

VI TELEFILTER**Filter specification****TFS 244 A****1/4****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Source impedance: 340 Ω || -5 pF
 Load impedance: 340 Ω || -5 pF
 Ext.coil: 116 nH

Construction and pin connection

see page 2

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 244,0 is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_O is the arithmetic mean value of the upper and lower frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed on 244,0 MHz without tolerance. 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_O 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_O .

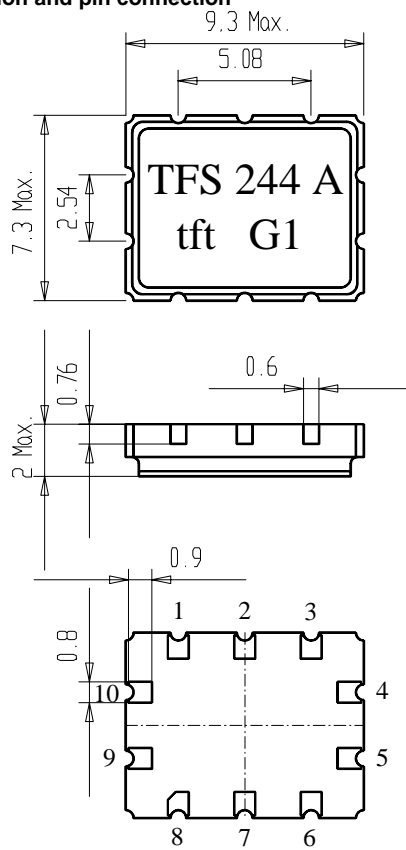
Preliminary Data

| | | typ. value | | tolerance / limit | |
|---|-------------------------|------------|-----|--------------------------------|-----|
| Insertion loss (Reference level) | $a_e = a_{min}$ | 3,2 | dB | max 5 | dB |
| Norminal frequency | f_N | | | 244,0 | MHz |
| Relative attenuation | a_{rel} | | | | |
| 244,0 MHz ± 90 | kHz | - | | max 3 | dB |
| 244,0 MHz ± 400 | kHz ... 244,0 MHz ± 600 | - | kHz | min 25 | dB |
| 244,0 MHz ± 600 | kHz ... 244,0 MHz ± 800 | - | kHz | min 36 | dB |
| 244,0 MHz ± 800 | kHz ... 244,0 MHz ± 1,6 | - | MHz | min 45 | dB |
| 244,0 MHz - 1,6 | MHz ... 244,0 MHz - 10 | - | MHz | min 50 | dB |
| 244,0 MHz + 1,6 | MHz ... 244,0 MHz + 15 | - | Mhz | min 45 | dB |
| 244,0 MHz + 15 | MHz ... 244,0 MHz + 25 | - | Mhz | min 50 | dB |
| Group delay distortion | GD | 2,6 | µs | - | |
| 244,0 MHz ± 70 | kHz | 1 | µs | max 2 | µs |
| Operating temperature range | | | | - 40 °C ... + 85 °C | |
| Storage temperature range | | | | - 30 °C ... + 85 °C | |
| Temperature coefficient of frequency | TC | | | ca. - 0,036 ppm/K ² | |
| Frequency inversion temperature | | | | + 25°C | |

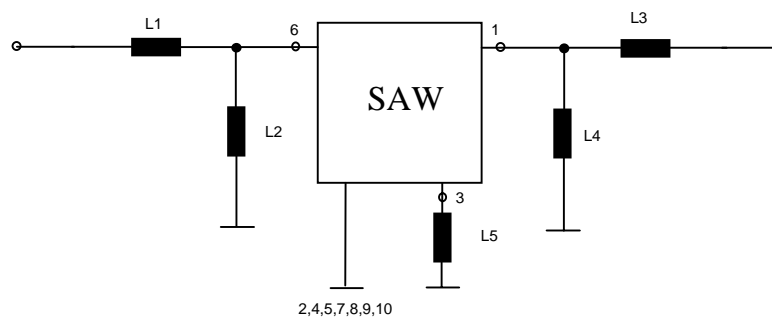
Generated:**Checked / approved:**

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VI TELEFILTER**Filter specification****TFS 244 A****2/4****Construction and pin connection**

- | | |
|------------|-----------|
| 1 Output | 6 Input |
| 2 Ground | 7 Ground |
| 3 Ext.coil | 8 Ground |
| 4 Ground | 9 Ground |
| 5 Ground | 10 Ground |

50 Ω test circuit

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Stability characteristics

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

1. Shock: 30g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 150 Hz, 0.35 mm amplitude, 5g; 2 hours for 3 planes;
DIN IEC 68 T2 - 6
3. Damp heat: 90 % to 95 % rel. humidity, 40 °C, 10 days;
IEC Pub. 68 - 2 - 3
4. Resistance to solder heat (Reflow): 260 °C for 10 sec;

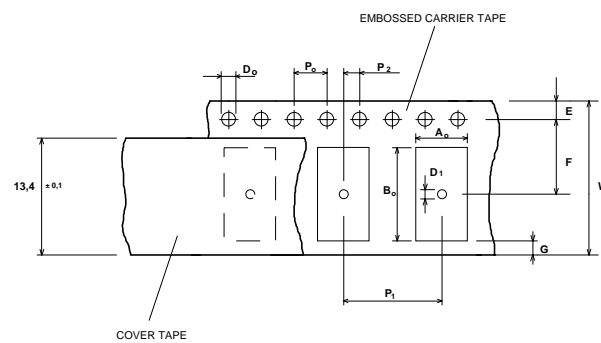
Packing

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: 2300

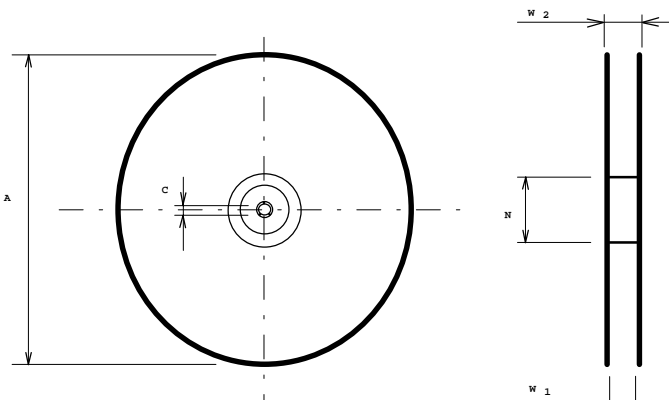
Tape (all dimensions in mm)

| | |
|---------|--------------|
| W | : 16 ± 0,3 |
| Po | : 4 ± 0,1 |
| Do | : 1,5 + 0,5 |
| D1 | : 1,5 ± 0,5 |
| E | : 1,75 ± 0,1 |
| F | : 7,5 ± 0,1 |
| G (min) | : 0,75 |
| P2 | : 2 ± 0,1 |
| P1 | : 12 ± 0,1 |
| D1(min) | : 1,5 |
| Ao | : 7,6 ± 0,1 |
| Bo | : 9,6 ± 0,1 |



Reel (all dimensions in mm):

| | | |
|----------|---|-----------|
| A | : | 330 |
| W1 | : | 16,4 +2 |
| W2 (max) | : | 22,4 |
| N (min) | : | >= 90 |
| C | : | 13 ± 0,25 |



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. | |

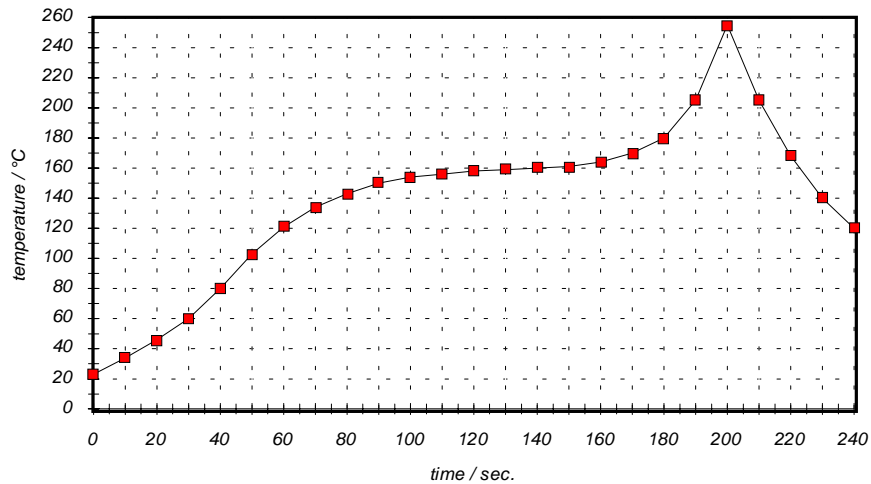
Chip-mount air reflow profile

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 |

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