Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 120 Ω || -22,9 pF
Output: 59 Ω || -30,3 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS 150AH 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 change of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		**typ. value**		**tolerance / limit**	
Insertion loss (reference level)	a_e	23,7	dB	max. 25	dB
Centre frequency	f_C	150,0	MHz	150,0 ± 0,1	MHz
Passband	PB	-		f_C ± 9,95	MHz
Pass band ripple (p-p)		0,8	dB	max. 1,5	dB
Bandwidth	BW				
1,5 dB		20,00	MHz	min. 19,9	MHz
3 dB		20,18	MHz	min. 20,0	MHz
45 dB		21,03	MHz	max. 22,0	MHz
Relative attenuation	a_{rel}				
f_C … f_C ± 9,95 MHz		1,3	dB	max. 1,5	dB
f_C ± 10,4 MHz … f_C ± 10,6 MHz		17	dB	min. 15	dB
f_C ± 10,6 MHz … f_C ± 11 MHz		45	dB	min. 30	dB
f_C ± 11 MHz … f_C ± 15 MHz		55	dB	min. 45	dB
f_C + 15 MHz … f_C + 250 MHz		57	dB	min. 49	dB
f_C - 135 MHz … f_C - 15 MHz		57	dB	min. 49	dB
Absolute group delay within PB		2,8	µs	max. 4	µs
Group delay ripple within PB (p-p)		80	ns	max. 150	ns
Return loss within PB		12	dB	min. 9	dB
Operating temperature range	OTR	-		- 25 °C ... + 80°C	
Storage temperature range		-		- 40 °C ... + 85°C	
Temperature coefficient of frequency	TC_f **	-88	ppm/K	-	

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

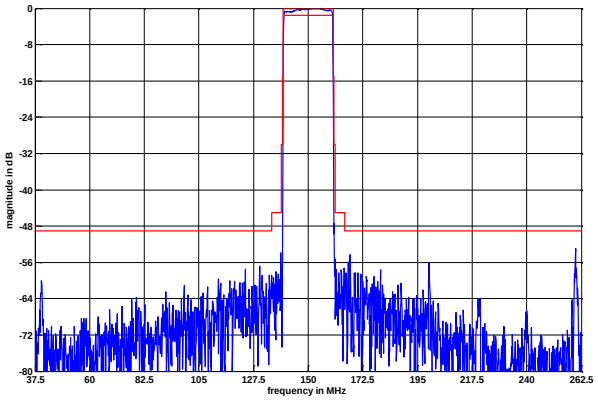
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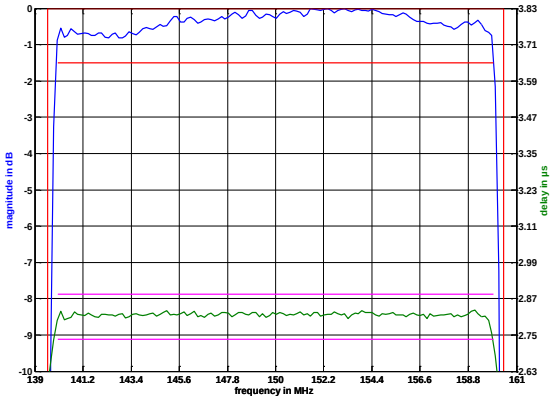
Checked / Approved:

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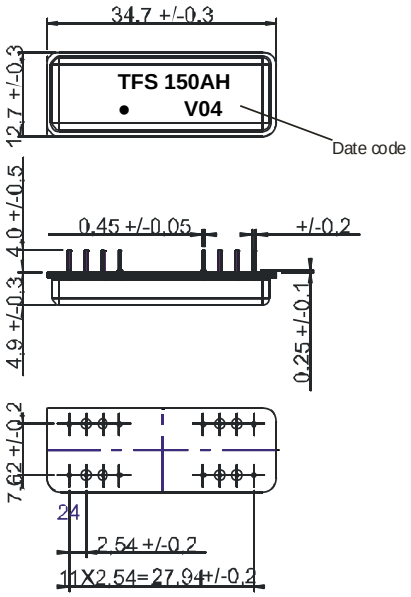
Filter characteristic





Construction and pin connection

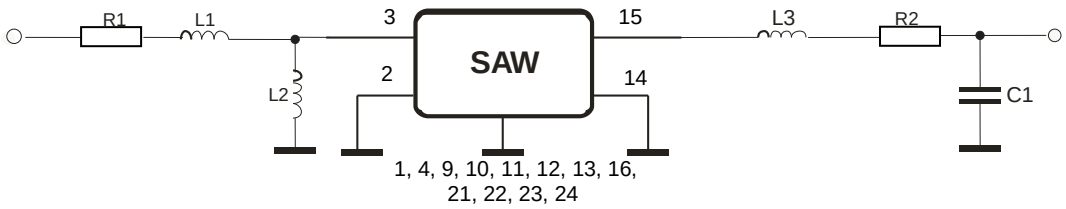
(All dimensions in mm)



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
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: twice 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)

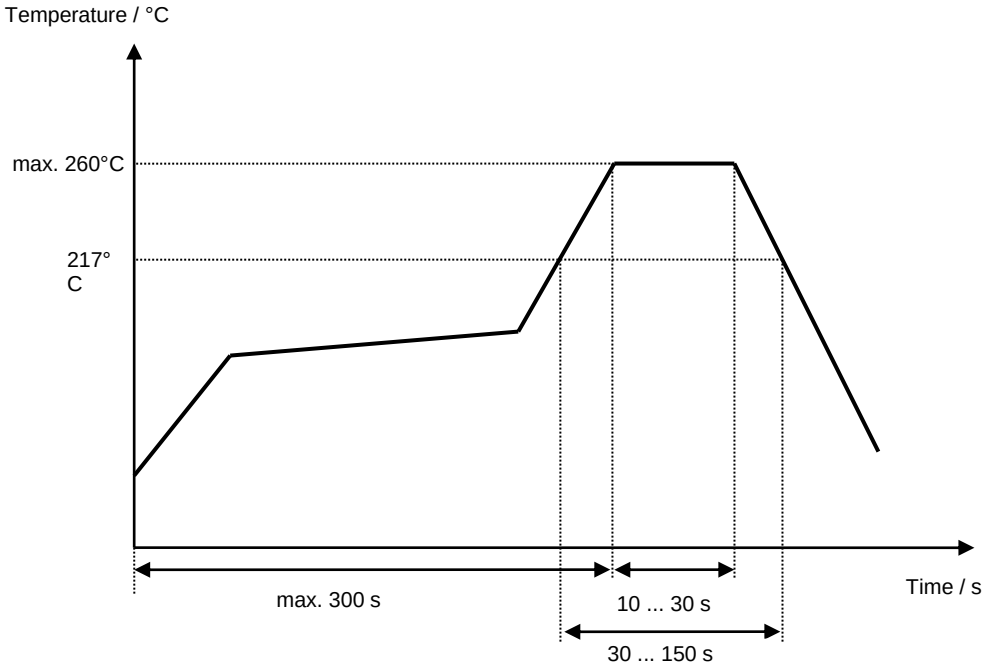
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Air reflow temperature conditions

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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History

Version	Reason of changes	Name	Date
1.0	- Generation of development specification	Strehl	18.08.2006
1.1	- change of pass band bandwidth - relative attenuations refer to f_C - remarks modified	Pfeiffer	23.10.2006
1.2	- add of terminating impedances, typical values and filter characteristics (all preliminary values) - add of matching configuration	Pfeiffer	01.12.2006
1.3	- change of terminating impedances, typical values and filter characteristics - change of matching configuration - add of return loss - limits	Pfeiffer	26.01.2007

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