

VI TELEFILTER**Filter Specification****TFS 175 A****1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: *
 source: 1,22 kΩ || -7,3 pF
 load: 580 Ω || -9,7 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 175 A 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 175,0 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. 9 dB
Nominal Frequency	f_N	-	175,0 MHz
Relative Attenuation	a_{rel}		
$f_N - 90$ kHz ... $f_N + 90$ kHz		0,2 dB	max. 0,5 dB
$f_N \pm 90$ kHz ... $f_N \pm 150$ kHz		0,5 dB	max. 1,0 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. 30 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
1 MHz... $f_N - 75$ MHz		>55 dB	min. 40 dB
$f_N + 75$ MHz... $f_N + 1,0$ GHz		>55 dB	min. 40 dB
Group Delay	GD		
Group Delay Ripple $f_N \pm 90$ kHz		0,2 μs	max. 400 ns
Operating Temperature Range			-10 ... 85 °C
Storage Temperature Range			-40 ... 85 °C
Temperature Coefficient	TC_f^{****}	- 0,036 ppm/K ²	-
Frequency inversion temperature		+ 25 °C	-
Input power			max. 15 dBm ^{***}
Permissible DC voltage			max. 30 V ^{**}

*) 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.

***) between any two terminals

****) a power of 20 dBm can be applied shortly, for 10 years life time the cycle time should be less than 1:50

*****) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (\Delta T)^2 \times f_{T0}(\text{MHz})$

generated: _____

checked / approved: _____

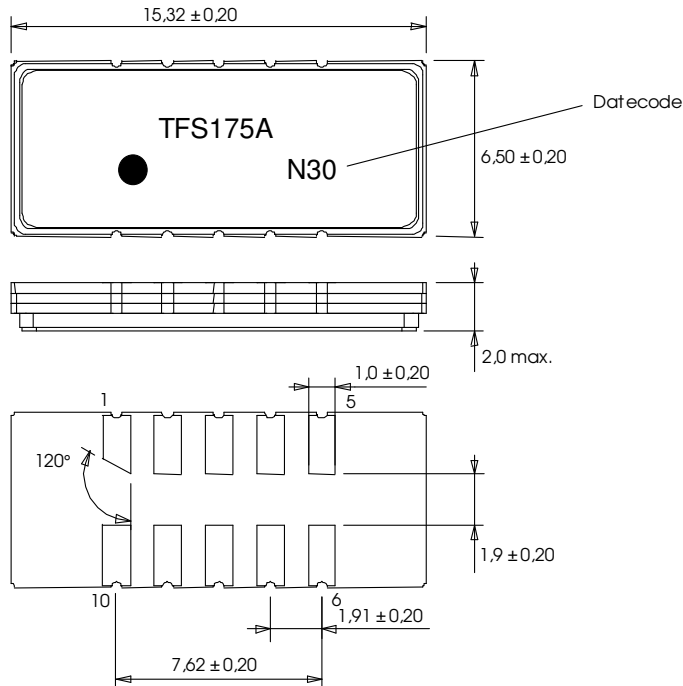
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Construction and Pin Connection

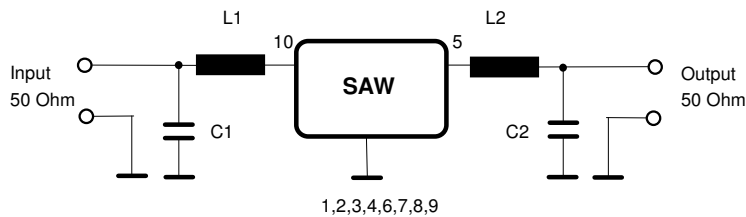
(All dimensions in mm)



- 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
L	1999
M	2000
N	2001
...	

50 Ω matching circuit



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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, 1,5 mm or 20g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 – 6
3. Damp heat: -55 °C to 125°C; 30 min. each / 95% r.H. / 10 cycles
(cycle) DIN IEC 68 – 2 – 14 Test N "Change of Temperature"
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;

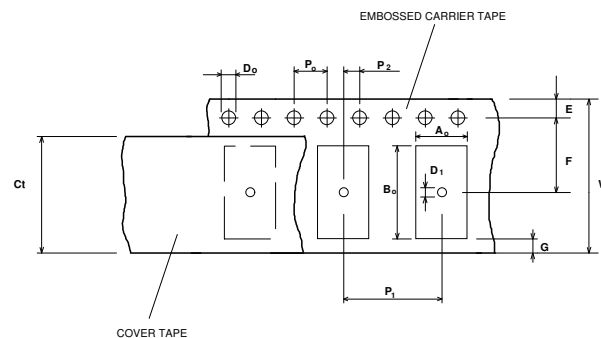
Packing

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;

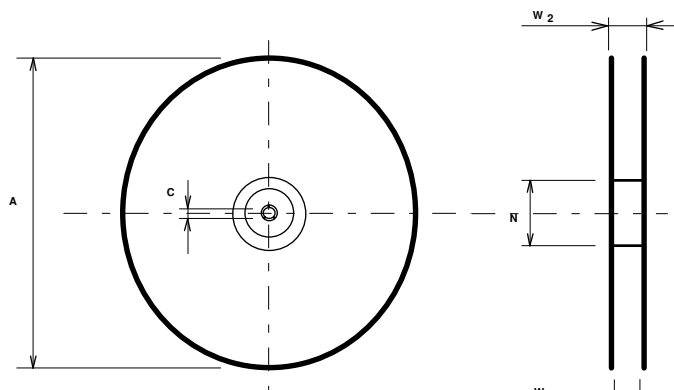
max. pieces of filters per reel:	2000
Reel of empty components at start:	min 300 mm
Reel of empty components at start including leader:	min 500 mm
Trailer	min 300 mm

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.

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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.	

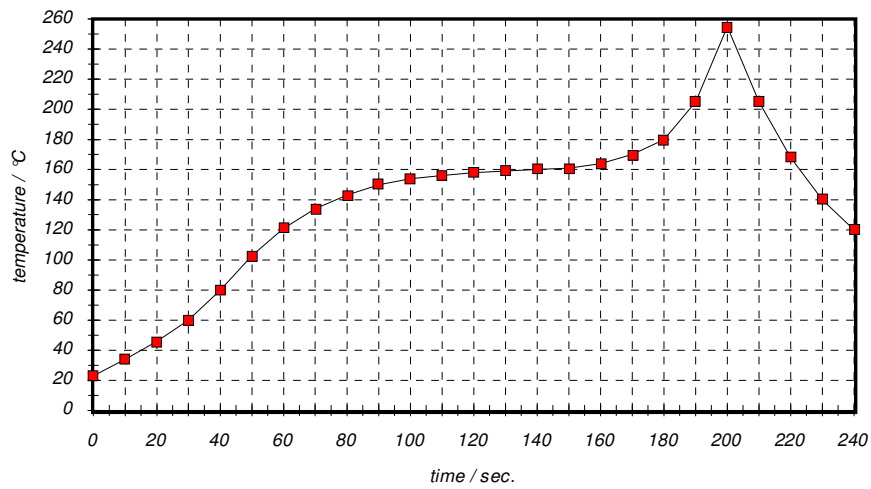
Chip-mount air reflow profile

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

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History

Version	Reason of Changes	Name	Date
1.0	new generation according to customer specification 010219	Steiner	23.04.2001
1.1	correct "Relative attenuation" correct package drawing add footnotes	Herrler	26.07.2001

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