

VI TELEFILTER**Filter Specification****TFS 170 K****1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance:
 source: 1,47 kΩ || -7.1 pF
 load: 610 Ω || -9,9 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 170 K 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 nominal frequency f_N is fixed to 170,6 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_C 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_C .

D a t a		typ. Value	Limit
Insertion Loss (Reference Level)	$a_e = a_{min}$	5 dB	max. 8 dB
Nominal Frequency	f_N	-	170,6 MHz
Relative Attenuation	a_{rel}		
$f_N \pm 100$ kHz		0,1 dB	max. 0,4 dB
$f_N \pm 100$ kHz ... $f_N \pm 150$ kHz		0,3 dB	max. 1 dB
$f_N \pm 400$ kHz ... $f_N \pm 600$ kHz		18 dB	min. 13 dB
$f_N \pm 600$ kHz ... $f_N \pm 800$ kHz		35 dB	min. 27 dB
$f_N \pm 800$ kHz ... $f_N \pm 1,6$ MHz		42 dB	min. 40 dB
$f_N \pm 1,6$ MHz ... $f_N \pm 3,0$ MHz		47 dB	min. 43 dB
$f_N \pm 3,0$ MHz ... $f_N \pm 5,8$ MHz		52 dB	min. 47 dB
$f_N \pm 5,8$ MHz ... $f_N \pm 35$ MHz		57 dB	min. 50 dB
$f_N \pm 35$ MHz ... $f_N \pm 75$ MHz		>70 dB	min. 45 dB
$f_N \pm 75$ MHz ... $f_N \pm 2$ GHz		>55 dB	min. 40 dB
Group Delay	GD		
Group Delay Ripple $f_N \pm 100$ kHz		0,25 µs	max. 0,4 µs
Time domain response *)			
5 µs		25 dB	min. -10 dB
10 µs		42 dB	min. -20 dB
30 µs		85 dB	min. -76 dB
35 µs		88 dB	min. -79 dB
40 µs		88 dB	min. -80 dB
Operating Temperature Range			-10 ... 85° C
Temperature Coefficient	TC	- 0,036 ppm/K ²	-

*) Values between 5 and 35 µs should be interpolated linearly from this table

generated: _____

checked / approved: _____

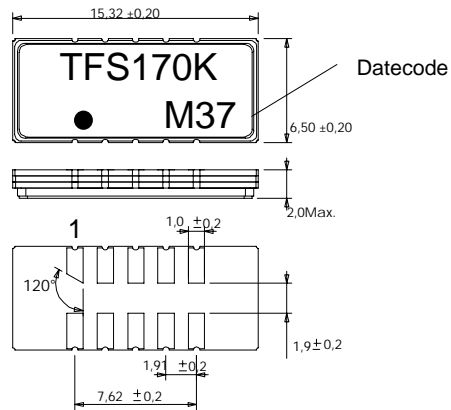
VI TELEFILTER
 Potsdamer Straße 18
 D 14 513 TELTOW / Germany
 Tel: (+49) 3328 4784-50 / Fax: (+49) 3328 4784-30
 E-Mail: tft@telefilter.com

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.

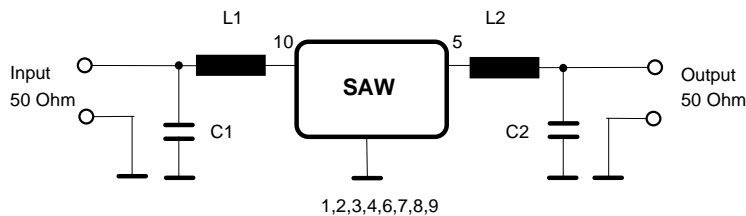
Construction and Pin Connection

(All dimensions in mm)



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

Datecode:	Year+week
K	1998
L	1999
M	2000
...	

50 Ohm matching circuit

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;

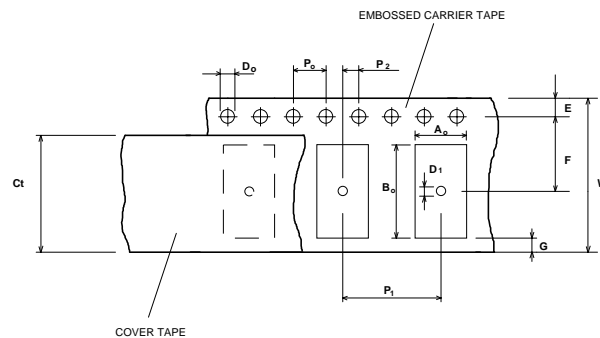
Packing

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;

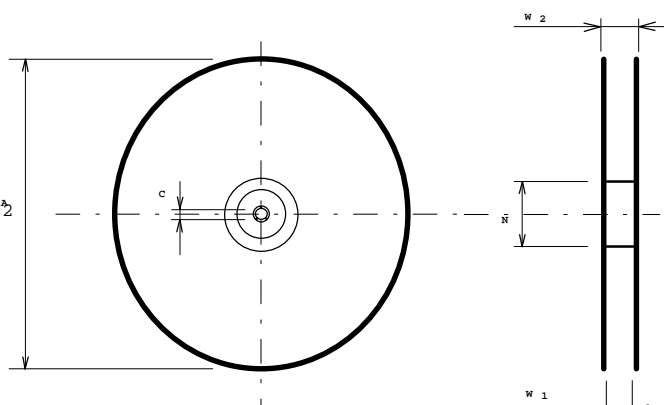
max. pieces of filters per reel:	2000
Reel of empty components at start:	min 300 mm
Reel of empty components at start including leader:	min 500 mm
Trailer	min 300 mm

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 : 15,9 ± 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 4784-50 / 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 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.	

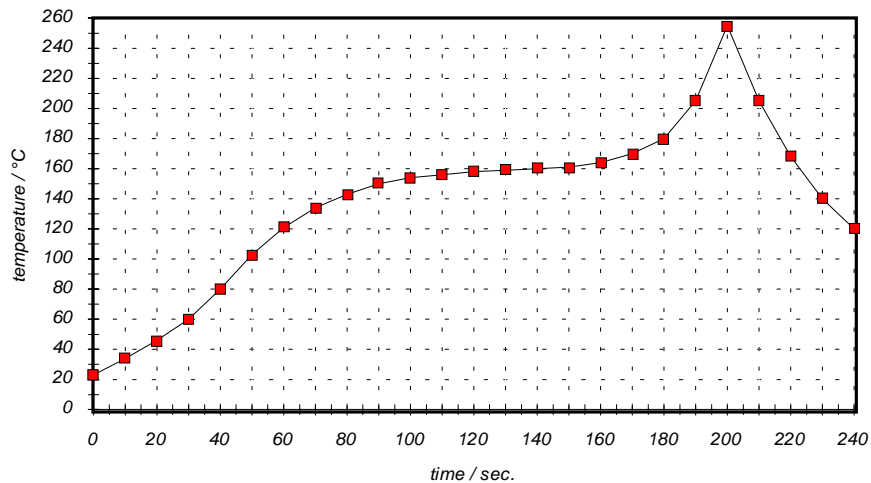
Chip-mount air reflow profile

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

VI TELEFILTER**Filter Specification****TFS 170 K****5/5**

History

Version	Reason of Changes	Name	Date
1.0	Generate filter specification from development specification - group delay ripple decreased according to customer requirement	Steiner	18.09.2000

VI TELEFILTER
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-50 / 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.