

VI TELEFILTER**Filter specification****TFS 300F****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	820 Ω	-6,6 pF
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 (at ambient temperature)	$a_e = a_{min}$	13,5 dB	max. 19 dB
Centre frequency (at ambient temperature)	f_C	-	300 MHz $\pm$ 0,09 MHz
Passband ripple (p-p)	within $f_C \pm 1,2$ MHz	0,3 dB	max. 1,1 dB
Relative attenuation	a_{rel}		
f_C	$f_C \pm 1,2$ MHz	0,3 dB	max. 1,1 dB
$f_C \pm 1,2$ MHz	$f_C \pm 1,65$ MHz	2 dB	max. 3 dB
$f_C \pm 2,4$ MHz	$f_C \pm 6$ MHz	45 dB	min. 40 dB
$f_C \pm 6$ MHz	$f_C \pm 40$ MHz	52 dB	min. 45 dB
Group delay ripple (p-p)	within $f_C \pm 1,6$ MHz	105 ns	max. 200 ns
Absolute group delay	at f_C	1,4 μ s	max. 1,8 μ s
Phase ripple (p-p)	within $f_C \pm 1,6$ MHz	4,5 °	max. 10 °
Triple transit suppression	compared to main signal	50 dB	min. 37 dB
Return loss	within $f_C \pm 1,6$ 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/K ²	-
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.

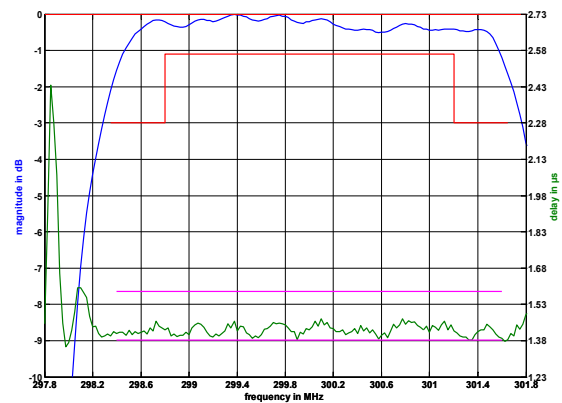
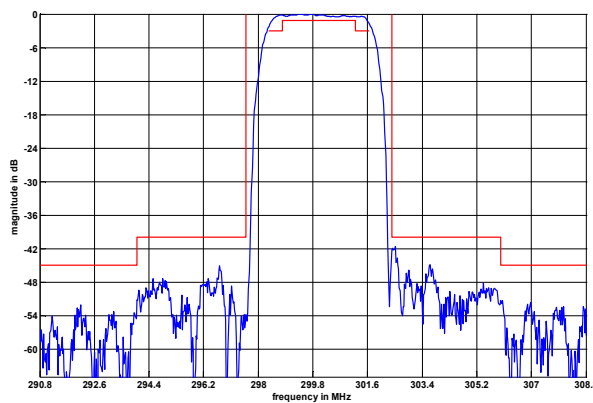
**) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$

generated:

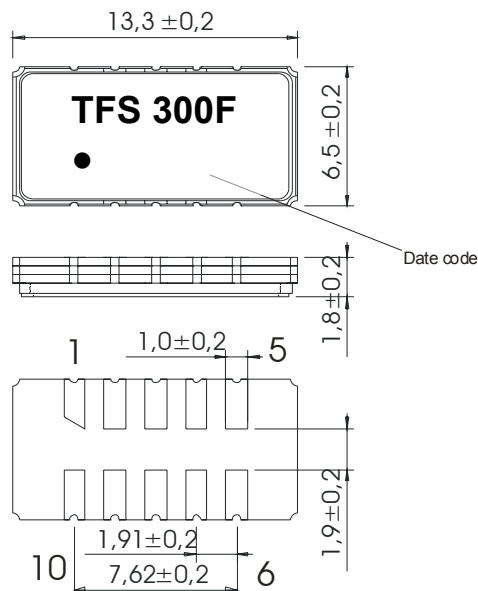
checked / approved:

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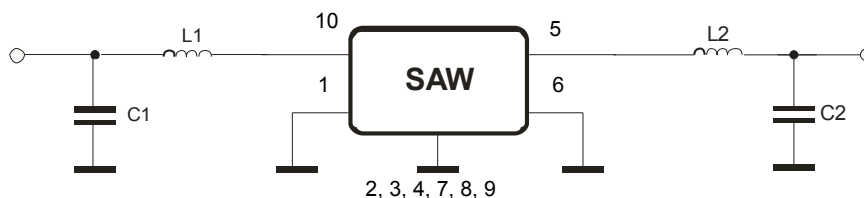
VI TELEFILTER**Filter specification****TFS 300F****2/5****Filter characteristic****Construction and pin connection**

(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
 U 2006
 V 2007
 W 2008
 ...

50 Ω Test circuit

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VI TELEFILTER**Filter specification****TFS 300F****3/5****Stability characteristics, reliability**

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 1 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: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

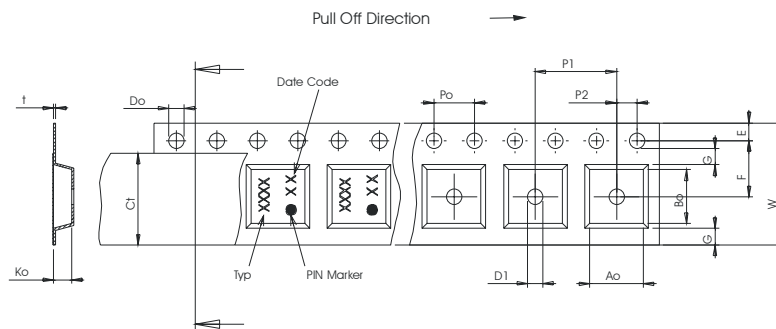
Packing

Tape & Reel: 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;

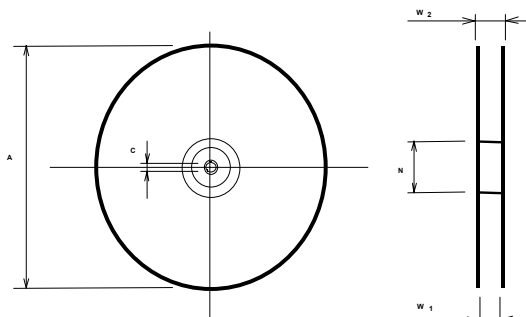
max. pieces of filters per reel: 1700
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

Tape (all dimensions in mm)

W	: 24,00 +0,30/-0,10
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,10
F	: 11,50 ± 0,10
G(min)	: 0,60
P2	: 2,00 ± 0,1
P1	: 12,00 ± 0,1
D1(min)	: 1,50
Ao	: 7,10 ± 0,10
Bo	: 13,90 ± 0,10
Ct	: 21,5 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 24,4 +2/-0
W2(max)	: 30,4
N(min)	: 60
C	: 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

Air reflow temperature conditions

1st and 2nd air reflow profile

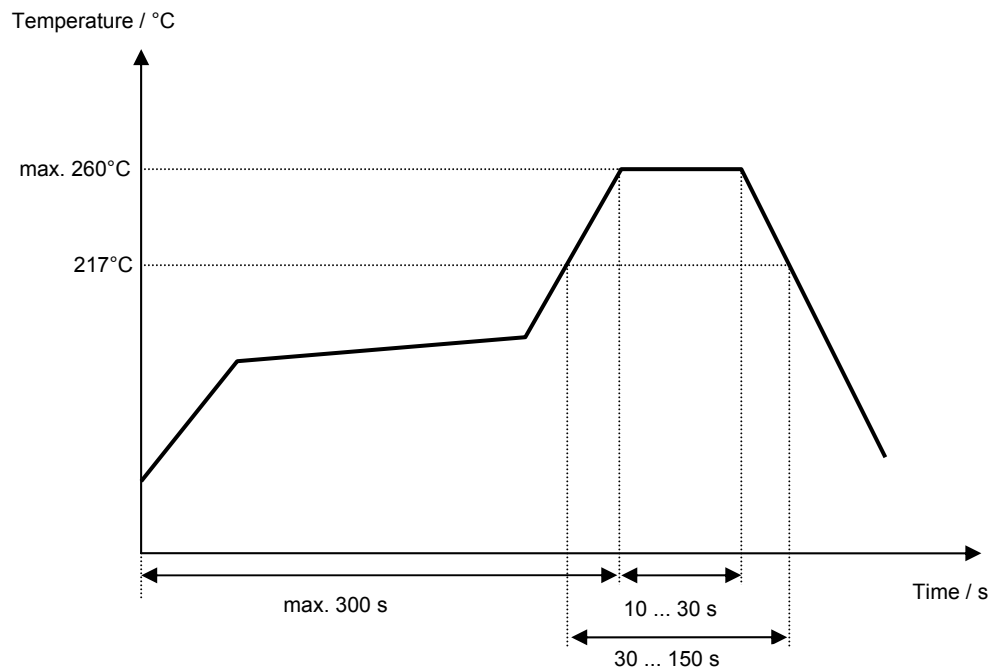
Name: _____ pre-heating periods _____ main-heating periods

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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

VI TELEFILTER**Filter specification****TFS 300F****5/5****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
1.5	- filter characteristic added - air reflow temperature conditions changed - stability characteristics modified	Pfeiffer	16.05.2006

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