

VI TELEFILTER**Specification****TFS 170/1 - 1/4****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm

Construction and pin configuration

see sheet 2

Packing

see sheet 3

Characteristics

Agreement:

Reference level for the relative attenuation a_{rel} of the TFS 170 is the minimum of the attenuation a_{min} . The minimum of the attenuation a_{min} is defined as insertion loss a_e . Reference frequency f_C is the mean value of the frequencies with a relative attenuation of 3 dB.

D a t a		typ. value	tolerance / limit
Insertion loss (Reference level)	$a_e = a_{min}$	5,5 dB	max 8 dB
Reference frequency	f_C	170,0 MHz	± 10 kHz
3 dB - band width	BW	188,0 kHz	
3 dB-BW for f_C	169,992 MHz ... 170,010 MHz	188,0 kHz	max ± 5 kHz
3 dB-BW for f_C	<169,992 MHz	188,0 kHz	max ± 3 kHz
3 dB-BW for f_C	<169,991 MHz	188,0 kHz	max ± 1 kHz
Relative attenuation	a_{rel}		
$f_C \pm 200$ kHz ... $f_C \pm 400$ kHz		-	min 19 dB
$f_C \pm 400$ kHz ... $f_C \pm 600$ kHz		-	min 40 dB
$f_C + 600$ kHz ... $f_C + 1060$ kHz		-	min 45 dB
$f_C + 1060$ kHz ... $f_C + 1360$ kHz		-	min 40 dB
$f_C + 1360$ kHz ... $f_C + 20$ MHz		-	min 45 dB
$f_C - 600$ kHz ... $f_C - 20$ MHz		-	min 45 dB
Group delay	GD	4,5 μ s	-
Group delay distortion	GDD		
$f_C \pm 65$ kHz		-	max 1,0 μ s
$f_C \pm 70$ kHz		-	max 1,1 μ s
Termination impedance at input		393 Ω // - 6,6 pF	-
Termination impedance at output		467 Ω // - 5,5 pF	-
Coupling coil		94 nH	-
Temperature coefficient of frequency	TC_f *)	- 0,032 ppm/K ² *)	-
Frequency inversion temperature	T_o	+ 40 °C	-
Operating temperature range			- 20 °C ... + 85 °C
Storage temperature range			- 45 °C ... + 85 °C

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

generated: _____

checked / approved: _____

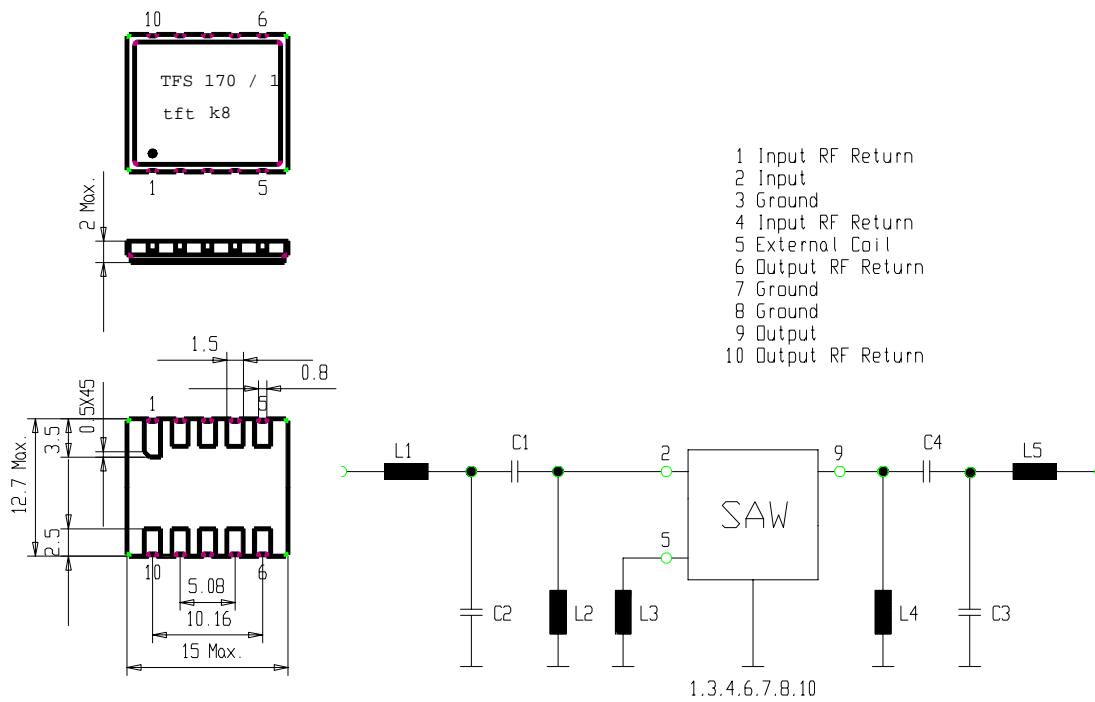
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Construction and pin configuration

(All dimensions in mm)



VI TELEFILTER**Specification****TFS 170/1 - 3/4****Stability Characteristics:**

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, 0,35 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 % re. 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;

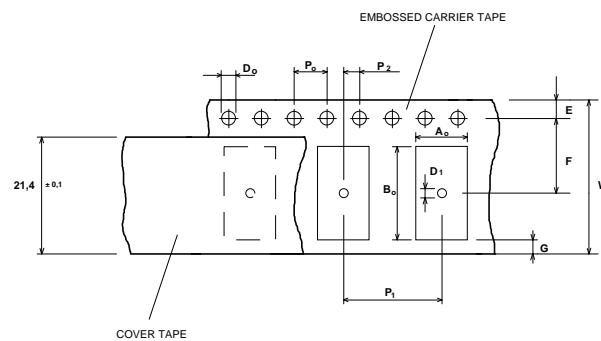
Packing

Tape & Reel: 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;

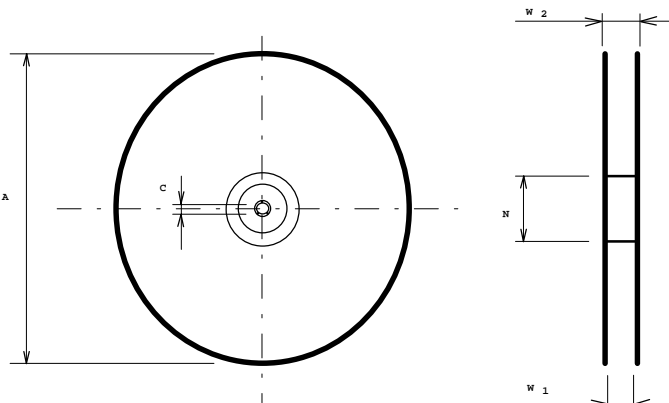
max. pieces of filters per reel: 1000

Tape (all dimensions in mm)

W	: 24 ± 0,3
Po	: 4 ± 0,1
Do	: 1,5 + 0,5
D1	: 1,5 + 0,5
E	: 1,75 ± 0,1
F	: 11,5 ± 0,1
G (min)	: 0,75
P2	: 2 ± 0,1
P1	: 16 ± 0,1
D1(min)	: 1,5
Ao	: 13,0 ± 0,2
Bo	: 16,4 ± 0,2

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

A	:	330
W1	:	24,4 +2
W2 (max)	:	30,4
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 left 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	230 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

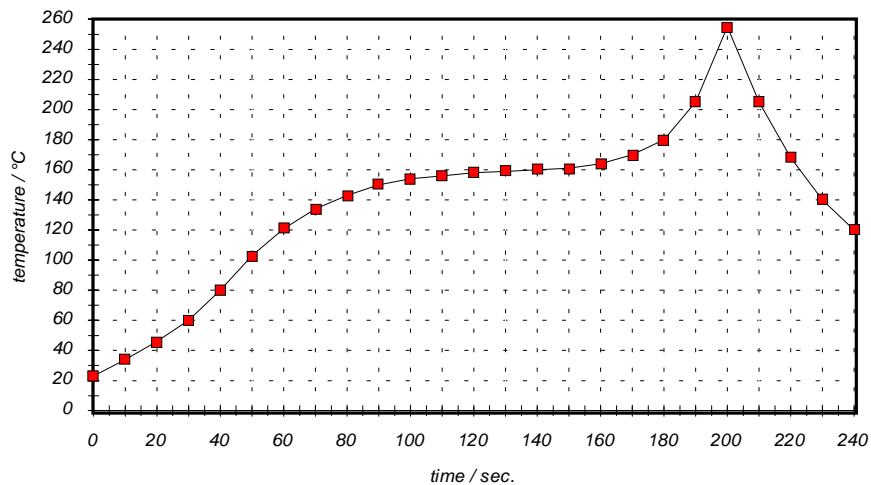
Chip-mount air reflow profile

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