Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 70 Ω || -16,6 pF
Output: 35 Ω || -14,7 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS150U 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 reference frequency f_c is the arithmetic mean value of the upper (f_{3dB+}) and lower (f_{3dB-}) frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e. The temperature coefficient of frequency Tc_f is valid both for 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		
Insertion loss (reference level)	a_e	22	dB	max.	23	dB
Centre frequency at ambient temperature	f_C	150,0	MHz		150,0±0,1	MHz
Passband in OTR	PB	-			(BW $_{3dB}$ -0,30)	MHz
Pass band ripple p-p		0,6	dB	max.	1,2	dB
Bandwidth	BW					
3 dB		17,5	MHz		17,5 ± 0,05	MHz
3 dB in OTR		17,5	MHz		17,5 ± 0,16	MHz
Relative attenuation	a_{rel}					
f_{3dB-} + 0,15 MHz … f_{3dB+} - 0,15 MHz		1,0	dB	max.	1,2	dB
f_{3dB+} + 0,40 MHz … f_{3dB+} + 0,60 MHz		24	dB	min.	20	dB
f_{3dB-} - 0,60 MHz … f_{3dB-} - 0,40 MHz		24	dB	min.	20	dB
f_{3dB+} + 0,60 MHz … f_{3dB+} + 1,00 MHz		38	dB	min.	32	dB
f_{3dB-} - 1,00 MHz … f_{3dB-} - 0,60 MHz		38	dB	min.	32	dB
f_{3dB+} + 1,00 MHz … f_{3dB+} + 5,00 MHz		52	dB	min.	42	dB
f_{3dB-} - 5,00 MHz … f_{3dB-} - 1,00 MHz		52	dB	min.	42	dB
f_{3dB+} + 5,00 MHz … f_{3dB+} + 25,00 MHz		58	dB	min.	49	dB
f_{3dB-} - 25,00 MHz … f_{3dB-} - 5,00 MHz		56	dB	min.	49	dB
f_{3dB+} + 25,00 MHz … f_{3dB+} + 35,00 MHz		64	dB	min.	47	dB
f_{3dB-} - 35,00 MHz … f_{3dB-} - 25,00 MHz		56	dB	min.	47	dB
f_{3dB+} + 35,00 MHz … f_{3dB+} + 100,00 MHz		64	dB	min.	52	dB
f_{3dB-} - 100,00 MHz … f_{3dB-} - 35,00 MHz		58	dB	min.	52	dB
Group delay	mean value in PB	2,3	µs	max.	3,0	µs
Group delay ripple within PB p-p		70	ns	max.	150	ns
Deviation from linear phase within PB	p-p	12°			-	
Triple transit attenuation compared to main signal		46	dB		-	
Crosstalk attenuation compared to main signal		65	dB		-	
Input/Output return loss within PB		6	dB		-	
Operating temperature range	OTR	-			- 25 °C ... + 80°C	
Storage temperature range		-			- 40 °C ... + 85°C	
Temperature coefficient of frequency	TC_f **	-94	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.
**) $\Delta f(Hz) = TC_f(ppm/K) \times (T-T_0) \times f_{To}(MHz)$

Generated:

Checked / Approved:

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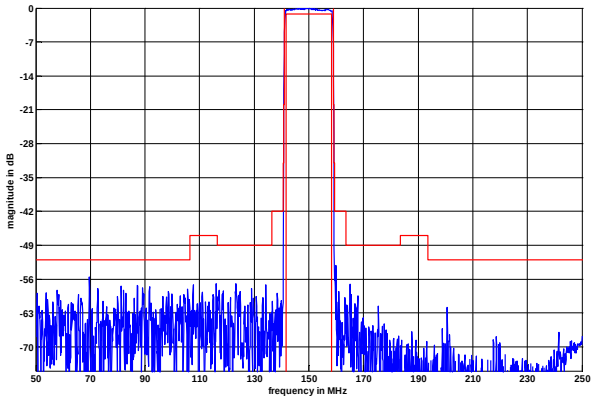
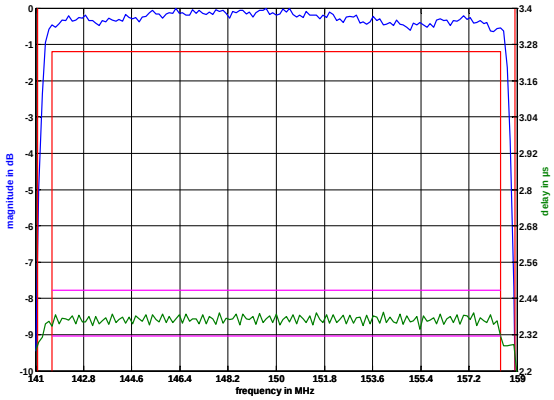
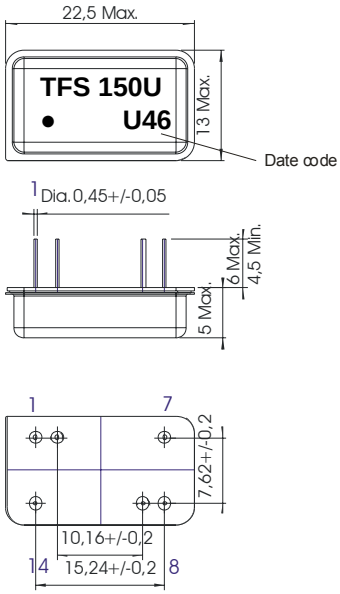
Filter characteristic





Construction and pin connection

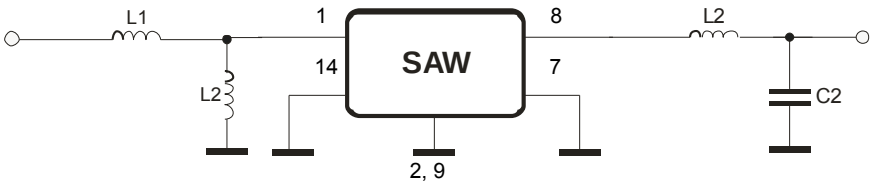
(All dimensions in mm)



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

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

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)

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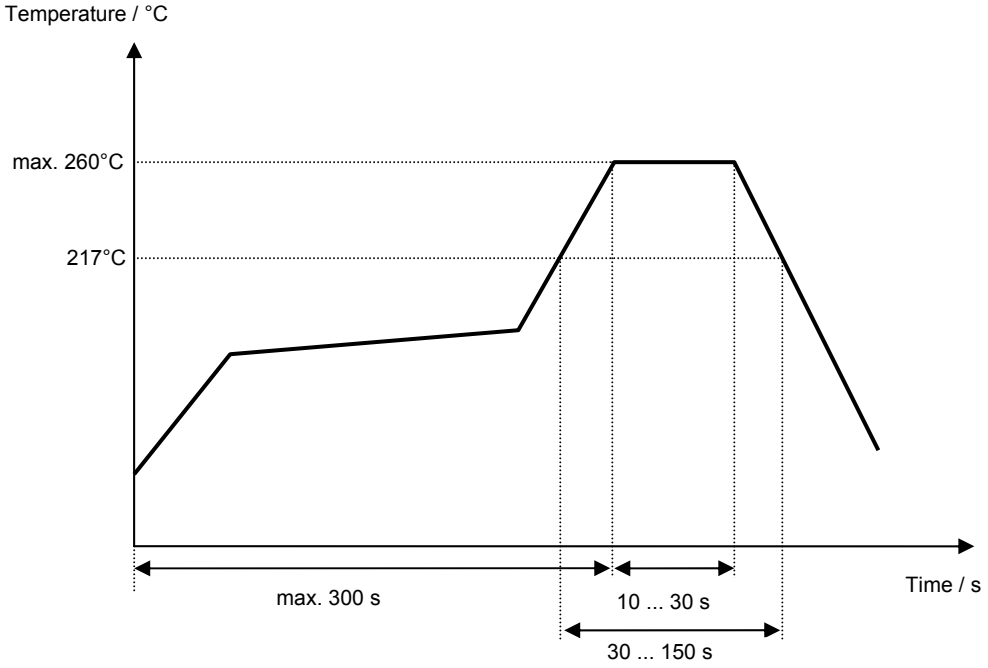
Air reflow temperature conditions

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	23.08.2005
1.1	- Temperature coefficient corrected	Steiner	05.09.2005
1.2	- Change reference for bandwidth and a_{rel} from 1,5dB to 3dB	Strehl	09.09.2005
1.3	- Change insertion loss - Change relative attenuation - Change reference for bandwidth and a_{rel} from 3dB to 1,5dB - Add frequency inversion temperature - Change temperature coefficient - Change stability characteristics	Alawneh	28.04.2006
1.4	- Change insertion loss - Change relative attenuation - Change reference for bandwidth and a_{rel} from 1,5dB to 3dB - Delate frequency inversion temperature - Change temperature coefficient	Strehl	18.07.2006
1.5	- add of terminating impedances, typical value, filter characteristics and matching configuration - 'remarks' corrected	Pfeiffer	17.11.2006

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