Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedances at f_C *) for input: 820 Ω | - 6,6 pF
for output: 670 Ω | - 6,5 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of TFS 300F is the minimum of the pass band attenuation a_{min}. This value is defined as the insertion loss a_e. 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 given values for the relative attenuation a_{rel} and the group delay ripple have to be reached at the frequencies given below, even 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 $a_e = a_{min}$ (at ambient temperature)	13,5 dB	max. 19 dB
Centre frequency f_c (at ambient temperature)	-	300 MHz ± 0,09 MHz
Passband ripple (p-p) within f_C ± 1,2 MHz	0,3 dB	max. 1,1 dB
Relative attenuation a_{rel}		
f_C ... f_C ± 1,2 MHz	0,3 dB	max. 1,1 dB
f_C ± 1,2 MHz ... f_C ± 1,65 MHz	2 dB	max. 3 dB
f_C ± 2,4 MHz ... f_C ± 6 MHz	45 dB	min. 40 dB
f_C ± 6 MHz ... f_C ± 40 MHz	52 dB	min. 45 dB
Group delay ripple (p-p) within f_C ± 1,6 MHz	105 ns	max. 200 ns
Absolute group delay at f_C	1,4 µs	max. 1,8 µs
Phase ripple (p-p) within f_C ± 1,6 MHz	4,5 °	max. 10 °
Triple transit suppression compared to main signal	50 dB	min. 37 dB
Return loss within f_C ± 1,6 MHz	15 dB	min. 10 dB
Operable temperature range	-	- 40 °C ... + 85 °C
Operating temperature range	-	- 30 °C ... + 70 °C
Storage temperature range	-	- 40 °C .....+ 85 °C
Temperature coefficient **) TC	-0,04 ppm/K²	-
Frequency inversion temperature (T_o)	28 °C	-

*) 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.
**) $\Delta f(Hz) = TC_f(ppm/K^2) \times (T-T_0)^2 \times f_{To}(MHz)$

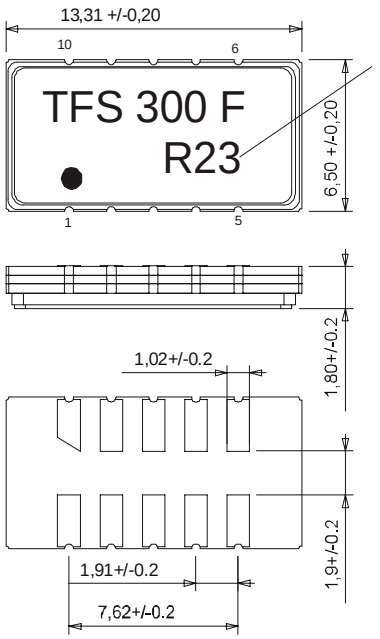
generated:

checked / approved:

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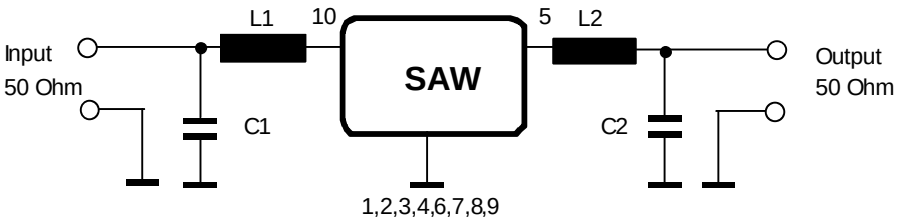
Construction and Pin Connection
(all dimensions in mm)



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

date code	year + week
N	2001
P	2002
R	2003
...	

50 Ω matching circuits



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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 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):	reflow possible: twice max.; for temperature conditions, please refer to the attached "Air reflow temperature conditions" on page 4;

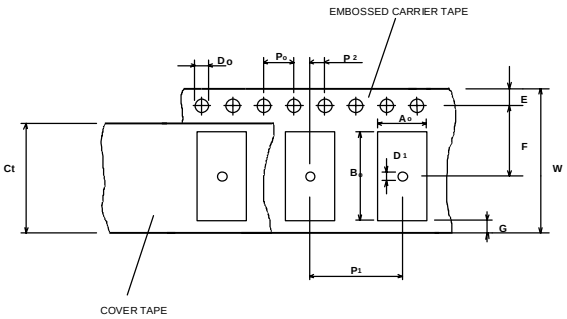
Packing

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

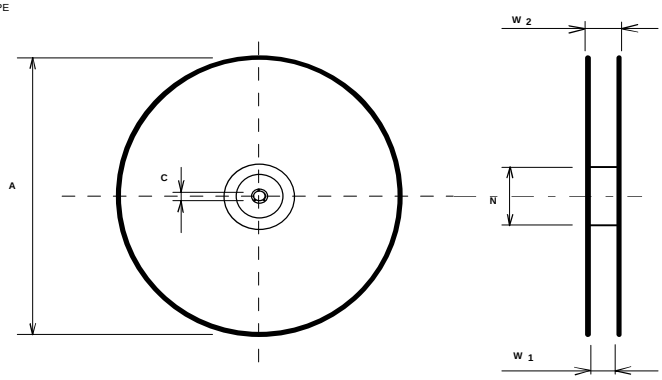
Tape (all dimensions in mm)

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. Markings on the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on its right.

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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	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

Chip-mount air reflow profile

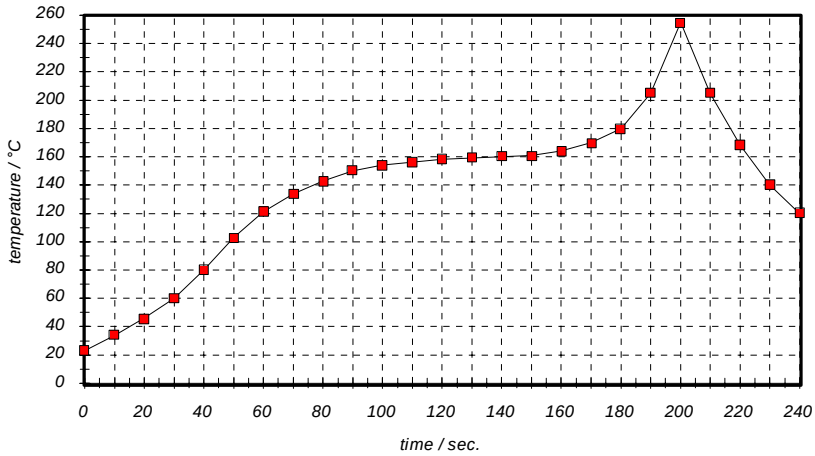


Table for temperature vs. time during the air reflow process

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	generate development specification according to customer requirements.	Dunzow W.	22.11.2001
1.1	change operating temperature range from [0°C...70°C] to [-30°C...70°C].	Dunzow W.	30.11.2001
1.2	change of package, insertion loss, requirements in pass band and relative attenuation 30.01.2003		Pfeiffer
1.3	absolute value of group delay and operable temperature added	Pfeiffer	26.02.2003
1.4	typical values and terminating impedances added	Pfeiffer	04.06.2003

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