Measurement condition

Ambient temperature $T_0$: 23 °C
Input power level: 0 dBm

Terminating impedance: *

Input: 50 Ω
Output: 50 Ω
Source: $677\Omega \parallel 1pF$
Load: $677\Omega \parallel 1pF$

Characteristics

Remark:

The reference level for the relative attenuation $a_{rel}$ is the minimum attenuation in the pass band PB. The maximum attenuation in the pass band PB is defined as the insertion loss $a_e$. The nominal frequency $f_N$ is fixed at 917.6 MHz without any tolerance or limit. The values of relative attenuation $a_{rel}$ are guaranteed for the whole operating temperature range. The frequency shift of the filter within the operating temperature range is included in the production tolerance scheme.

<table>
<thead>
<tr>
<th>Data</th>
<th>typ. value</th>
<th>tolerance / limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal frequency $f_N$</td>
<td>-</td>
<td>917.6 MHz</td>
</tr>
<tr>
<td>Passband $PB - f_N$</td>
<td>± 12.5 kHz</td>
<td>3.5 dB</td>
</tr>
<tr>
<td>Insertion loss within $PB$ $a_e$</td>
<td>2.8 dB</td>
<td>max.</td>
</tr>
<tr>
<td>Relative attenuation $a_{rel}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>880.0 MHz ... 914.8 MHz</td>
<td>22 dB</td>
<td>min. 20 dB</td>
</tr>
<tr>
<td>920.5 MHz ... 950.0 MHz</td>
<td>23 dB</td>
<td>min. 20 dB</td>
</tr>
<tr>
<td>Input power level $\text{**)}$</td>
<td>-</td>
<td>max. 20 dBm</td>
</tr>
<tr>
<td>Operating temperature range $\text{OTR}$</td>
<td>-</td>
<td>0 °C ... + 40 °C</td>
</tr>
<tr>
<td>Operational temperature range</td>
<td>-</td>
<td>- 10 °C ... + 55 °C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-</td>
<td>- 40 °C ... + 85 °C</td>
</tr>
<tr>
<td>Temperature coefficient of frequency $\text{TC}_f \text{***)}$</td>
<td>-0.044 ppm/K²</td>
<td></td>
</tr>
</tbody>
</table>

*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

**) @914.8MHz with duty cycle 1:8

***) $\Delta f_c (\text{Hz}) = TC_f (\text{ppm/K²}) \times (T - T_0)^2 \times f_{N0}$ (MHz)

---

Generated:

Checked / Approved:
Filter characteristic

![Graph showing filter characteristic with frequency in MHz on the x-axis and amplitude in dB on the y-axis.]  
- Insertion loss: -2.78 dB

Construction and pin connection

(All dimensions in mm)

![Diagram showing construction and pin connection with pin numbers and dimensions.]  
- Date code: Year + week
  - F: 2015
  - G: 2016
  - H: 2017
  - ...  
- Pin connections:
  - 1: Ground
  - 2: Input
  - 3: Ground
  - 4: Ground
  - 5: Ground
  - 6: Output
  - 7: Ground
  - 8: Ground

50 Ohm Test circuit

![Diagram of 50 Ohm Test circuit with components L1, C1, SAW, L2, and C2 connected.]  
- Components:
  - L1, C1, SAW, L2, C2
  - Connections: 1, 3, 4, 5, 7, 8

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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.; for temperature conditions refer to the attached “Air reflow temperature conditions” on page 4;

This filter is RoHS compliant (2011/65/EU)

Packing

Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius; tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel: 3000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

The minimum bending radius is 45 mm.
Air reflow temperature conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ramp-up rate (30°C to 217°C)</td>
<td>less than 3°C/second</td>
</tr>
<tr>
<td>&gt; 100°C</td>
<td>between 300 and 600 seconds</td>
</tr>
<tr>
<td>&gt; 150°C</td>
<td>between 240 and 500 seconds</td>
</tr>
<tr>
<td>&gt; 217°C</td>
<td>between 30 and 150 seconds</td>
</tr>
<tr>
<td>Peak temperature</td>
<td>max. 260°C</td>
</tr>
<tr>
<td>Time within 5°C of actual peak temperature</td>
<td>between 10 and 30 seconds</td>
</tr>
<tr>
<td>Cool-down rate (Peak to 50°C)</td>
<td>less than 6°C/second</td>
</tr>
<tr>
<td>Time from 30°C to Peak temperature</td>
<td>no greater than 300 seconds</td>
</tr>
</tbody>
</table>

**Chip-mount air reflow profile**

![Chip-mount air reflow profile graph](image-url)

- **Temperature / °C:**
  - max. 260°C
  - 217°C

- **Time / s:**
  - max. 300 s
  - 10 ... 30 s
  - 30 ... 150 s
**Vectron International** Filter specification **TFS 917** 5/5

### History

<table>
<thead>
<tr>
<th>Version</th>
<th>Reason of Changes</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Generation of development specification</td>
<td>S.Springfeldt</td>
<td>06.02.2015</td>
</tr>
<tr>
<td>2.0</td>
<td>Correction of attenuation in the range of 880MHz to 914.8MHz Adding attenuation requirement in the upper range (920.5MHz to 950MHz)</td>
<td>S.Springfeldt</td>
<td>19.02.2015</td>
</tr>
<tr>
<td>3.0</td>
<td>Change to 3.8x3.8 package due to customer desire</td>
<td>S.Springfeldt</td>
<td>02.03.2015</td>
</tr>
<tr>
<td>3.1</td>
<td>Generation of filter specification</td>
<td>S.Springfeldt</td>
<td>20.04.2015</td>
</tr>
</tbody>
</table>