

1. General

The filter is symmetrical, i.e. input and output are exchangeable with each other. But the external coupling coil has to be connected to pin 3 in any case.

The filter can be driven balanced only.

To get a balanced signal for test measurements with the Network Analyzer we use two wideband 1:1 transformers at each port:

SMT 4, vendor NEOSID, PN 88 8529 10

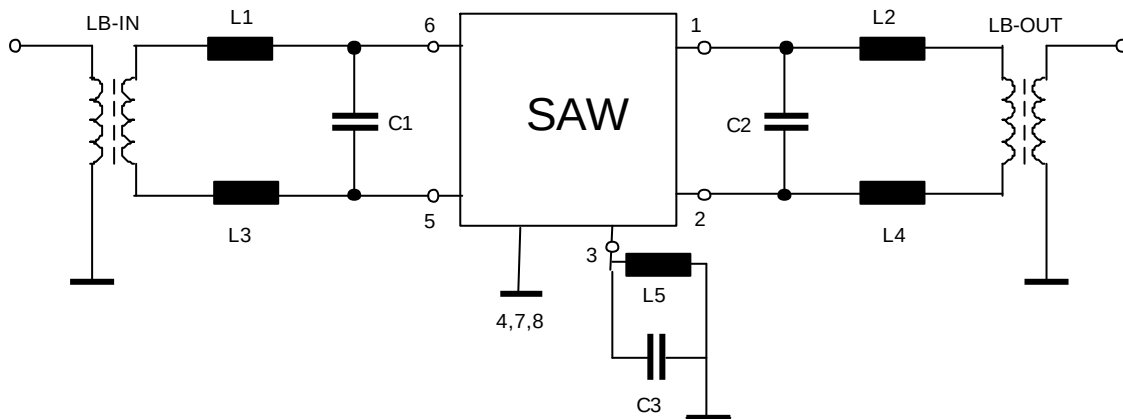
The termination impedances are : $600\ \Omega \parallel -1.45\ \text{pF}$

This impedance is equal for the input and the output. It has to be realized at the point where the filter is mounted. To match this impedance to the impedance of the system a matching circuit is required.

2. Theoretical Matching

For the matching to 50 Ohm there can be used two different matching circuits:

50 Ohm Test circuit 1



The theoretical values of the stated elements are:

$$L1 = L2 = L3 = L4 = 53\ \text{nH}$$

VI TELEFILTER
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-52 / Fax: (+49) 3328 4784-30
E-Mail: tft@telefilter.com

Vectron International, Inc.
267 Lowell Road
Hudson, NH 03051 / USA
Tel: (603) 598-0070 Fax: (603) 598-0075
E-Mail: vti@vtinh.com

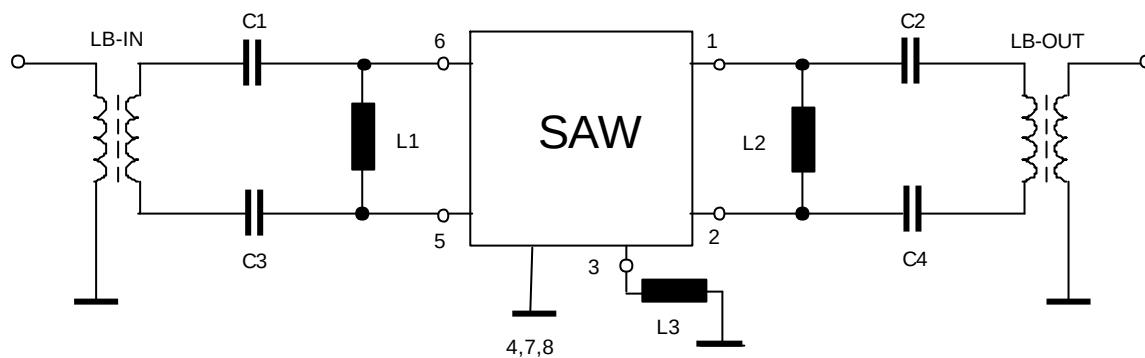
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$C1 = C2 = 2.1 \text{ pF}$

$C3 = 0 \text{ pF}$

$L5 = 108 \text{ nH}$

50 Ohm Test circuit 2



The theoretical values of the stated elements are:

$C1 = C2 = C3 = C4 = 7.8 \text{ pF}$, $L1 = L2 = 83.3 \text{ nH}$, $L5 = 108 \text{ nH}$

The calculation was made without consideration of parasitics. The elements which have to be used on the PCB are slightly different from the stated due to these parasitics.

3. Matching on PCB

For example: PCB with 50 Ω test circuit 1

$L1 = L2 = L4 = 68 \text{ nH}$

$L3 = 56 \text{ nH}$

$C1 = C2 = C3 = 0.5 \text{ pF}$

$L5 = 100 \text{ nH}$

The calibration is made at the 50 Ohm ports. Thus, the measured characteristics will include the losses of the two transformers (about 0.7 dB each).

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Application Note

TFS 246M - 3/2

In case of questions please contact us to

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