

VI TELEFILTER**Filter Specification****TFS 196****1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedances *: for input: 253 Ω // -12,9 pF
 for output: 265 Ω // -13,2 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 196 is the insertion loss. The insertion loss a_e is defined as the insertion loss at the nominal frequency f_N . The centre frequency f_C 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 temperature coefficient of frequency TC_f is valid both for the reference frequency f_C and the frequency response of the filter at the operating temperature. The frequency shift of the filter at the operating temperature not included in the production tolerance scheme.

Data		typ. Value	Limit
Insertion Loss (Reference Level)		8,0 dB	max. 9,0 dB
Nominal Frequency			196,990 MHz
Centre Frequency (at ambient temperature)	f_C	196,99 MHz	$196,99 \pm 0,03$ MHz
Pass band	PB	-	$f_C \pm 0,280$ MHz
Group delay ripple in PB		0,1 µs	max 0,30 µs
Relative Attenuation			
f_C	a_{rel}	-	max. 3,0 dB
$f_C \pm 0,296$ MHz	$f_C \pm 0,75$ MHz	-	min. 3,0 dB
@	$f_C \pm 0,75$ MHz	25 dB	min. 20 dB
@	$f_C \pm 1,55$ MHz	60 dB	min. 55 dB
$f_C \pm 3,1$ MHz	$f_C \pm 8,0$ MHz	60 dB	min 55 dB
$f_C - 21$ MHz	$f_C - 19$ MHz	70 dB	min 60 dB
$f_C - 11$ MHz	$f_C - 9$ MHz	65 dB	min 60 dB
Operating Temperature Range °C			-10 ... 50
Storage Temperature Range			-40 ... 85 °C
Temperature Coefficient TC		- 0,036 ppm / K ²	-

*) 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.

generated: _____

checked / approved: _____

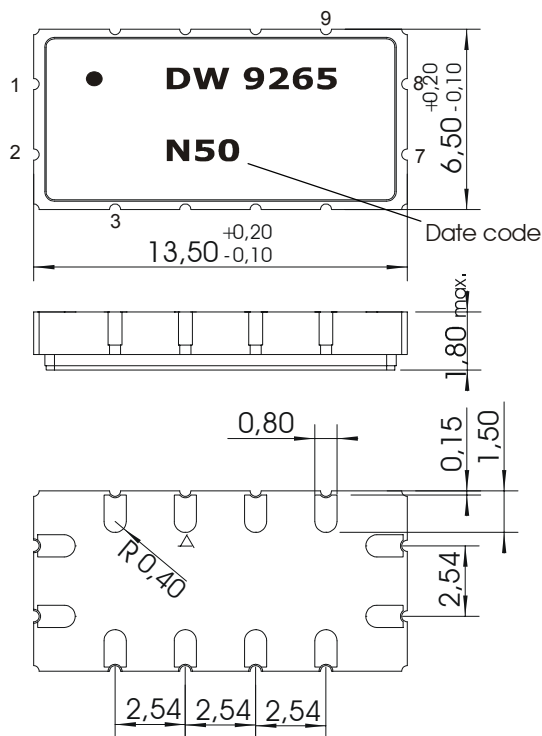
VI TELEFILTER
 Potsdamer Straße 18
 D 14 513 TELTOW / Germany
 Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
 E-Mail: tft@telefilter.com

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 reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

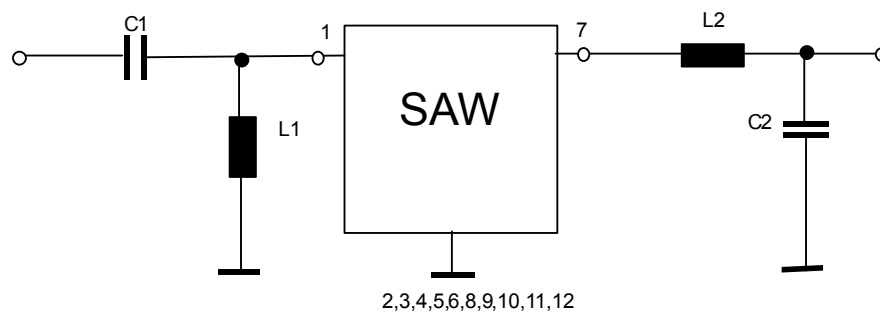
Construction and pin connection

(All dimensions in mm)



- | | |
|----|------------------|
| 1 | Input |
| 2 | Input RF Return |
| 3 | Ground |
| 4 | Ground |
| 5 | Ground |
| 6 | Ground |
| 7 | Output |
| 8 | Output RF return |
| 9 | Ground |
| 10 | Ground |
| 11 | Ground |
| 12 | Ground |

Date code: Year+week
M 2000
N 2001
P 2002
...

50 Ω matching circuit

VI TELEFILTER
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / 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 reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

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, 1,5 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
DIN IEC 68 part 2 – 14 Test N
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;

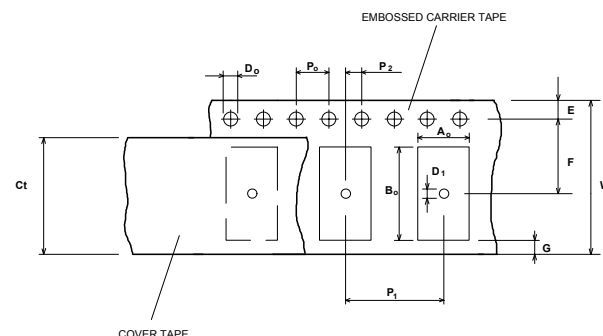
Packing

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;

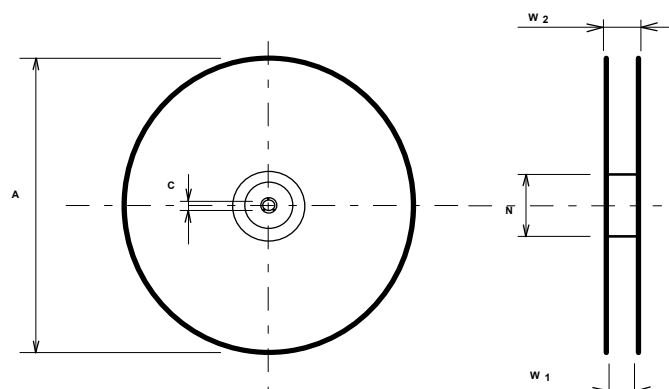
max. pieces of filters per reel: 1700
Reel of empty components at start: min 300 mm
Reel of empty components at start including leader: min 500 mm
Trailer min 300 mm

Tape (all dimensions in mm)

W : 24 ± 0,3
Po : 4 ± 0,1
Do : 1,5 ± 0,1
E : 1,75 ± 0,1
F : 11,5 ± 0,1
G (min) : 0,60
P2 : 2 ± 0,1
P1 : 12 ± 0,1
D1(min) : 1,5
Ao : 7,1 ± 0,2
Bo : 13,9 ± 0,2
Ct : 21,5 ± 0,1

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

A : 330
W1 : 24,40 ± 2,0
W2 (max) : 30,4
N (min) : 60
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.

VI TELEFILTER
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / 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 reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Air reflow temperature conditions1st 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.	

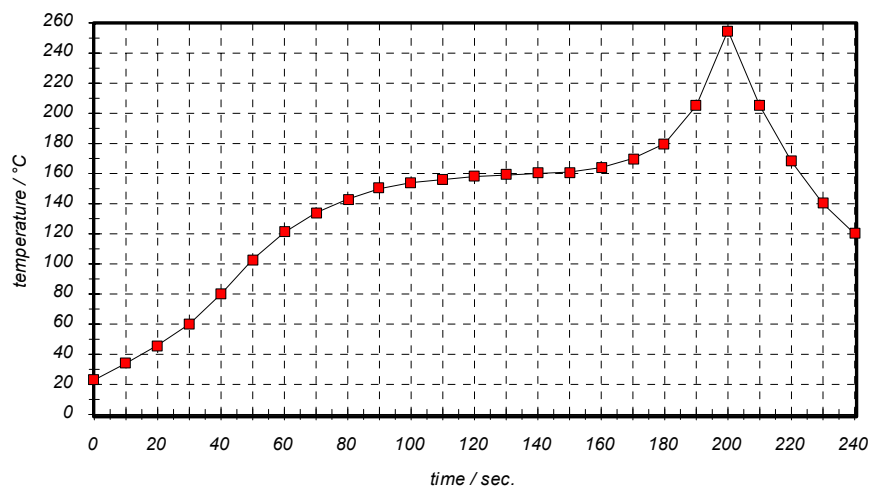
Chip-mount air reflow profile

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

VI TELEFILTER**Filter Specification****TFS 196****5/5****History**

Version	Reason of Changes	Name	Date
1.0	generate specification	Pfeiffer	28.11.2001
1.1	changed label terminated impedances added (primarily values)	Pfeiffer	18.12.2001
1.2	changed position of pin marker	Pfeiffer	17.01.2002

VI TELEFILTER
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / 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 reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.