

VI TELEFILTER**Filter Specification****TFS 456 B 1/4****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: 270 Ω || -1pF

Construction and pin connection

see page 2

50 Ω test circuit

see page 2

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 456 B is the maximum of the attenuation a_{max} . The maximum of the attenuation within the usable signal bandwidth is defined as the insertion loss a_e . The centre frequency f_0 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 456,15 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_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 | Variation/ Limitation |
|--|-----------------|---------------------------|------------------------------|
| Insertion loss (Reference level) | $a_e = a_{min}$ | 3 dB | max. 5 dB |
| Nominal frequency | f_N | - | 456,15 MHz |
| Centre frequency | f_0 | 456,15 MHz | - |
| 3 dB - bandwidth | BW | 280 kHz | - |
| Usable signal bandwidth | | - | min. $f_N \pm 10$ kHz |
| Relative attenuation $f_N + 910$ kHz $f_N \pm 0,7$ MHz ... $f_N \pm 10$ MHz | a_{rel} | | min. 52 dB min. 40 dB |
| Temperature coefficient of frequency | TC_f | -0,036 ppm/K ² | - |
| Frequency inversion temperature | | + 25 °C | |
| Operating temperature range | | | - 10°C ... + 50°C |

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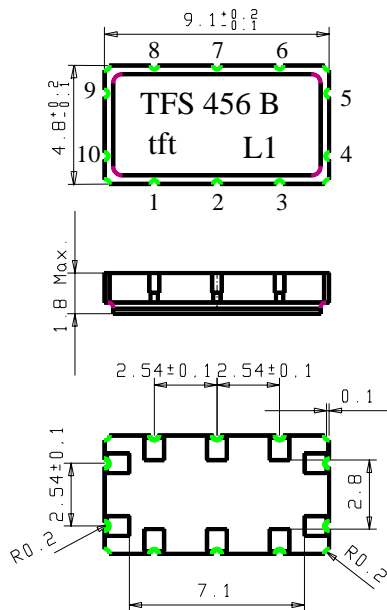
Checked / approved: _____

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

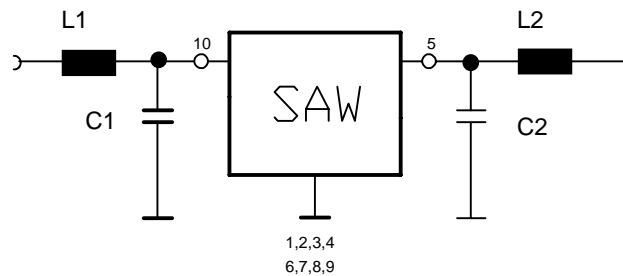
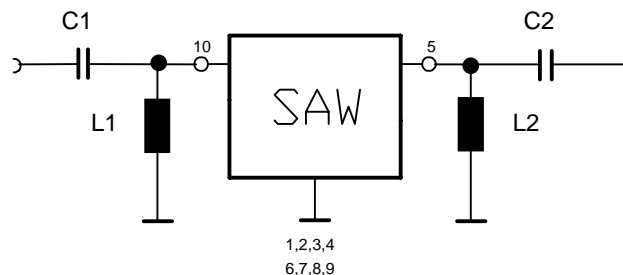
Vectron International, Inc.
 267 Lowell Road
 Hudson, NH 03051 / USA
 Tel: (603) 598-0070 Fax: (603) 598-0075
 E-Mail: vti@vtinh.com

VI TELEFILTER**Filter Specification****TFS 456 B 2/4****Construction and pin connection**

(All dimensions in mm)



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

50 Ω test circuit 1**50 Ω test circuit 2****Stability Characteristics**

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VI TELEFILTER**Filter Specification****TFS 456 B 3/4**

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

1. Shock: 100g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,075 mm or 1g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Damp heat: 90 % to 95 % rel. humidity, 40 °C, 10 days;
(steady state) DIN IEC 68 - 2 - 3
4. Resistance to solder heat (reflow): max. 2 times reflow process;
for temperature conditions refer to the attached "Air reflow temperature conditions" on sheet 4;

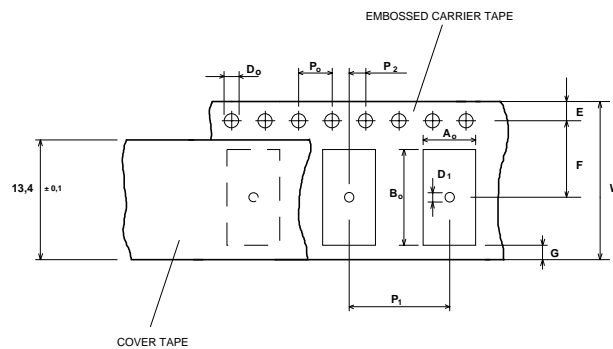
Packing

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;

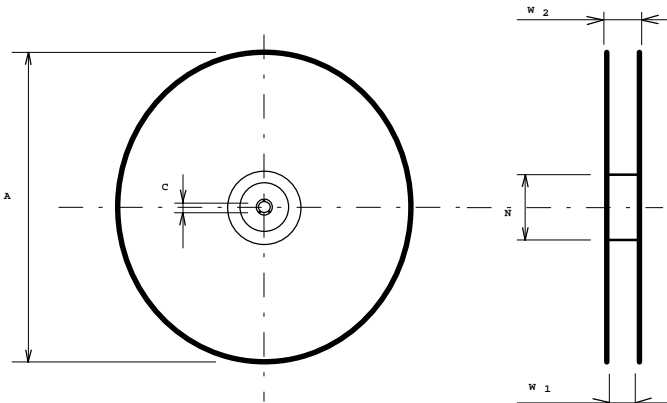
max. pieces of filters per reel: 3000

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 ± 0,05 |
| P1 | : 8 ± 0,1 |
| D1(min) | : 1,5 |
| Ao | : 5,3 ± 0,1 |
| Bo | : 9,7 ± 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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Hudson, NH 03051 / USA
Tel: (603) 598-0070 Fax: (603) 598-0075
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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

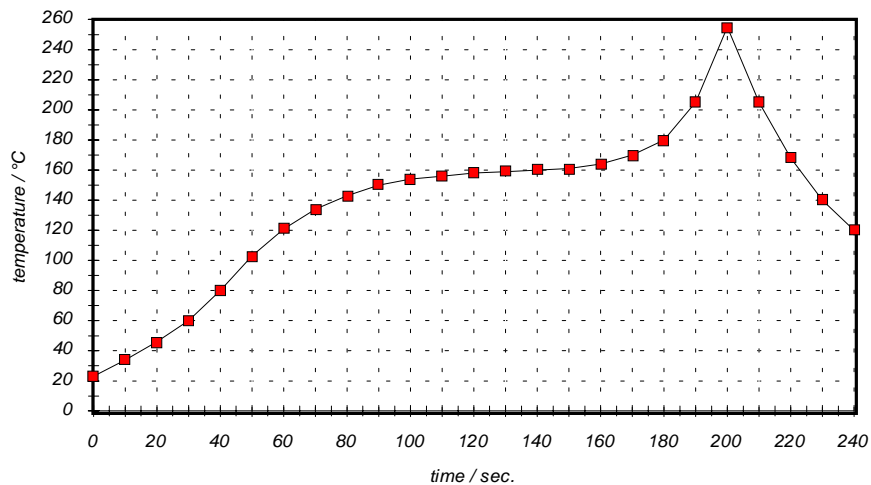


Table for temperature vs. time during the air reflow process

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 |