

# VI TELEFILTER

## Filter specification

## TFS 150AB

1/5

### Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	560 $\Omega$    -17,0 pF	
Output:	610 $\Omega$    -15,5 pF	

### Characteristics

#### Remark:

The reference level for the relative attenuation  $a_{rel}$  of the TFS 150AB 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 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 temperature coefficient of frequency  $TC_f$  is valid for both the reference frequency  $f_c$  and the frequency response of the filter in the operating temperature range. The bandwidth shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit	
<b>Insertion loss</b> (reference level)		$a_e$	25 dB	max.	27 dB
<b>Centre frequency</b> at ambient temperature		$f_c$	150,0 MHz		150,0±0,1 MHz
<b>Passband</b> at ambient temperature		PB	-		$f_c \pm 3,2$ MHz
<b>Pass band ripple</b>		p-p	0,6 dB	max.	1,3 dB
<b>Bandwidth</b> at ambient temperature		BW			
1,3 dB			-	min.	6,4 MHz
3,0 dB			6,62 MHz	min.	6,6 MHz
33 dB			7,31 MHz	max.	7,4 MHz
43 dB			7,42 MHz	max.	8,0 MHz
48 dB			7,46 MHz	max.	8,8 MHz
<b>Relative attenuation</b>		$a_{rel}$			
$f_c$			1 dB	max.	1,3 dB
$f_c \pm 3,2$ MHz			2,5 dB	max.	3 dB
$f_c \pm 3,7$ MHz			36 dB	min.	33 dB
$f_c \pm 3,9$ MHz			50 dB	min.	43 dB
$f_c \pm 4,3$ MHz			53 dB	min.	50 dB
$f_c \pm 17,4$ MHz			60 dB	min.	55 dB
<b>Group delay</b>		mean value in PB	3,36 $\mu$ s	max.	3,4 $\mu$ s
<b>Group delay ripple within PB</b>		p-p	75 ns	max.	170 ns
<b>Deviation from linear phase within PB</b>		p-p	1,5 deg		-
<b>Triple transit attenuation compared to main signal</b>			50 dB		-
<b>Crosstalk attenuation compared to main signal</b>			65 dB		-
<b>Operating temperature range</b>		OTR	-		- 25 °C ... + 80 °C
<b>Storage temperature range</b>			-		- 40 °C ... + 85 °C
<b>Frequency inversion temperature</b>			46 °C		
<b>Temperature coefficient of frequency</b>		$TC_f$ **	-0,03 ppm/K <sup>2</sup>		-

\*) 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.

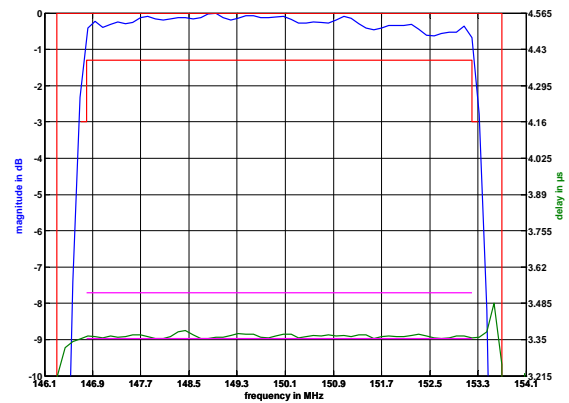
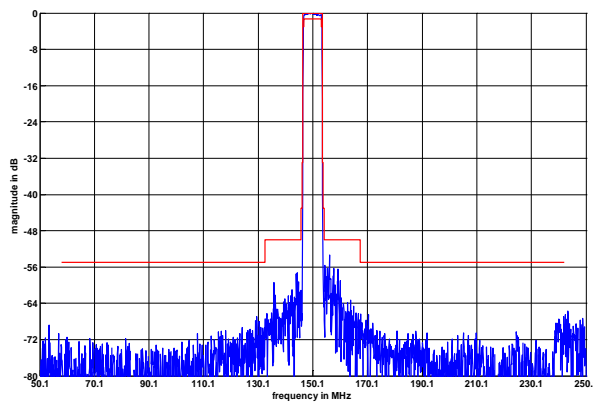
\*\*)  $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$

### Generated:

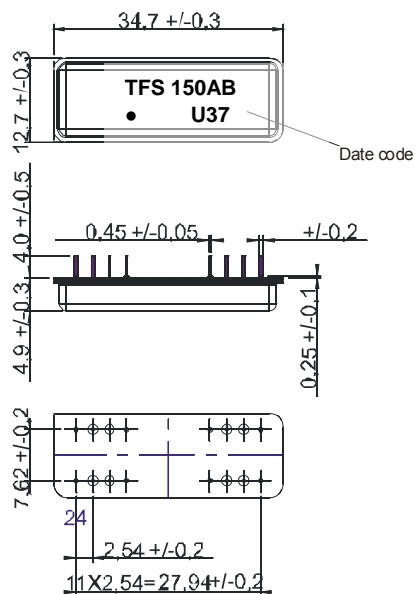
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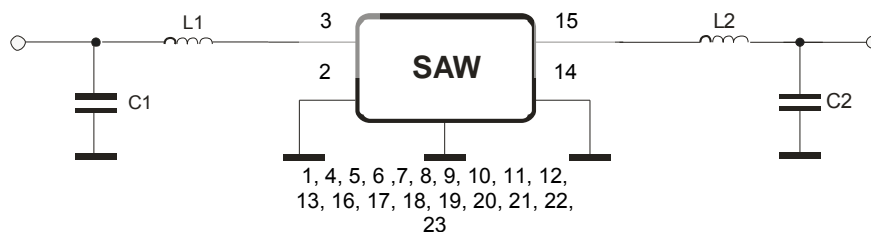
**VI TELEFILTER****Filter specification****TFS 150AB****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



1	Ground
2	Input RF Return
3	Input
4	Ground
9,10,11,12	Ground
13	Ground
14	Output RF Return
15	Output
16	Ground
21,22,23,24	Ground

Date code: Year + week  
 U 2006  
 V 2007  
 W 2008  
 ...

**50 Ohm Test circuit**

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**VI TELEFILTER****Filter specification****TFS 150AB****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.;  
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)

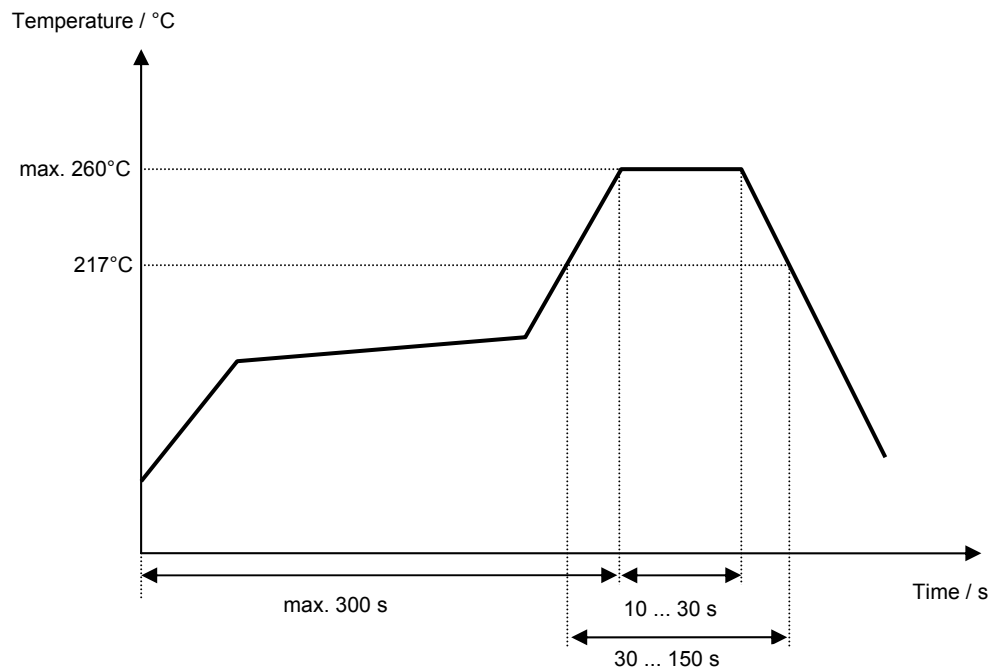
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**Air reflow temperature conditions**

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 150AB****5/5****History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	Generation of development specification	Alawneh	31.05.2006
1.1	Correct bandwidth	Strehl	12.07.2006
1.2	- terminating impedances, typical values, filter characteristics and matching configuration added Pfeiffer		14.09.2006