

**VI TELEFILTER**

**Filter specification**

**TFS 140W**

**Measurement condition**

Ambient temperature: 25 °C  
 Input power level: 0 ± 2 dBm  
 Terminating impedance: \*  
     Input: 95 Ω || -21.1 pF  
     Output: 95 Ω || -31.8 pF

**Characteristics**

**Remark:**

The reference level for the relative attenuation  $a_{rel}$  of TFS140W 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 3 dB filter attenuation level relative to the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed at **140 MHz** without tolerance. The given values are guaranteed in operating temperature range.

<b>D a t a</b>	<b>typ. value</b>		<b>limit</b>		
<b>Insertion loss</b> $a_e = a_{min}$	8,3	dB	max.	13	dB
<b>Nominal frequency</b> $f_N$				140,0	MHz
<b>Centre frequency</b> $f_C$ (at ambient temperature)	139,82	MHz	139,60 ...	140,40	MHz
<b>Centre frequency</b> $f_C$ (over temperature range)	.		139,05 ...	141,07	MHz
<b>Insertion loss at</b> $f_C$	8,8	dB	max.	11	dB
<b>Amplitude ripple</b> (peak to adjacent valley) within 133,6 MHz ... 146,4 MHz	0,3	dB	max.	0,9	dB
<b>Pass bandwidth</b>					
1 dB	15,8	MHz	min.	15	MHz
3 dB	16,9	MHz	min.	16	MHz
40 dB	20,9	MHz	max.	22	MHz
<b>Relative attenuation</b> $a_{rel}$					
$f_N - 40$ MHz ... $f_N - 11,9$ MHz	51	dB	min.	42	dB
$f_N + 12,5$ MHz ... $f_N + 14,5$ MHz	54	dB	min.	35	dB
$f_N + 14,5$ MHz ... $f_N + 40$ MHz	49	dB	min.	42	dB
<b>Phase variation</b> (within 133,6 MHz ... 146,4 MHz)	7	deg	max.	14	deg p-p
<b>Triple transit signal attenuation</b>	38	dB	min.	35	dB
<b>Group delay ripple</b> (within 133,6 MHz ... 146,4 MHz)	65	ns	max.	120	ns
<b>Input power level</b>	-		max.	+ 10	dBm
<b>Operating temperature range</b>	-		- 30 °C ...	+ 70	°C
<b>Operable temperature range</b>	-		- 40 °C ...	+ 85	°C
<b>Storage temperature range</b>	-		- 40 °C ...	+ 85	°C
<b>Temperature coefficient of frequency</b> 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:**

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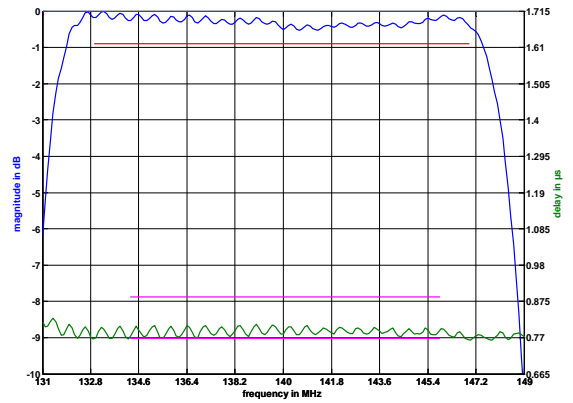
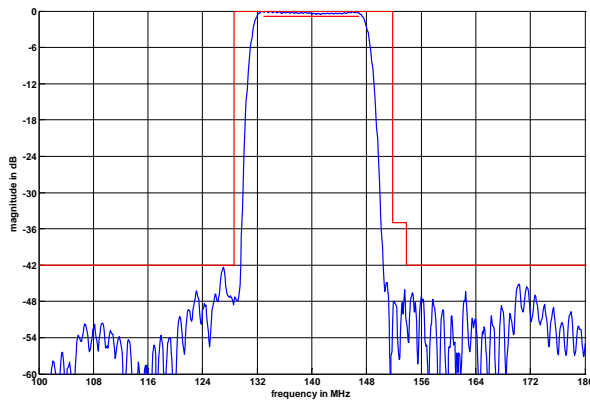
**Checked / Approved:**

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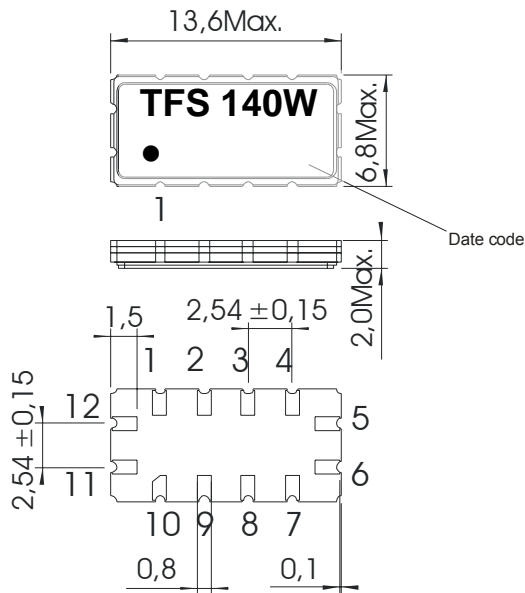
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**Filter characteristic**



**Construction and pin connection**

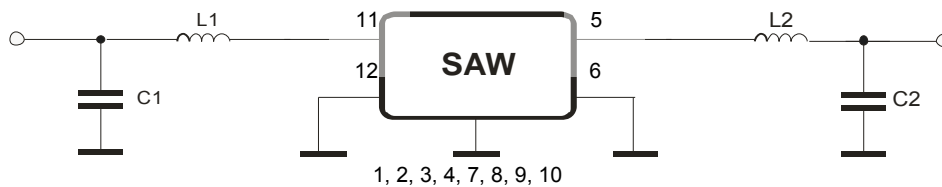
(All dimensions in mm)



- 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;

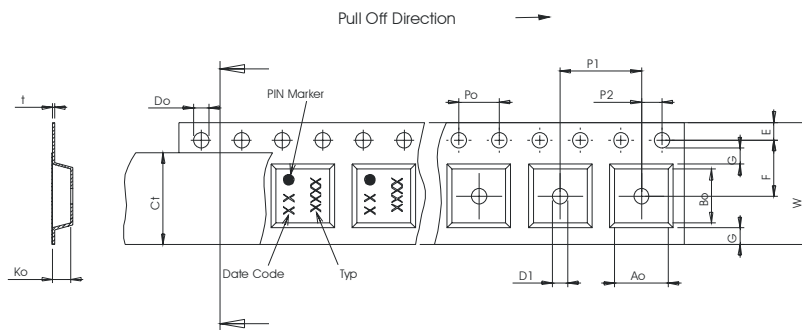
This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

**Packing**

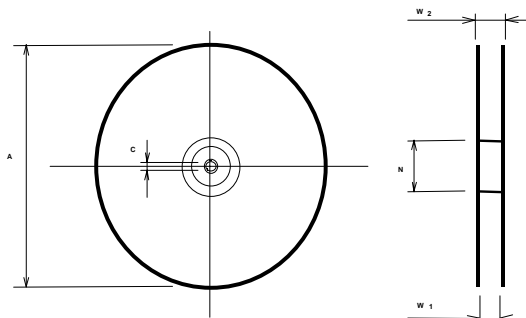
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;  
tape type II, embossed carrier tape with top cover tape on the upper side;

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 <sup>^</sup>

- 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
  - W2(max) : 30,4
  - N(min) : 60
  - C : 13,0



The minimum bending radius is 45 mm.

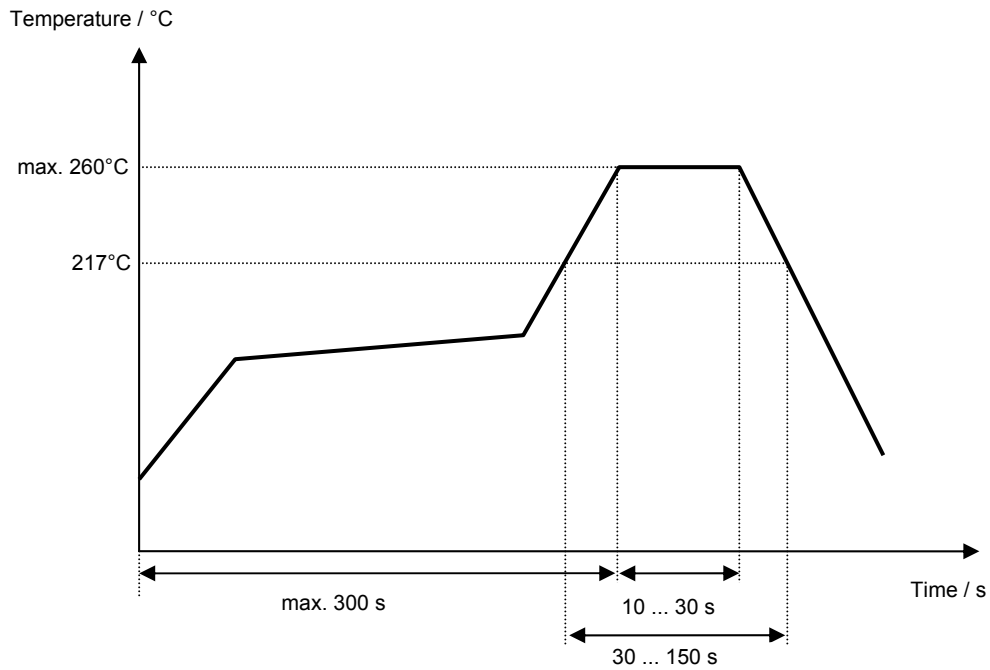
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**Air reflow temperature conditions**

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 140W****5/5****History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	Generation of specification according to customer requirements	E. Chilla	28.03.2003
1.1	triple transit signal suppression added	Steiner	03.07.2003
1.2	generate filter specification terminating impedances added typical values added filter characteristics added test circuit added RoHS compliant added air reflow temperature conditions updated	Chilla	03.03.2006

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