

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance:
 source: 630 Ω || -5,6 pF
 load: 600 Ω || -5,7 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 248 D is the minimum of the pass band attenuation a_{min} . This value is defined as the insertion loss a_e . The nominal frequency f_N is fixed to 248,6 MHz. The given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached at the frequencies given below also if the centre frequency f_0 is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_0 .

| D a t a | | typ. Value | Limit |
|---|-------------|----------------------------|-------------------------------------|
| Insertion Loss (at ambient temperature) drift vs. Temperature | $a_e = a_0$ | 4,0 dB | 3,0 ... 6,0 dB max. \pm 0,5 dB |
| Nominal Frequency | f_N | - | 248,6 MHz |
| Centre Frequency | f_0 | 248,6 MHz | - |
| 3 dB bandwidth | Bw_{3dB} | | min. 240 kHz |
| Passband | | | $f_N \pm$ 95 kHz |
| Relative Attenuation | a_{rel} | | |
| $f_N \pm$ 95 kHz | | | max. 1,2 dB |
| $f_N \pm$ 95 kHz ... $f_N \pm$ 120 kHz | | | -0,9 ... +2,1 dB |
| $f_N \pm$ 330 kHz ... $f_N \pm$ 600 kHz | | | min. 13 dB |
| $f_N \pm$ 600 kHz ... $f_N \pm$ 800 kHz | | | min. 22 dB |
| $f_N \pm$ 800 kHz ... $f_N \pm$ 3 MHz | | | min. 30 dB |
| $f_N \pm$ 3 MHz ... $f_N \pm$ 105 MHz | | | min. 48 dB |
| $f_N \pm$ 105 MHz ... $f_N \pm$ 150 MHz | | | min. 51 dB |
| Group Delay | GD | | max. 3 μ s |
| Group Delay Ripple $f_N \pm$ 95 kHz | | - | max. 0,7 μ s |
| $f_N \pm$ 120 kHz | | - | max. 1,0 μ s |
| Input power level | | - | max. 12 dBm |
| Operating Temperature Range | | | -5 °C ... + 75 °C |
| Temperature Coefficient | TC | - 0,032 ppm/K ² | - |

generated: _____

checked / approved: _____

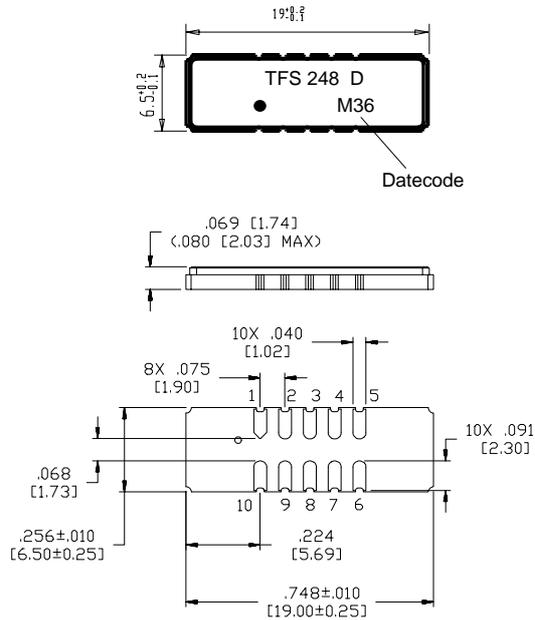
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Construction and Pin Connection

(All dimensions in mm)

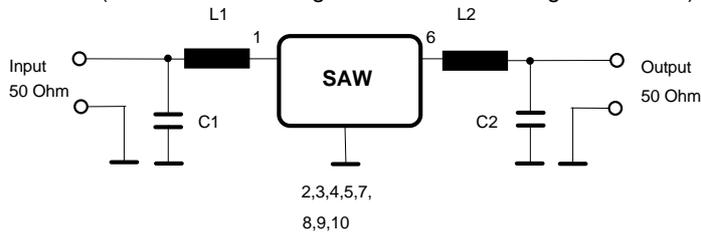


| | |
|----|------------------|
| 1 | Input |
| 2 | Ground |
| 3 | Ground |
| 4 | Ground |
| 5 | Output RF-return |
| 6 | Output |
| 7 | Ground |
| 8 | Ground |
| 9 | Ground |
| 10 | Input RF-return |

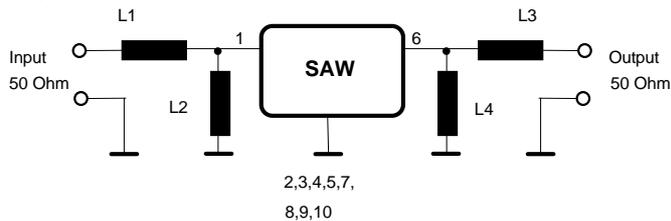
| | |
|----------|-----------|
| Datecode | Year+week |
| K | 1998 |
| L | 1999 |
| M | 2000 |
| ... | |

Possible matching circuits

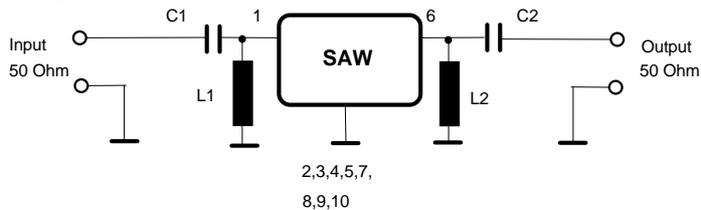
circuit 1 (Reference matching circuit for final testing at Telefilter)



circuit 2



circuit 3



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Stability Characteristics

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

1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Damp heat: 25 °C to 55°C / 95% r.H. / 10 cycles
(cycle) DIN IEC 68 - 2 – 30 Db
4. Resistance to solder heat (reflow): max. 2 times reflow process;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

Packing

Tape & Reel: DIN 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:

Reel of empty components at start:

Reel of empty components at start including leader:

Trailer

1700

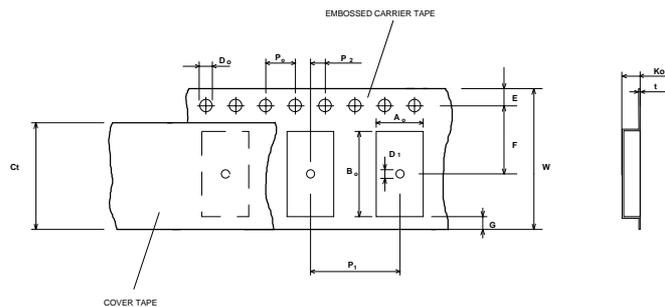
min 300 mm

min 500 mm

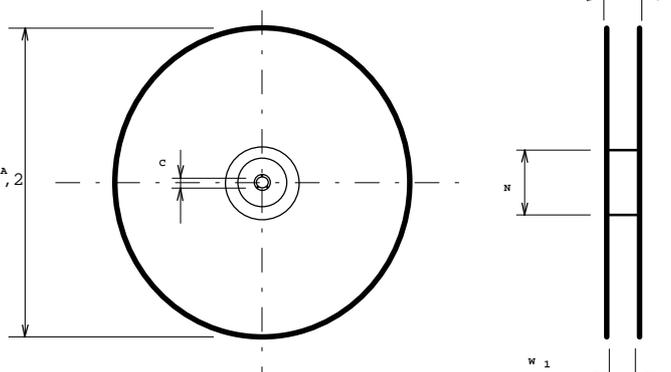
min 300 mm

Tape (all dimensions in mm)

| | |
|----------|---------------|
| W | : 32 ± 0,3 |
| Po | : 4 ± 0,1 |
| Do | : 1,5 + 0,5 |
| E | : 1,75 ± 0,1 |
| F | : 11,5 ± 0,1 |
| G (min) | : 0,75 |
| P2 | : 2 ± 0,1 |
| P1 | : 12 ± 0,1 |
| D1 (min) | : 1,5 |
| Ao | : 7,1 ± 0,1 |
| Bo | : 19,6 ± 0,1 |
| Ko | : 2,1 ± 0,1 |
| t | : 0,35 ± 0,05 |
| Ct | : 25,5 ± 0,1 |

**Reel (all dimensions in mm):**

| | | |
|----------|---|---------------|
| A | : | 330 |
| W1 | : | 32,4 +2 |
| W2 (max) | : | 38,4 |
| N (min) | : | 100 |
| C | : | 13 + 0,5/-0,2 |



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. The marking of the filters is able to read if the view is directed on the upper side of the carrier tape with the sprocket holes on the right side of the tape.

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Air reflow temperature conditions

1st and 2nd air reflow profile

| Name: | pre-heating periods | main-heating periods | peak temperature |
|--------------|---------------------|----------------------|------------------|
| Temperature: | 150 °C - 170 °C | over 200 °C | 255 °C ± 5 °C |
| Time: | 60 sec. - 90 sec. | 20 sec. - 25 sec. | |

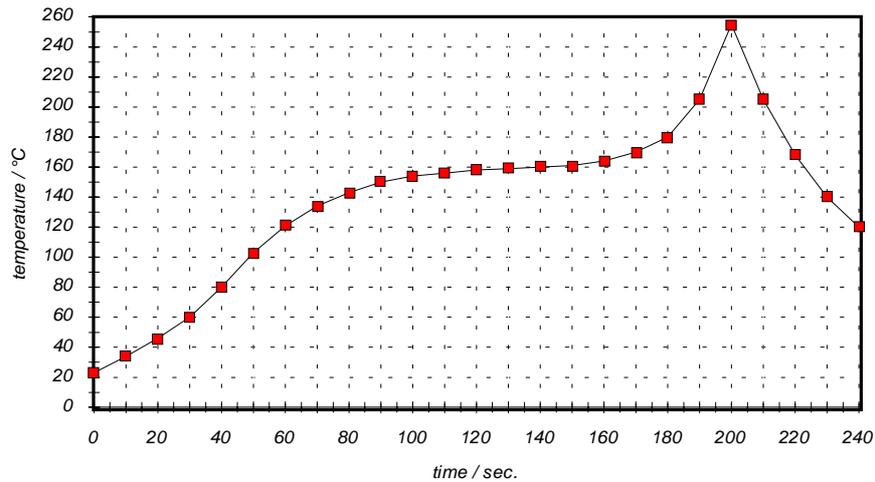
Chip-mount air reflow profile

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

| time / sec. | temperature / °C | time / sec. | temperature / °C |
|-------------|------------------|-------------|------------------|
| 0 | 23 | 140 | 160 |
| 10 | 34 | 150 | 161 |
| 20 | 46 | 160 | 164 |
| 30 | 60 | 170 | 170 |
| 40 | 80 | 180 | 180 |
| 50 | 103 | 190 | 205 |
| 60 | 121 | 195 | 230 |
| 70 | 134 | 200 | 255 |
| 80 | 143 | 205 | 230 |
| 90 | 150 | 210 | 205 |
| 100 | 154 | 215 | 180 |
| 110 | 156 | 220 | 165 |
| 120 | 158 | 230 | 140 |
| 130 | 159 | 240 | 120 |

History

| Version | Reason of Changes | Name | Date |
|----------------|--|-------------|-------------|
| 2.1 | - definition for the insertion loss changed - passband ripple adjusted to the new loss definition - wrong tape and reel dimensions corrected | Steiner | 14.09.2000 |