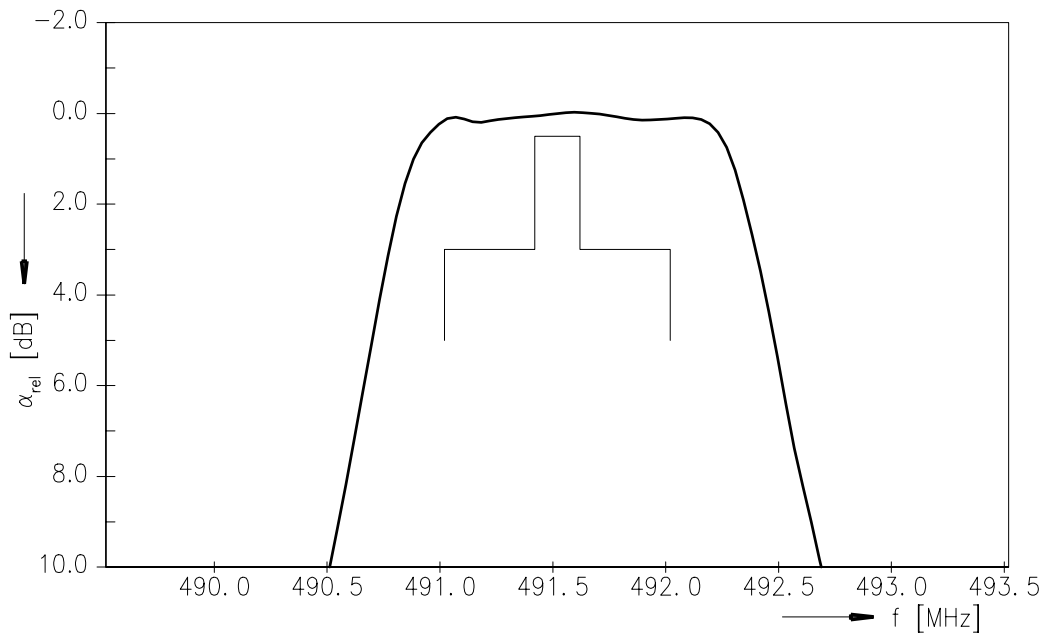
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Transfer function



Transfer function (Passband)



Please read *cautions and warnings and important notes* at the end of this document.



**SAW Components** **B5217**

**SAW IF filter** **491.52 MHz**

Data Sheet



## References

|                            |  |
|----------------------------|--|
| <b>Type</b>                | B5217  |
| <b>Ordering code</b>       | B39491B5217H310  |
| <b>Marking and package</b> | C61157-A7-A95  |
| <b>Packaging</b>           | F61074-V8170-Z000  |
| <b>Date codes</b>          | L_1126   |
| <b>S-parameters</b>        | LI62A_NB.s2p   |
| <b>Soldering profile</b>   | S_6001   |
| <b>RoHS compatible</b>     | 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." |
| <b>Matching coils</b>      | See Inductor pdf-catalog<br><a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a><br>and Data Library for circuit simulation<br><a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a>  |

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