Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedances *): input:	180 Ω || -3,4 pF	
output:	180 Ω || -3,4 pF	
Source:	200	Ω
Load:	200	Ω

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS 172B is the maximum attenuation in the pass band. The maximum attenuation in the pass band is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 172,8 MHz without any tolerance or limit. The values of relative attenuation a_{rel} are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit		
Insertion loss	$a_e = a_{max}$			max.	4,0	dB
(reference level)		2,7	dB	min.	2,0	dB
Nominal frequency	f_N				172,8	MHz
Centre frequency	f_C	172,8	MHz			
Pass band				f_N ±	4,42	MHz
Pass band ripple		0,5	dB	max.	0,8	dB
Relative attenuation	a_{rel}					
f_N - 172,5 MHz … f_N - 29,8 MHz		54	dB	min.	40	dB
f_N + 30,2 MHz … f_N + 827,2 MHz		53	dB	min.	40	dB
Group delay ripple within PB		70	ns	max.	100	ns
VSWR within PB		1,5 : 1		max.	2,5 : 1	
Input power level		-		max.	10	dBm
Operating temperature range	OTR	-		- 10 °C ... + 85°C		
Storage temperature range		-		- 30 °C ... + 90°C		
Temperature coefficient of frequency	TC_f **	-78	ppm/K		-	

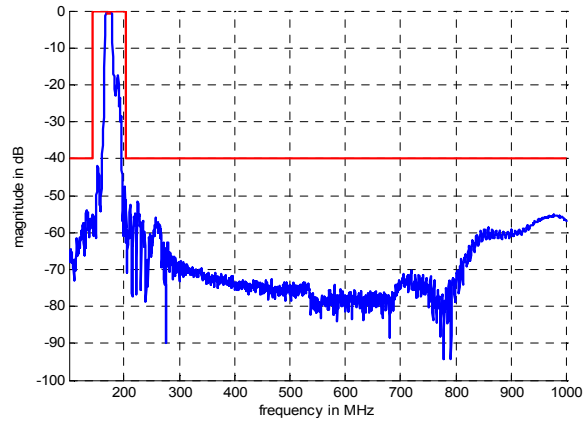
*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions, do not hesitate to ask for an application note or contact our design team.
**) $\Delta f(Hz) = TC_f(ppm/K) \times (T-T_0) \times f_{To}(MHz)$.

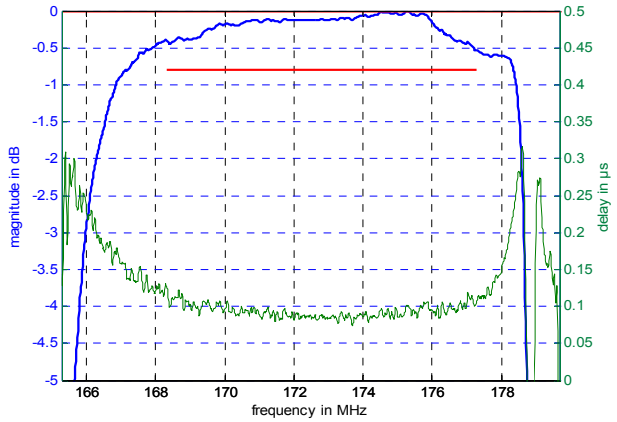
generated:

checked / approved:

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

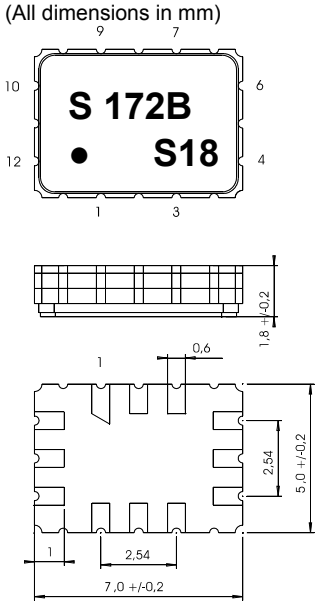
Filter characteristic





Construction and pin connection

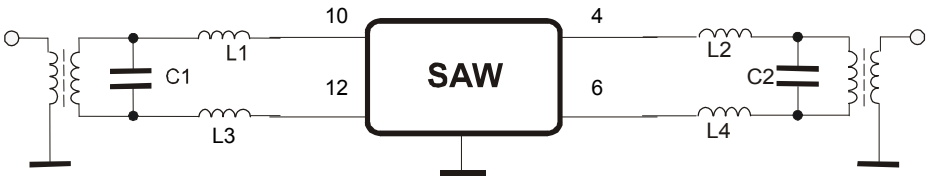
(All dimensions in mm)



1	Ground
2	Ground
3	Ground
4	Output
5	Ground
6	Output
7	Ground
8	Ground
9	Ground
10	Input
11	Ground
12	Input

Date code:	Year + week
S	2004
T	2005
U	2006
...	

50 Ω Test circuit



1, 2, 3, 5, 7, 8, 9, 11

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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, 0,35 mm or 5 g 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):	reflow possible: twice max.; for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

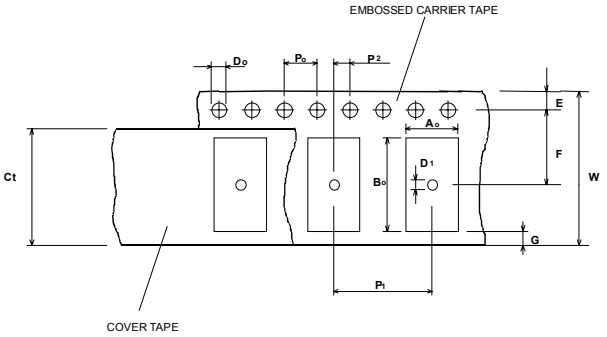
Packing

Tape & Reel: IEC 286 – 3, with exeption 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 peer reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

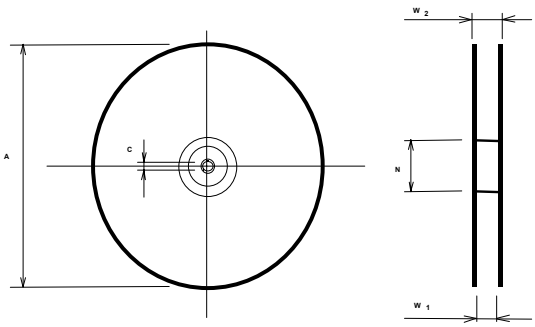
Tape (all dimensions in mm)

W	:	16,00 ± 0,3
Po	:	4,00 ± 0,1
Do	:	1,50 +0,1/-0
E	:	1,75 ± 0,1
F	:	7,50 ± 0,1
G(min)	:	0,60
P2	:	2,00 ± 0,1
P1	:	8,00 ± 0,1
D1(min)	:	1,50
Ao	:	5,50 ± 0,1
Bo	:	7,50 ± 0,1
Ct	:	13,5 ± 0,1



Reel (all dimensions in mm)

A	:	330
W1	:	16,4 +2/-0
W2(max)	:	22,4
N(min)	:	50
C	:	13,0 +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. Marking of the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on the right.

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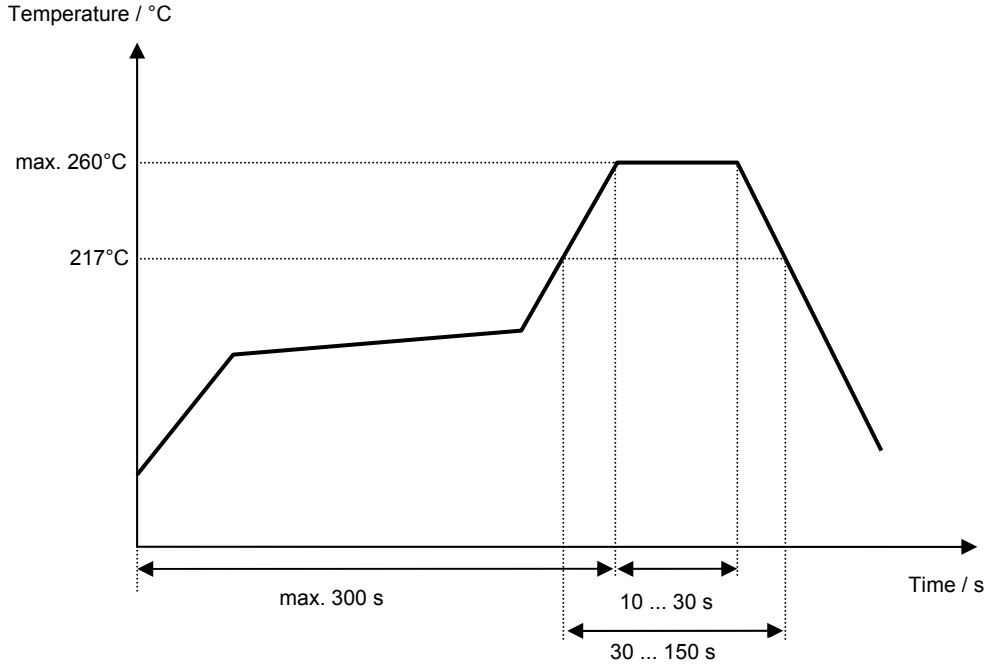
Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



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History

Version	Reason of Changes	Name	Date
1.0	- Generation of specification according to customer specification.	Dr. Sabah	12.08.2003
1.1	- Change of passband, change of pass band ripple definition of group delay ripple, add source and load impedance, definition of package (construction, pin configuration, tape and reel)	Roizengaft	13.01.2004
1.2	- Generation of filter specification - Change remark of filter characteristic - Add typical value - Change package (construction, pin connection) - Add input and output impedance - Add temperature coefficient	Noack	16.04.2004
1.3	- Change package (construction, pin configuration)	Noack	30.04.2004
1.4	- Change remark according to customer specification - Change air reflow profile	Noack	22.11.2004

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