

Microchip**Filter specification****TFS 100L****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	590 Ω	-1.1 pF
Output:	590 Ω	-1.1 pF
Source impedance:	50 Ω	
Load impedance:	50 Ω	

Characteristics

Remark:

The minimum of the 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 centre frequency f_c and the frequency response of the filter within the operating temperature range.

D a t a		typ. value		tolerance / limit		
Insertion loss		a_e	3.6 dB	max.	6	dB
Centre frequency		f_c	100.000 MHz		-5 +3	kHz kHz
Bandwidth		BW				
3	dB		39 kHz	min.	33	kHz
				max.	42	kHz
20	dB		66 kHz	max.	78	kHz
Group delay at f_c			22.6 μ s	min.	20	μ s
Input power level**			-	max.	23	dBm
Temperature coefficient of frequency		TC_f *	-0.035 ppm/K ²		-	
Frequency inversion temperature		T_o	45 °C	min.	40	°C
				max.	50	°C
Operating temperature range		OTR	-		0 °C ... + 70 °C	
Storage temperature range			-		- 40 °C ... + 85 °C	

*) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T - T_o)^2 \times f_{T0}(\text{MHz})$.

**) TFS100L can be operated continuously at the specified power level with a 100 MHz signal for a period of at least 10 years as long as operating temperatures are below specified maximum.

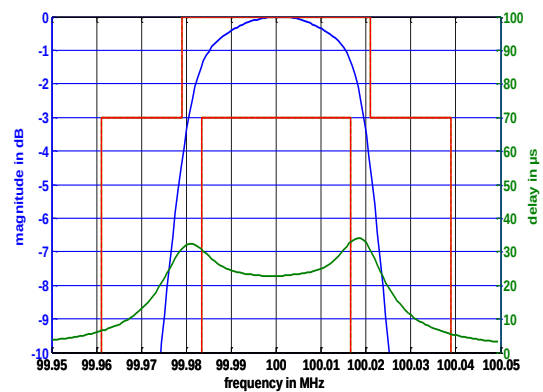
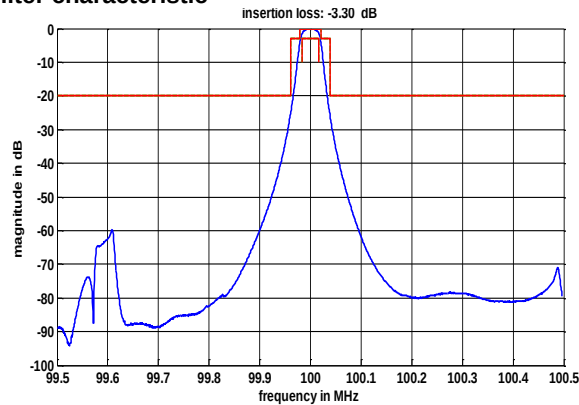
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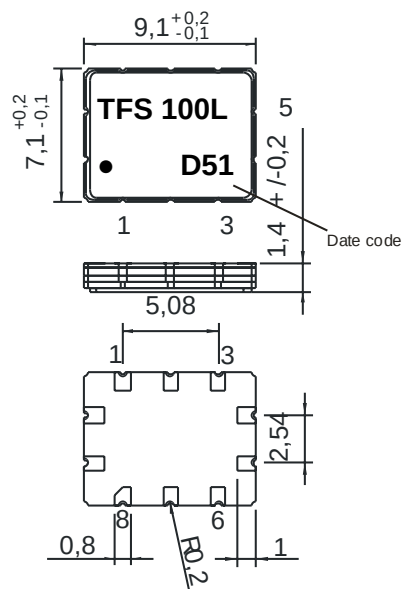
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Filter characteristic



Construction and pin connection

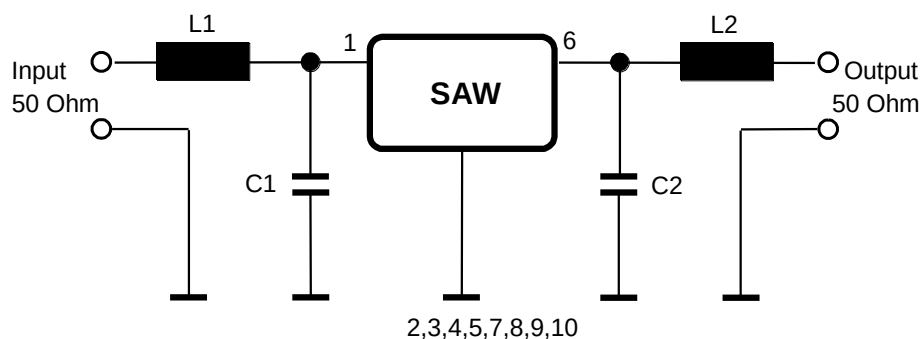
(All dimensions in mm)



1	Input
2	Input RF-Return
3	Ground
4	Ground
5	Ground
6	Output
7	Output RF-Return
8	Ground
9	Ground
10	Ground

Date code: Year + week
 D 2013
 E 2014
 F 2015
 ...

50 Ω 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 plane, 3 planes; DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 15 min. each / 100 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions, see page 4: "Air reflow temperature conditions"
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

This filter is RoHS compliant (2011/65/EU)

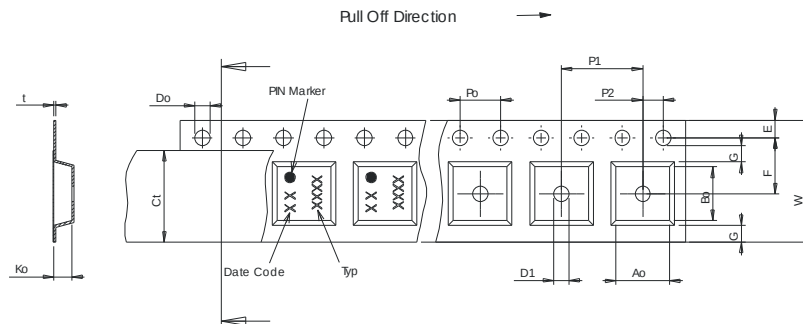
Packing

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;

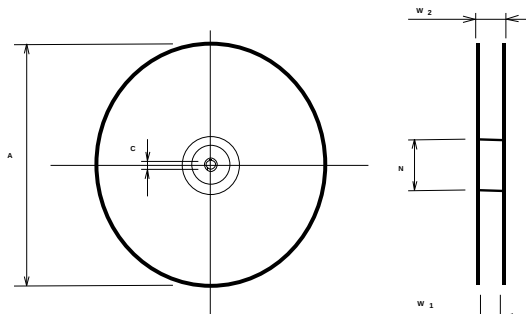
max. pieces of filters per reel:	2000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 16,00 ± 0,3
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,10
F	: 7,50 ± 0,10
G(min)	: 0,60
P2	: 2,00 ± 0,1
P1	: 12,00 ± 0,1
D1(min)	: 1,50
Ao	: 7,60 ± 0,10
Bo	: 9,60 ± 0,10
Ct	: 13,3

**Reel (all dimensions in mm)**

A	: 330 or 180
W1	: 16,4
W2(max)	: 22,4
N(min)	: 50
C	: 13,0



The minimum bending radius is 45 mm.

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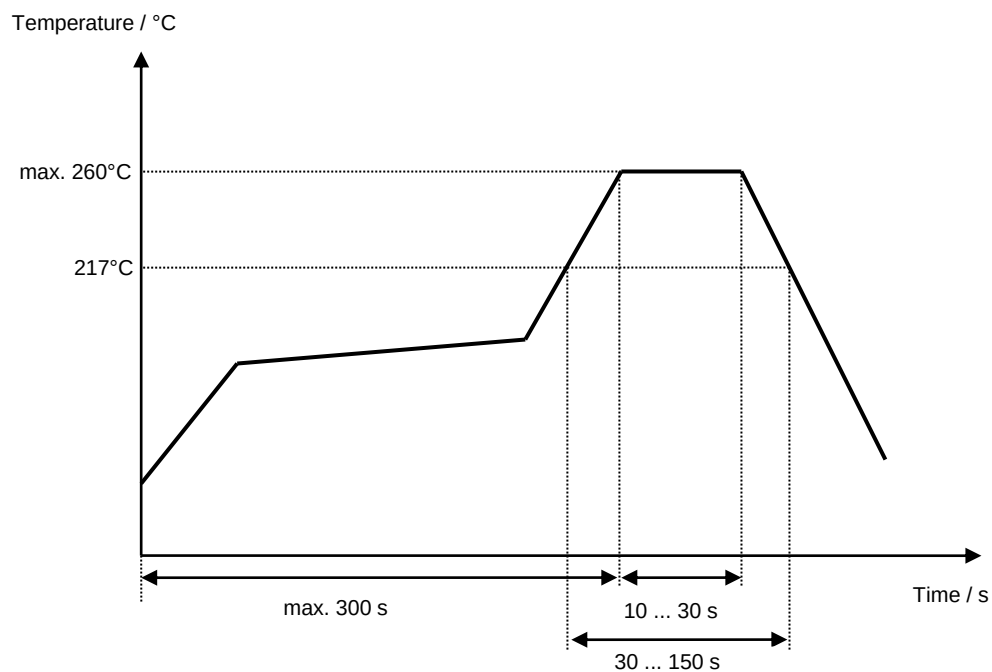
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Air reflow temperature conditions

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

Microchip**Filter specification****TFS 100L****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of specification.	Dr. Bert Wall	13.11.2013
2.0	- Replace T.B.D. by preliminary vales - Add source and load impedance - Add comment for input power level - Remove 170 kHz bandwidth and pass band variation	Dr. Bert Wall	15.11.2013
2.1	- Add asterix for remark 2	Dr. Bert Wall	15.11.2013
2.2	- Add limit for group delay	Dr. Bert Wall	13.12.2013
2.3	- Correct description of pin 3 in "Construction and pin connection"	Fredrick Raura	19.12.2013
3.0	- Add typical values - Change terminating impedance - Change from development to filter specification - Clarify comment concerning maximum input power	Silas Bonnen	20.08.2014

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