

VI TELEFILTER

Filter specification

TFS 92B

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 2530 Ω || -8,1 pF
 Output: 2380 Ω || -9,4 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 92B 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.

Data		typ. value		tolerance / limit	
Insertion loss (reference level)	a_e	11,3	dB	max.	15 dB
Nominal frequency	f_N	-			92,0 MHz
Centre frequency	f_c	92,01	MHz	-	
Passband	PB			$f_N \pm$	500 kHz
Pass band ripple		0,4	dB	max.	0,8 dB
Amplitude ripple in any 112,5 kHz segment within PB	p-p	0,2	dB	max.	0,5 dB
Relative attenuation	a_{rel}				
f_N	... $f_N \pm 500$ kHz	0,4	dB	max.	0,8 dB
$f_N \pm 1,1$ MHz	... $f_N \pm 1,5$ MHz	47	dB	min.	39 dB
$f_N \pm 1,5$ MHz	... $f_N \pm 3$ MHz	48	dB	min.	40 dB
0,3 MHz	... $f_N - 3$ MHz	60	dB	min.	50 dB
$f_N + 3$ MHz	... $f_N + 1$ GHz	65	dB	min.	50 dB
Group delay	at f_N	2,3	µs	max.	4 µs
Group delay ripple in any 112,5 kHz segment within PB		60	ns	max.	120 ns
Phase linearity in any 112,5 kHz segment within PB	p-p	1,4	deg	max.	5 deg
Triple transit response suppression		38	dB	min.	35 dB
Input power level		-		max.	23 dBm**)
Operating temperature range	OTR	-			- 40 °C ... + 70°C
Storage temperature range		-			- 40 °C ... + 100°C
Frequency inversion temperature		15	°C		-
Temperature coefficient of frequency	TC_f **	-0,036	ppm/K ²		-

*) 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.

***) This power level is only allowed for short term operation (10% of the life time), the max. input power for continuous operation is max.15dBm only

***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T-T_0)^2 \times f_{T0}(\text{MHz})$

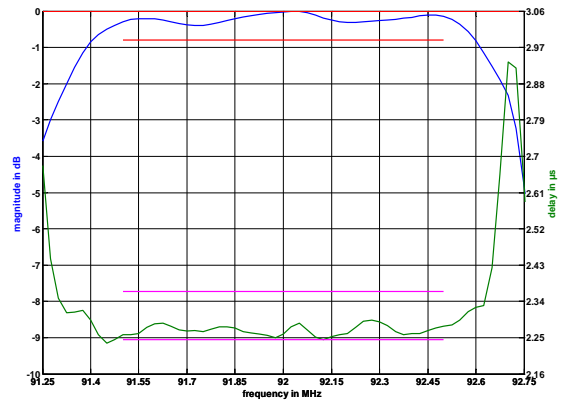
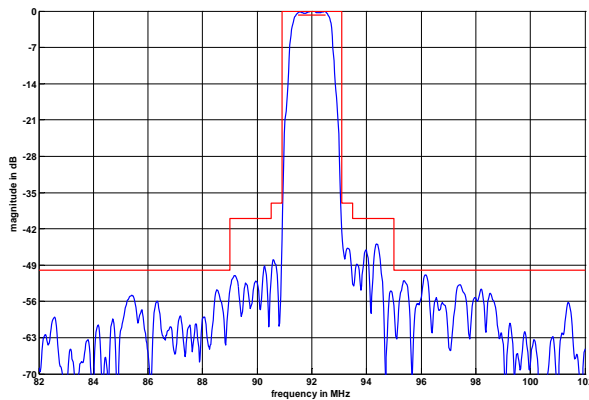
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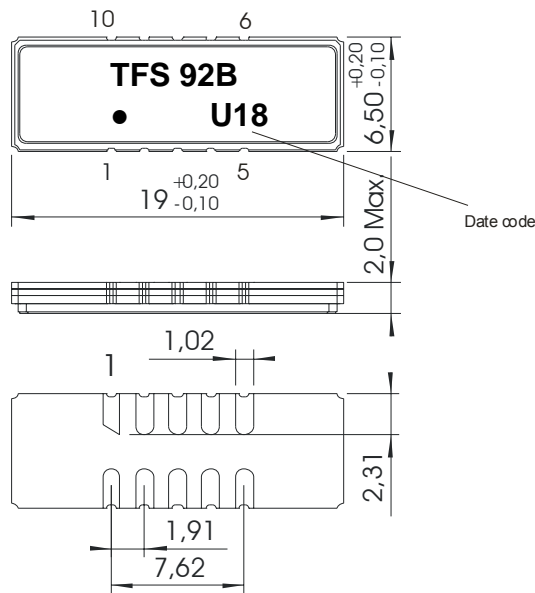
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Filter characteristic



Construction and pin connection

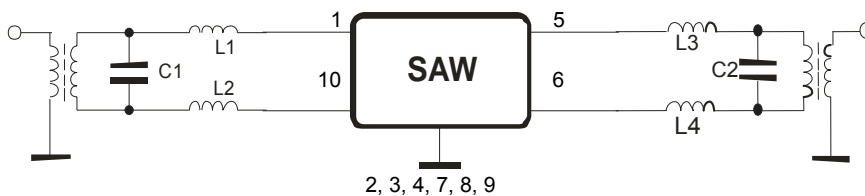
(All dimensions in mm)



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

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)

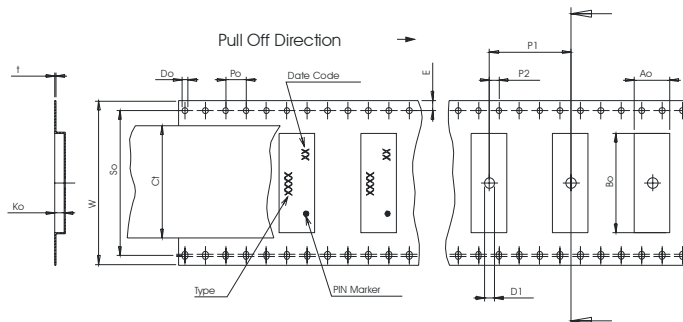
Packing

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:	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

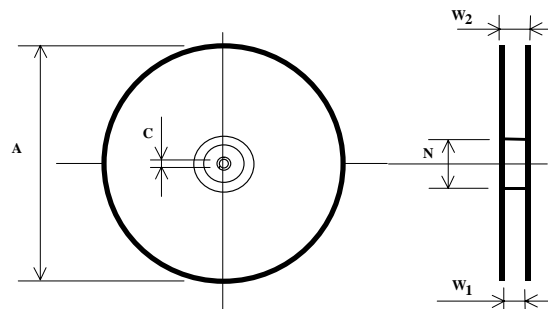
Tape (all dimensions in mm)

- W : 32,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 14,20 ± 0,1
- P2 : 2,00 ± 0,1
- P1 : 12,00 ± 0,1
- D1(min) : 2,00
- Ao : 7,10 ± 0,1
- Bo : 19,60 ± 0,1
- So : 28,40 ± 0,1
- Ct : 25,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 32,4 +2/-0
- W2(max) : 38,4
- N(min) : 100
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

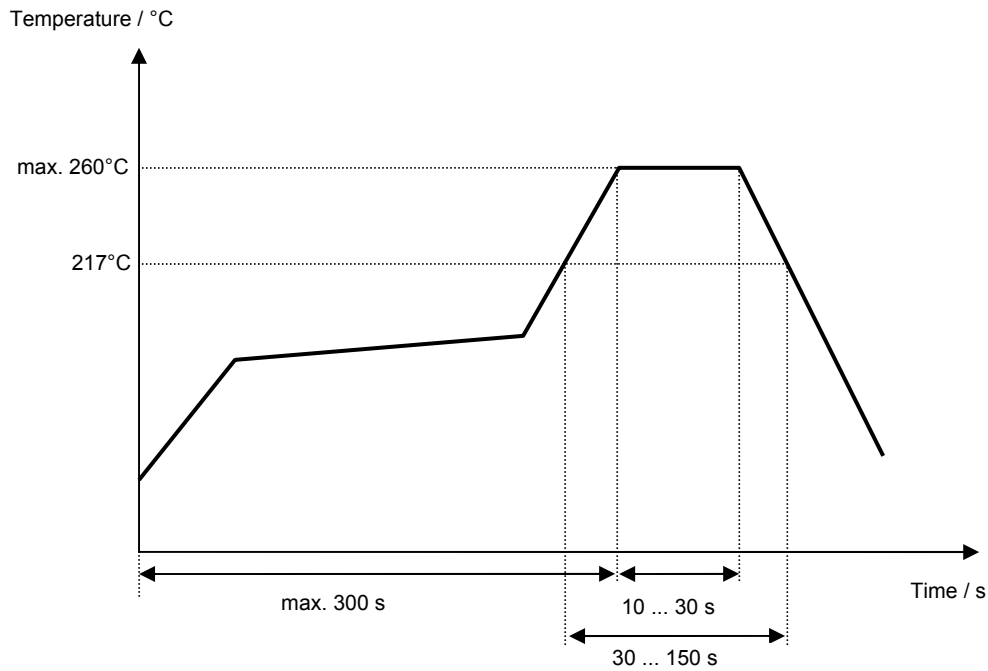
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Air reflow temperature conditions

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 92B****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Strehl	18.10.2005
1.1	- Change relative attenuation - Change "stability characteristics" to "stability characteristics, reliability"	Strehl	15.11.2005
1.2	- terminating impedances, typical values and filter characteristic added	Pfeiffer	03.05.2006

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