

**VI TELEFILTER**

**Filter specification**

**TFS 70BF**

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**Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	144 Ω    -19,8 pF	
Output:	200 Ω    -23,1 pF	

**Characteristics**

**Remark:**

The reference level for the relative attenuation  $a_{rel}$  of the TFS 70BF 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 at 70 MHz. The values for relative attenuation are guaranteed at ambient temperature. The frequency shift of the filter over temperature defined by the temperature coefficient of frequency  $Tc_f$  is not included in the production tolerance scheme.

<b>D a t a</b>		<b>typ. value</b>		<b>tolerance / limit</b>	
<b>Insertion loss</b> (reference level)	$a_e$	10,7	dB	max.	12 dB
<b>Nominal frequency</b>	$f_N$	-		70	MHz
<b>Centre frequency at ambient temperature</b>	$f_c$	70	MHz	-	
<b>Passband</b>	PB	-		$f_N \pm$	4,5 MHz
<b>Relative attenuation</b>	$a_{rel}$				
$f_N$	$f_N \pm 3,5$ MHz	1,2	dB	max.	1,8 dB
$f_N \pm 3,5$ MHz	$f_N \pm 4,0$ MHz	1,8	dB	max.	3 dB
$f_N \pm 4,0$ MHz	$f_N \pm 5$ MHz	25	dB	min.	20 dB
$f_N \pm 5$ MHz	$f_N \pm 8$ MHz	38	dB	min.	35 dB
$f_N \pm 8$ MHz	$f_N \pm 50$ MHz				
<b>Group delay</b>	mean value in PB	0,99	µs	max.	1,2 µs
<b>Group delay ripple within PB</b>		200	ns	max.	300 ns
<b>Input power level</b>		-		max.	8 dBm
<b>Operating temperature range</b>	OTR	-		- 40 °C ... + 80 °C	
<b>Storage temperature range</b>		-		- 40 °C ... + 85 °C	
<b>Temperature coefficient of frequency</b>	$Tc_f$ **	- 72	ppm/K	-	

\*) The terminating impedances depend on parasites 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.

\*\*)  $\Delta f_c(\text{Hz}) = Tc_f(\text{ppm/K}) \times (T - T_0) \times f_{CAT}(\text{MHz})$ .

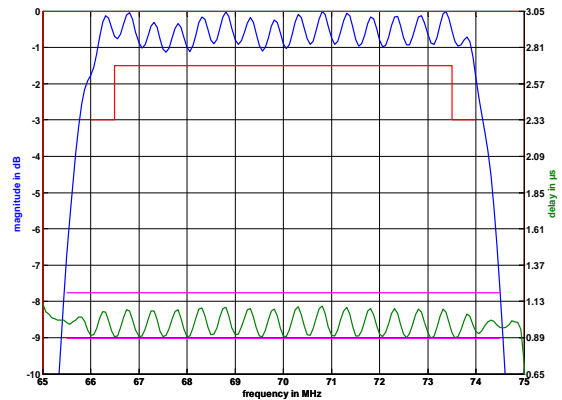
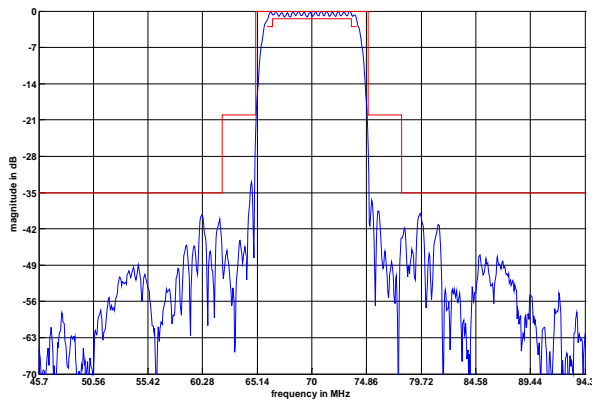
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**Checked / Approved:** \_\_\_\_\_

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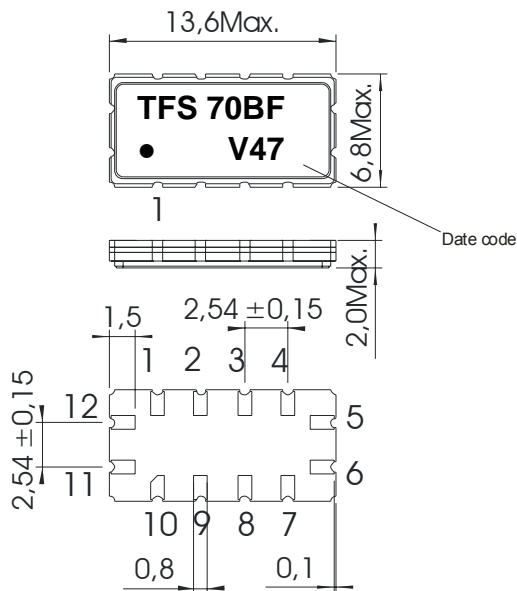
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**Filter characteristic**



**Construction and pin connection**

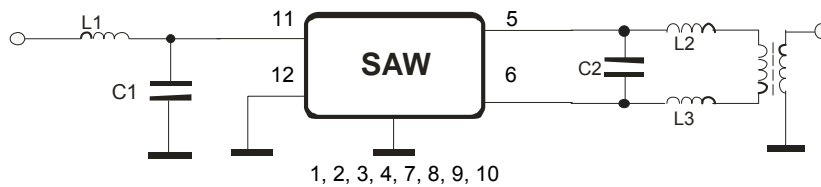
(All dimensions in mm)



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

Date code: Year + week  
 V 2007  
 W 2008  
 X 2009  
 ...

**50 Ohm Test circuit**



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**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)

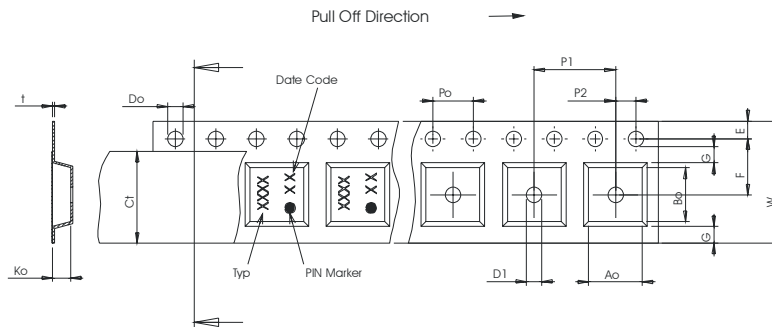
**Packing**

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

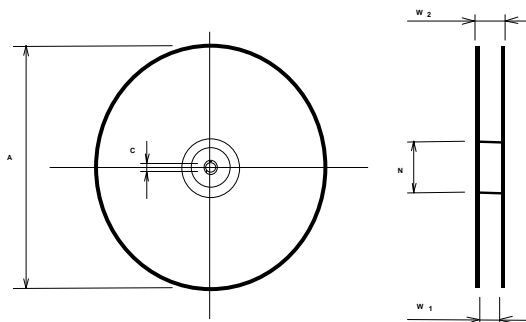
**Tape (all dimensions in mm)**

- 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.

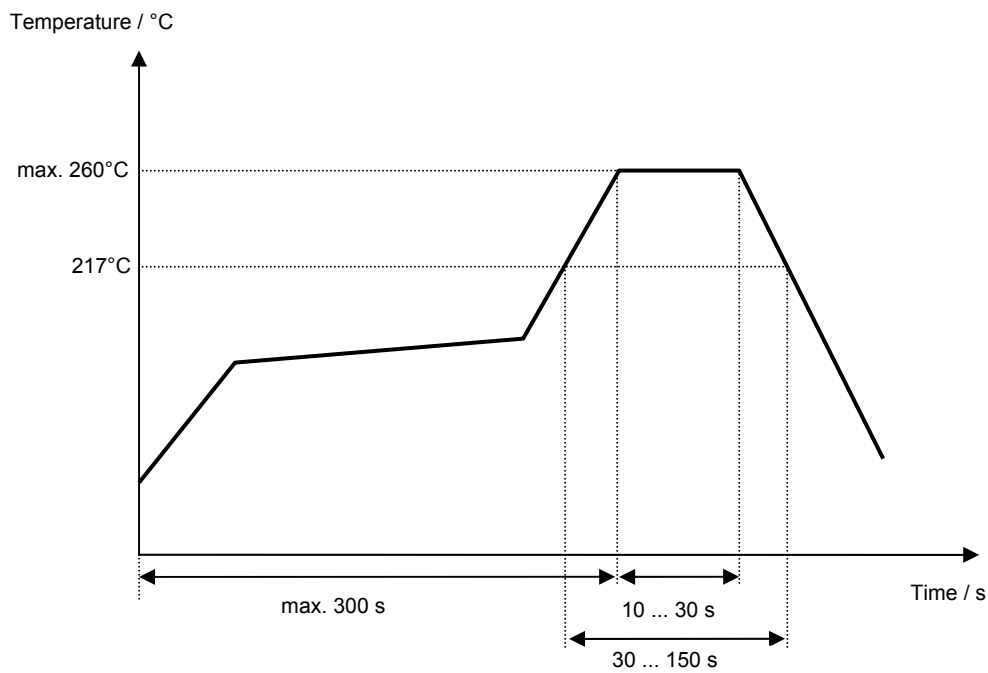
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**Air reflow temperature conditions**

<b>Conditions</b>	<b>Exposure</b>
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**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of filter specification	Strehl	20.11.2007