

VI TELEFILTER

Filter specification

TFS 153D

1/5

Measurement condition

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	343 Ω	-13,3 pF
Output:	314 Ω	-14,3 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 153D 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 T_{cf} is valid for both the reference frequency f_c and the frequency response of the filter in the operating temperature range. The frequency shift of the filter in the operating temperature range is not included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit	
Insertion loss (reference level)		a_e	21,3 dB	max.	25 dB
Nominal frequency		f_N	-		153,5 MHz
Centre frequency		f_c	153,5 MHz		± 0,1 MHz
Passband		PB	-	f_c	±2,5015 MHz
Pass band ripple (p-p)			0,3 dB	max.	0,7 dB
Bandwidth		BW			
0,7 dB			5,30 MHz	min.	5,03 MHz
3 dB			5,65 MHz	min.	5,60 MHz
15 dB			6,21 MHz	max.	6,30 MHz
45 dB			6,68 MHz	max.	9,70 MHz
Relative attenuation		a_{rel}			
f_c	± 2,5015 MHz	... f_c ± 2,5015 MHz	0,3 dB	max.	0,7 dB
f_c	- 144,500 MHz	... f_c - 4,825 MHz	2,5 dB	max.	3,0 dB
f_c	± 3,150 MHz	... f_c ± 3,350 MHz	70 dB	min.	45 dB
f_c	± 3,350 MHz	... f_c ± 3,750 MHz	17 dB	min.	15 dB
f_c	± 3,750 MHz	... f_c ± 4,825 MHz	30 dB	min.	25 dB
f_c	+ 4,825 MHz	... f_c + 428,500 MHz	50 dB	min.	40 dB
			65 dB	min.	45 dB
Absolute group delay within PB			2,5 µs	max.	2,7 µs
Group delay ripple within PB (p-p)			65 ns	max.	120 ns
Operating temperature range		OTR	-		- 25 °C ... + 80 °C
Storage temperature range			-		- 40 °C ... + 85 °C
Frequency inversion temperature			20 °C		-
Temperature coefficient of frequency		T_{cf} **	-0,036 ppm/K ²		-

*) 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.

**) $\Delta f_c(\text{Hz}) = T_{cf}(\text{ppm/K}^2) \times (T - T_A)^2 \times f_{CAT}(\text{MHz})$

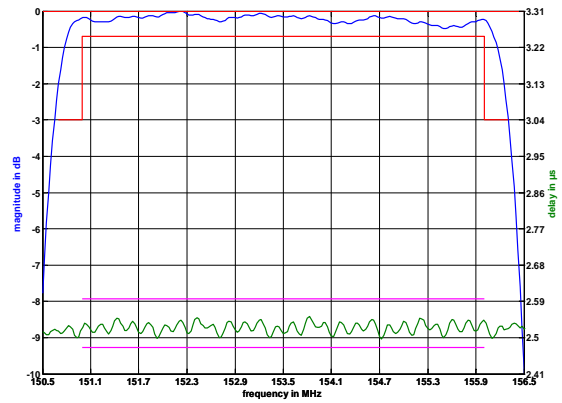
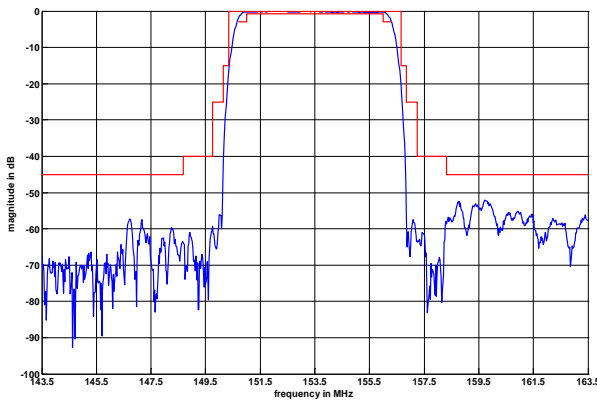
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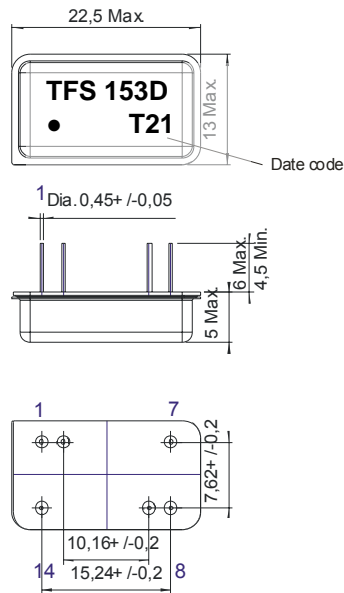
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Filter characteristic



Construction and pin connection

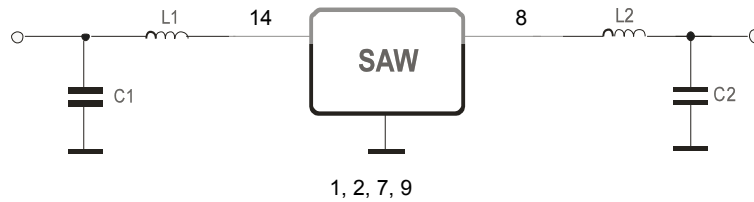
(All dimensions in mm)



- 1 Input RF Return
- 2 Ground
- 7 Output RF Return
- 8 Output
- 9 Ground
- 14 Input

Date code: Year + week
 T 2005
 U 2006
 V 2007
 ...

50 Ω Test circuit



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VI TELEFILTER**Filter specification****TFS 153D****3/5****Stability characteristics**

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 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;

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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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VI TELEFILTER**Filter specification****TFS 153D****5/5****History**

Version	Reason of changes	Name	Date
1.0	- development specification	Pfeiffer	12.05.2005
1.1	- terminating impedance, typical values and filter characteristic added	Pfeiffer	17.05.2005

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