### Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 142 Ω || -4,5 pF
Output: 197 Ω || -3,7 pF

### Characteristics

Remark:
The reference level for the relative attenuation $a_{rel}$ of the TFS 900 is the minimum of the pass band attenuation. This value is defined as the insertion loss $a_e$. The nominal frequency $f_N$ is fixed at 900 MHz without any tolerance. The values of relative attenuation $a_{rel}$ are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

| **D a t a** | | | | **typ. value** | | **tolerance / limit** | | |
|---|---|---|---|---|---|---|---|---|
| **Insertion loss** (reference level) | | $a_e = a_{min}$ | | 15,2 | dB | max. | 17,0 | dB |
| **Nominal frequency** | | $f_N$ | | - | | | 900,0 | MHz |
| **Passband** | | PB | | 140,5 | MHz | min. | $f_N$ ± 60 | MHz |
| **Pass band ripple** | | | | 0,4 | dB | max. | 1,0 | dB |
| **Relative attenuation** | | $a_{rel}$ | | | | | | |
| 1 MHz ... | 740 MHz | | | 44 | dB | min. | 30 | dB |
| 740 MHz ... | 760 MHz | | | 43 | dB | min. | 25 | dB |
| 1040 MHz ... | 1060 MHz | | | 39 | dB | min. | 25 | dB |
| 1060 MHz ... | 2000 MHz | | | 42 | dB | min. | 30 | dB |
| **Group delay ripple** in PB | | | | 3,5 | ns | | - | |
| **Input power level** | | | | | | max. | 10 | dBm |
| **Operating temperature range** | | OTR | | - | | - 40 °C ... + 85°C | | |
| **Storage temperature range** | | | | - | | - 45 °C ... + 85°C | | |
| **Temperature coefficient of frequency** | | $TC_f$ | ** | -96 | ppm/k | | | |

*) 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.
**) $\Delta f_C(Hz) = TC_f(ppm/K) \times (T - T_o) \times f_{To}$ (MHz).

**Generated:**

**Checked / Approved:**

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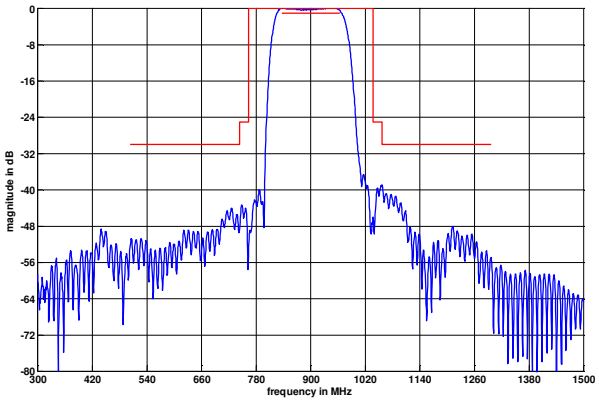
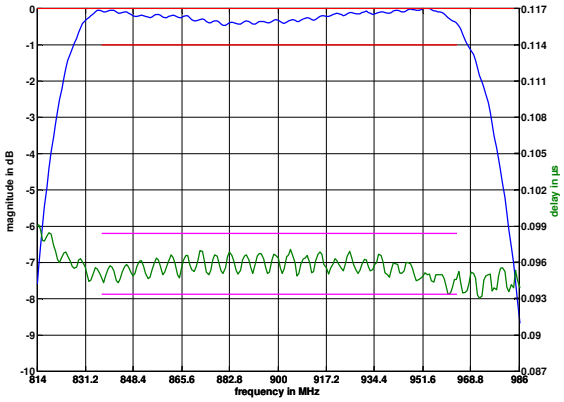
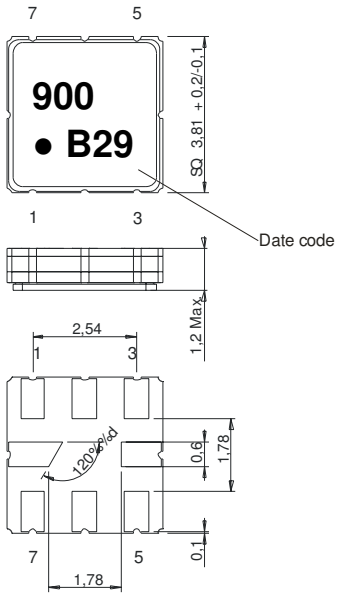
## Filter characteristic




## Construction and pin connection

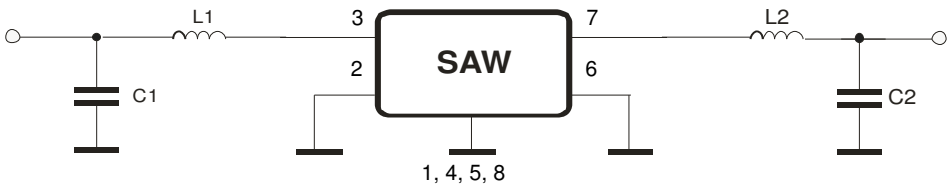
(All dimensions in mm)




| | |
|---|---|
| 1 | Ground |
| 2 | Input RF Return |
| 3 | Input |
| 4 | Ground |
| 5 | Ground |
| 6 | Output RF Return |
| 7 | Output |
| 8 | Ground |

| Date code: | Year + week |
|---|---|
| B | 2011 |
| C | 2012 |
| D | 2013 |
| ... | |

## 50 Ohm Test circuit

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## Stability characteristics

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

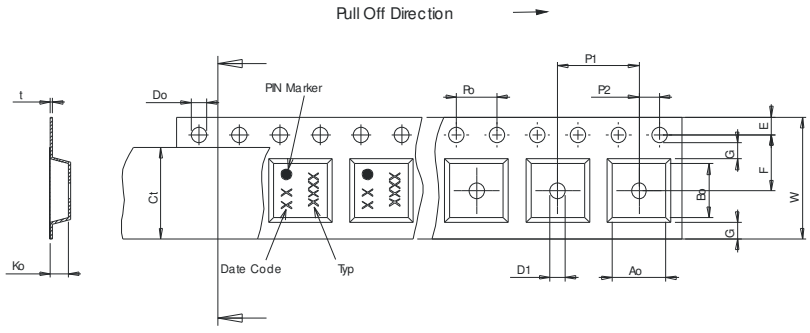
| | |
|---|---|
| 1. Shock: | 500g, 1 ms, half sine wave, 3 shocks each plane;<br>DIN IEC 68 T2 - 27 |
| 2. Vibration: | 10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;<br>DIN IEC 68 T2 - 6 |
| 3. Change of temperature: | -55 °C to 125°C / 30 min. each / 10 cycles<br>DIN IEC 68 part 2 – 14 Test N |
| 4. Resistance to solder heat (reflow): | reflow possible: twice max.;<br>for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4; |

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

## Packing

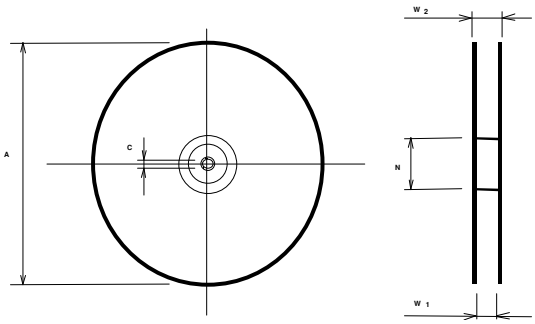
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

| | |
|---|---|
| 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 |




**Tape (all dimensions in mm)**

| | | | |
|---|---|---|---|
| W | : | 12,00 | ± 0,3 |
| Po | : | 4,00 | ± 0,1 |
| Do | : | 1,50 | +0,1/-0 |
| E | : | 1,75 | ± 0,1 |
| F | : | 5,50 | ± 0,05 |
| G(min) | : | 0,75 | |
| P2 | : | 2,00 | ± 0,05 |
| P1 | : | 8,00 | ± 0,1 |
| D1(min) | : | 1,50 | |
| Ao | : | 4,30 | ± 0,1 |
| Bo | : | 4,30 | ± 0,1 |
| Ct | : | 9,5 | ± 0,1 |




**Reel (all dimensions in mm)**

| | | | |
|---|---|---|---|
| A | : | 330 | |
| W1 | : | 12,4 | +2/-0 |
| W2(max) | : | 18,4 | |
| N(min) | : | 50 | |
| C | : | 13,0 | +0,5/-0,2 |

The minimum bending radius is 45 mm.

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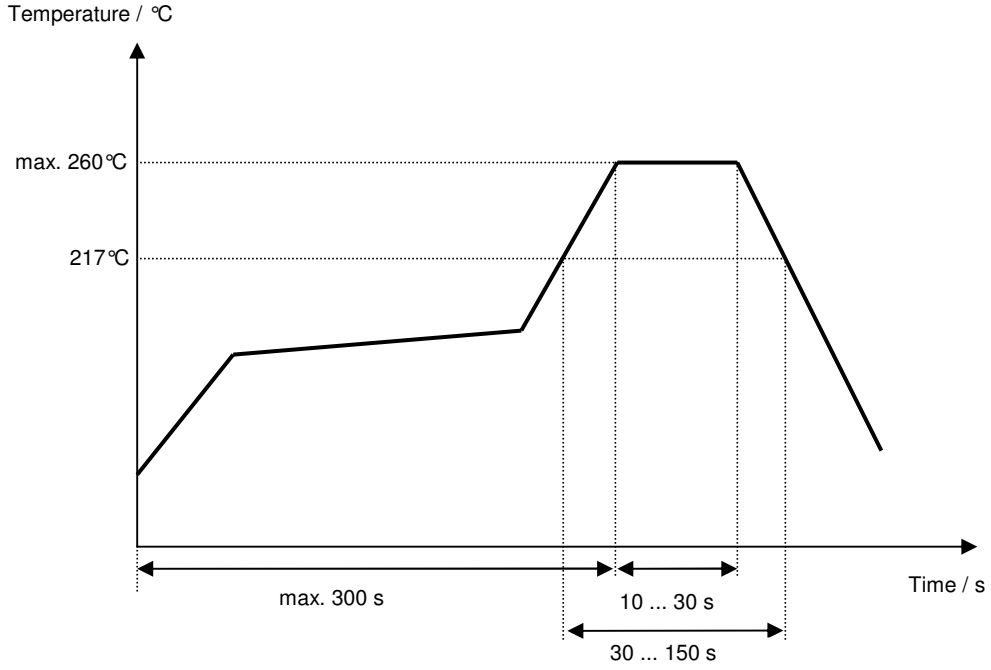
**Air reflow temperature conditions**

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

**Chip-mount air reflow profile**

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## History

| Version | Reason of Changes | Name | Date |
|---|---|---|---|
| 1.0 | - Generation of development specification | Chilla | 13.12.2005 |
| 1.1 | - generated filter specification<br>- added terminating impedances<br>- added typical values<br>- added filter characteristic<br>- added test circuit | Chilla | 18.05.2006 |
| 2.0 | - extend OTR | Chilla | 30.06.2011 |
| 2.1 | - updated header and footer | Raura | 19.07.2011 |

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