VI TELEFILTER Filter specification TFS 140X 1/5

Measurement condition

Ambient temperature: 25 °C
Input power level: 0 ± 2 dBm
Source and load impedance: 50 **Ω**
Terminating impedances *
Input: 99 Ω || - 28.3 pF
Output: 103 Ω || - 27.2 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of TFS140X is the minimum of the pass band attenuation a_{min}. This value 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 20 dB filter attenuation level relative to the insertion loss a_e. 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**		**limit**		
Insertion loss	$a_e = a_{min}$	9	dB	max.	12	dB
Nominal frequency	f_N	140	MHz		140,0	MHz
Centre frequency f_C (at ambient temperature)				139,60 ... 140,40		MHz
Pass band	PB			f_N	± 7,1	MHz
Amplitude ripple (peak to adjacent valley) within f_N ± 7,2 MHz		0.2		max.	1	dB
Bandwidth						
1 dB		17,6	MHz	min.	17	MHz
3 dB		18,5	MHz	min.	17,75	MHz
35 dB		21,8	MHz	max.	24	MHz
40 dB		24,8	MHz	max.	48	MHz
Relative attenuation	a_{rel}					
$f_{N\ ...}$	f_N ± 8,5 MHz	0,5	dB	max.	1	dB
f_N ± 8,5 MHz ...	f_N ± 8,875 MHz	1,5	dB	max.	3	dB
f_N ± 12 MHz ...	f_N ± 24 MHz	40	dB	min.	35	dB
f_N ± 24 MHz ...	f_N ± 40 MHz	50	dB	min.	40	dB
Phase variation within PB		6	deg	max.	10	deg p-p
Group delay ripple within PB		44	ns	max.	60	ns
Absolute group delay within PB		777	ns	max.	825	ns
Input power level				max.	+ 10	dBm
Operable temperature range				- 40 °C ... + 85 °C		
Storage temperature range				- 40 °C ... + 85 °C		
Temperature coefficient of frequency	TCf	-87	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.

Generated:

Checked / Approved:

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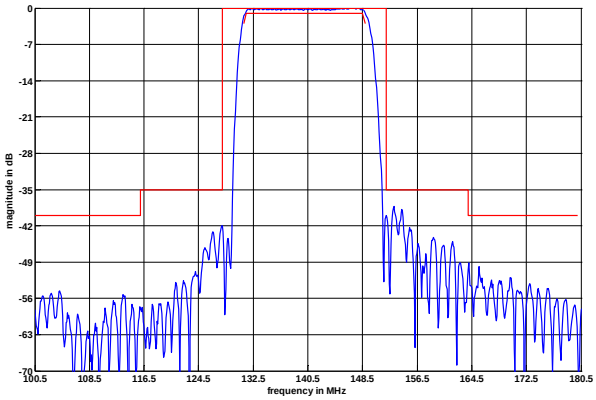
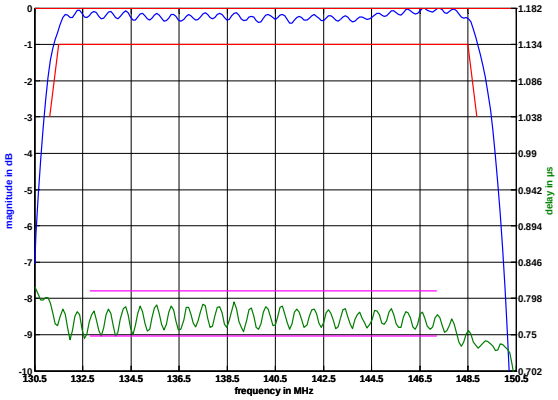
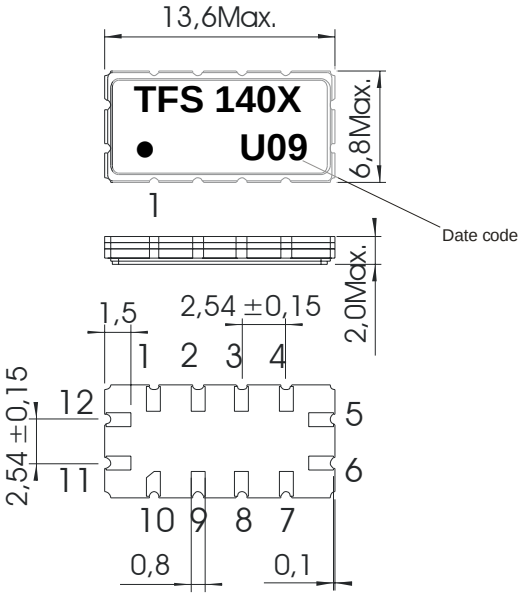
Filter characteristic





Construction and pin connection

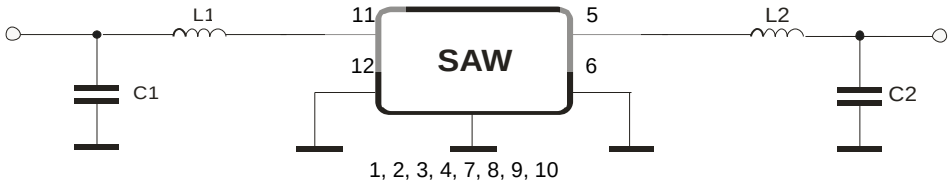
(All dimensions in mm)



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

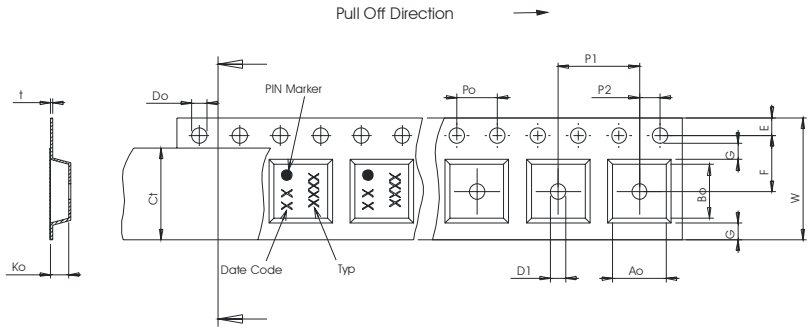
1. Shock:	500g, 1 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration:	10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans; DIN IEC 68 T2 - 6
3. Change of temperature:	-55 °C to 125°C / 30 min. each / 10 cycles DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow):	reflow possible: 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)

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

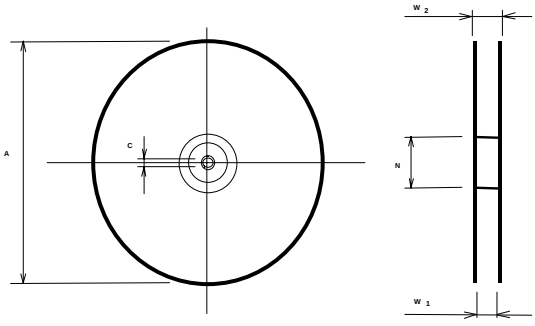


Tape (all dimensions in mm)

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.

Air reflow temperature conditions

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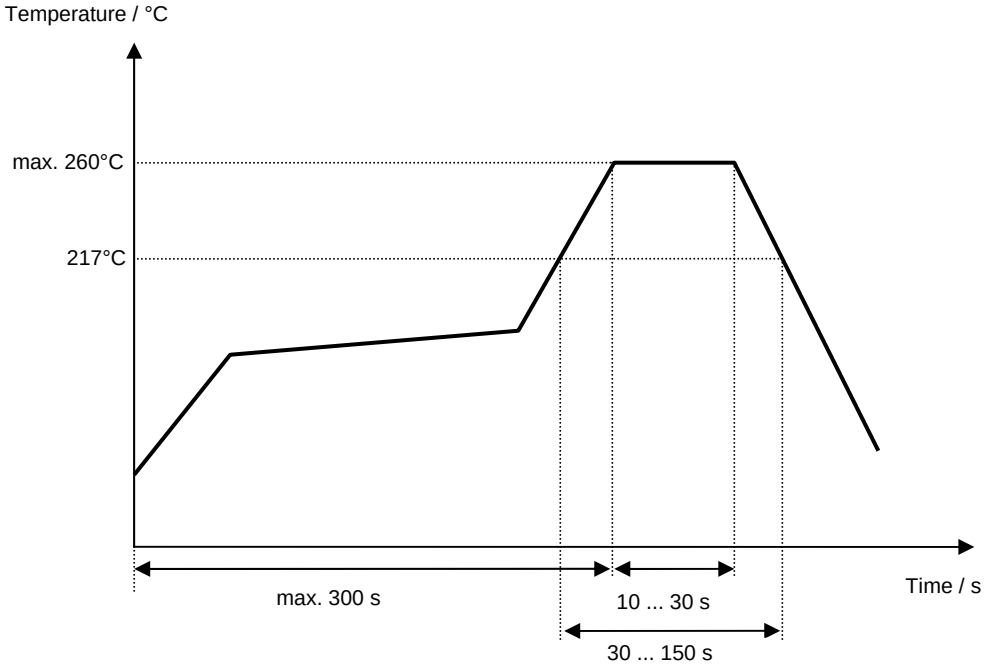
Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak 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 specification according to customer requirements	E. Chilla	28.04.2003
1.1	group delay ripple changed absolute group delay added	E. Chilla	21.04.2003
1.2	changed to filter specification terminating impedances added typical values added pass band added bandwidth for 1 dB, 3 dB, 35 dB changed relative attenuation changed	E. Chilla	24.11.2003
1.3	filter characteristics added RoHS compliant added air reflow temperature conditions updated	E. Chilla	03.03.2006

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