Measurement condition

Ambient temperature: 25 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 1190 Ω || -9,8 pF
Output: 1190 Ω || -10,0 pF

Characteristics

Remark:
The nominal frequency f_N is fixed at 119,6 MHz. The insertion loss a_e is defined as loss value determined at f_N. Reference level for the relative attenuation a_{rel} of the TFS 119B is the insertion loss a_e. The centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 9 dB filter attenuation level relative to the insertion loss a_e. All specified data are met within the operating temperature range.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	$a_e = a_{min}$	6,4	dB	max.	8	dB
Nominal frequency	f_N	-			119,6	MHz
Centre frequency	f_C	119,6	MHz		-	
Passband	PB	-			f_N ± 75	kHz
Pass band ripple	p-p	0	dB	max.	1	dB
Relative attenuation	a_{rel}					
f_N … f_N ± 75	kHz	0,3	dB	max.	1	dB
f_N ± 400 kHz … f_N ± 600	kHz	16	dB	min.	9	dB
f_N ± 600 kHz … f_N ± 800	kHz	28	dB	min.	20	dB
f_N ± 800 kHz … f_N ± 3	MHz	28	dB	min.	26	dB
f_N ± 3 MHz … f_N ± 20	MHz	35	dB	min.	30	dB
f_N - 118,6 MHz … f_N - 20	MHz	75	dB	min.	55	dB
f_N + 20 MHz … f_N + 500	MHz	75	dB	min.	55	dB
Group delay ripple within PB		130	ns	max.	400	ns
Return loss at f_N		25	dB	min.	9	dB
Input power level		-		max.	10	dBm
Operating temperature range	OTR	-		- 10 °C ... + 85°C		
Storage temperature range		-		- 45 °C ... + 85°C		
Frequency inversion temperature		30	°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.
**) $\Delta f(Hz) = TC_f(ppm/K^2) \times (T-T_0)^2 \times f_{cat}(MHz)$.

Generated:

Checked / Approved:

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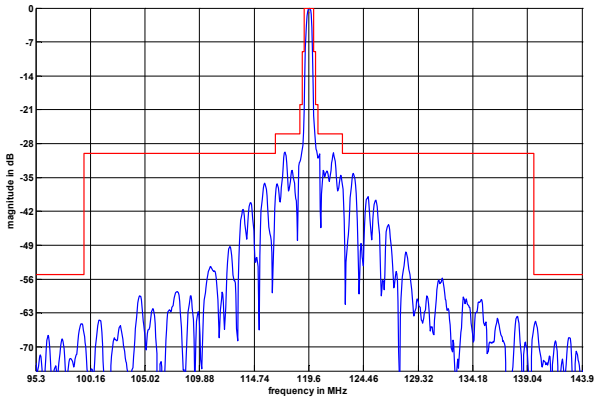
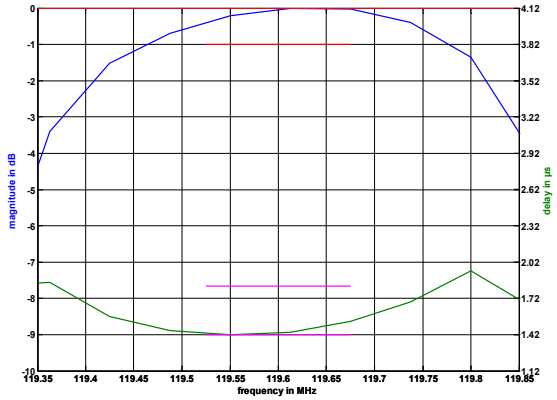
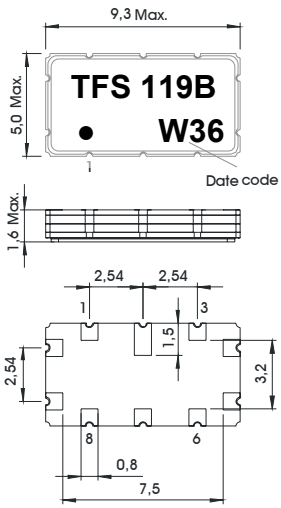
Filter characteristic





Construction and pin connection

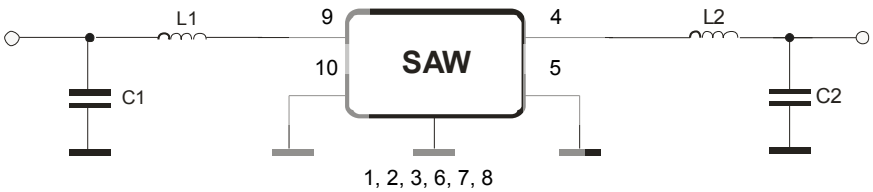
(All dimensions in mm)



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

Date code:	Year + week
W	2008
X	2009
A	2010
...	

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 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)

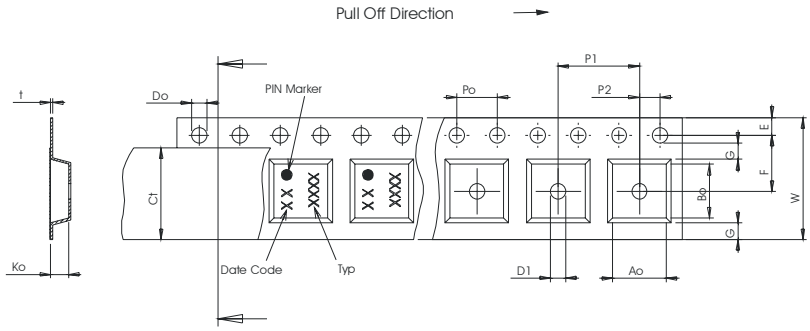
Packing

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:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

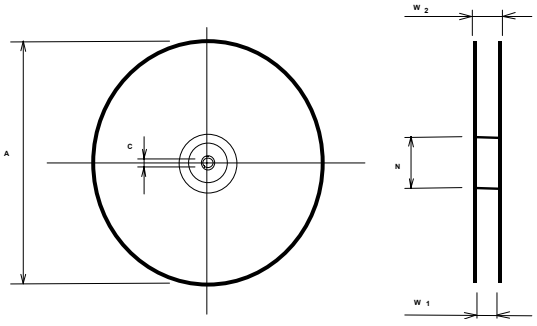
Tape (all dimensions in mm)

W	: 16,00	+0,3/-0,1
Po	: 4,00	± 0,1
Do	: 1,50	+0,1/-0
E	: 1,75	± 0,1
F	: 7,50	± 0,1
G(min)	: 0,60	
P2	: 2,00	± 0,1
P1	: 8,00	± 0,1
D1(min)	: 1,50	
Ao	: 5,30	± 0,1
Bo	: 9,70	± 0,1
Ct	: 13,5	± 0,1



Reel (all dimensions in mm)

A	:330	
W1	: 16,4	+2/-0
W2(max)	: 22,4	
N(min)	: 50	
C	: 13,0	+0,5/-0,2



The minimum bending radius is 45 mm.

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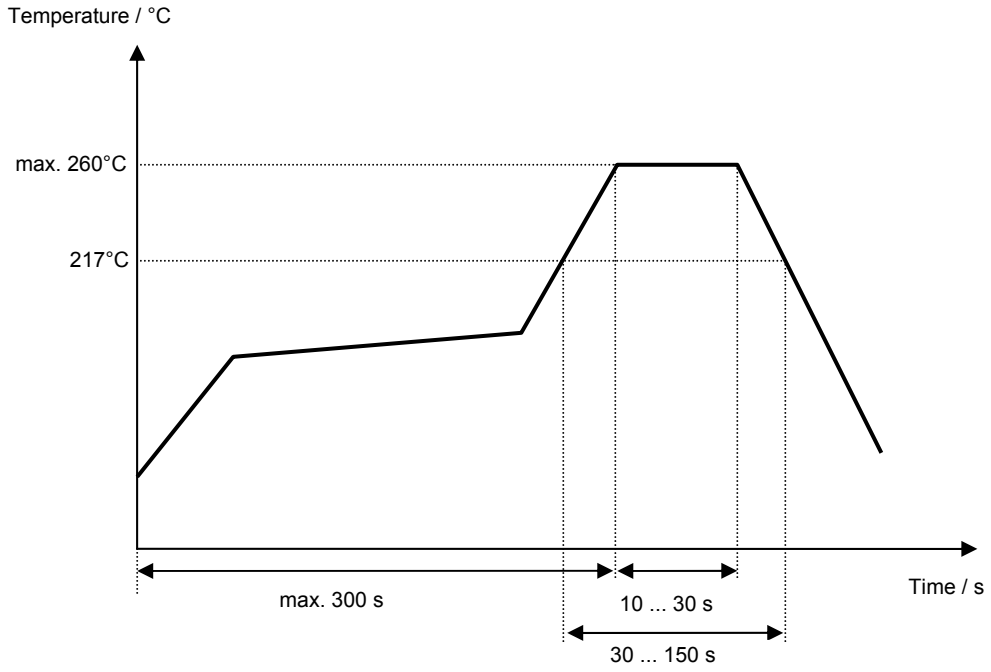
Air reflow temperature conditions

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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History

Version	Reason of Changes	Name	Date
1.0	- development specification generated	Pfeiffer	01.11.2006
1.1	- add of terminating impedanes, typical values, filter characteristics and matching configuration	Pfeiffer	13.12.2006
1.2	- change construction and packing	Strehl	13.05.2008
1.3	- terminating impedances adjusted for changed packages	Pfeiffer	04.09.2008

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