VI TELEFILTER Filter specification TFS 90B 1/5

Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 1000 Ω || -18,0 pF
Output: 900 Ω || -17,9 pF

Characteristics

Remark:
The nominal frequency f_N is fixed at 90,0 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 90B is the insertion loss a_e. The centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 2 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	10,9	dB	max.	13,0	dB
Nominal frequency	f_N	-			90,0	MHz
Centre frequency	f_C	90,0	MHz		-	
Passband	PB	-		f_N ±	1,8	MHz
Pass band ripple p-p		0,7	dB	max.	2	dB
Bandwidth						
1 dB		3,8	MHz		-	
3 dB		4,2	MHz		-	
Relative attenuation	a_{rel}					
f_N ... f_N ± 1,5 MHz		0,3	dB	max.	0,6	dB
f_N ± 1,5 MHz ... f_N ± 1,8 MHz		0,6	dB	max.	2,5	dB
f_N - 80 MHz ... f_N - 15 MHz		48	dB	min.	40	dB
f_N ± 15 MHz ... f_N ± 10 MHz		38	dB	min.	30	dB
f_N ± 10 MHz ... f_N ± 6 MHz		30	dB	min.	25	dB
f_N ± 6 MHz ... f_N ± 2,5 MHz		13	dB	min.	6,5	dB
f_N + 15 MHz ... f_N + 80 MHz		44	dB	min.	40	dB
f_N + 80 MHz ... f_N + 910 MHz		38	dB	min.	30	dB
Group delay at f_N		0,65	µs	max.	0,75	µs
Group delay variation in f_N ± 1,2 MHz p-p		80	ns	max.	120	ns
Group delay variation in PB p-p		100	ns	max.	180	ns
Intermodulation **		42	dBm	min.	30	dBm
Input power level		-		max.	6	dBm
Operating temperature range	OTR	-		-40 °C.....	+85 °C	
Storage temperature range		-		-55 °C.....	+85 °C	
Temperature coefficient of frequency	TC_f ***	-33	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.
**) f_{in1}= 89,4 MHz; f_{in2}= 89,7 MHz; P_{in}= 0 dBm $f_{measurement}$ = 90,0 MHz
***) Δf_C(Hz) = TC_f(ppm/K) x (T - T_o) x f_{To} (MHz).

Generated:

Checked / Approved:

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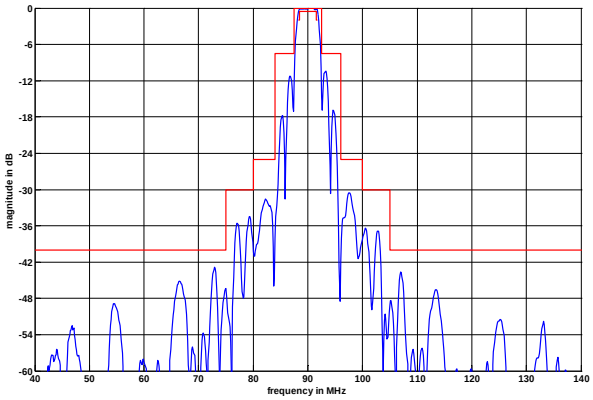
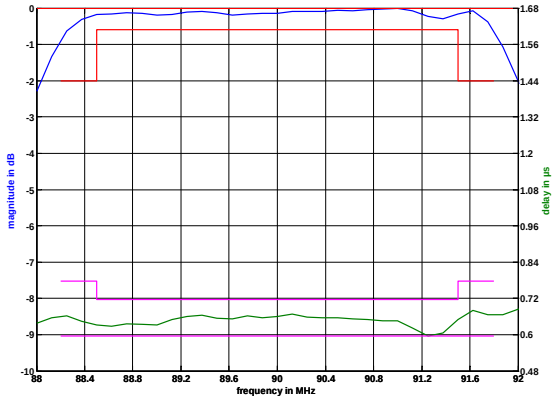
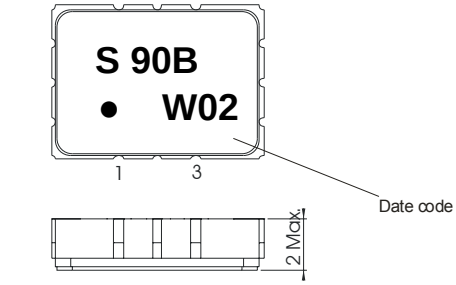
Filter characteristic

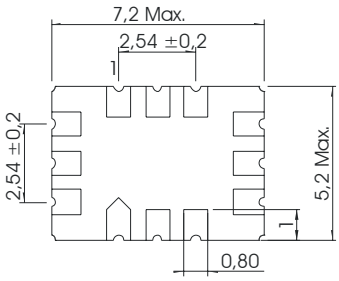




Construction and pin connection

(All dimensions in mm)



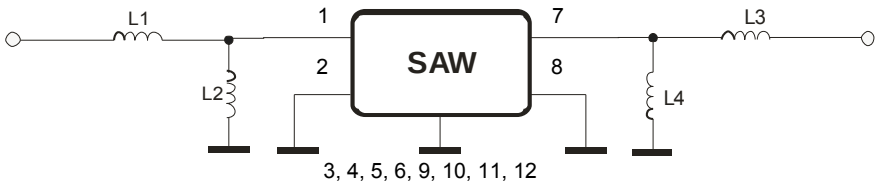


1	Input
2	Input RF Return
3	Ground
4	Ground
5	Ground
6	Ground
7	Output
8	Output RF Return
9	Ground
10	Ground
11	Ground
12	Ground

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

Base material ceramic; plating Au >1,0µm over Ni >2µm

50 Ohm Test circuit



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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock:	3000g shock, per MIL-STD 883, procedure 2002.4, condition C 5000g shock, per MIL-STD 883, procedure 2002.4, condition D
2. Vibration:	20g, per MIL-STD 883, procedure 2007.3, condition A
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)

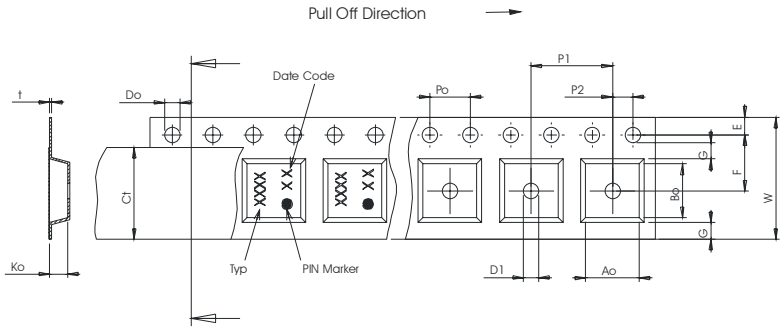
Packing

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

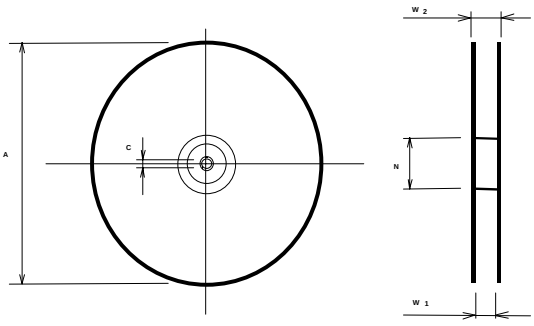
Tape (all dimensions in mm)

W	: 16,00	± 0,3
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	: 5,50	± 0,1
Bo	: 7,50	± 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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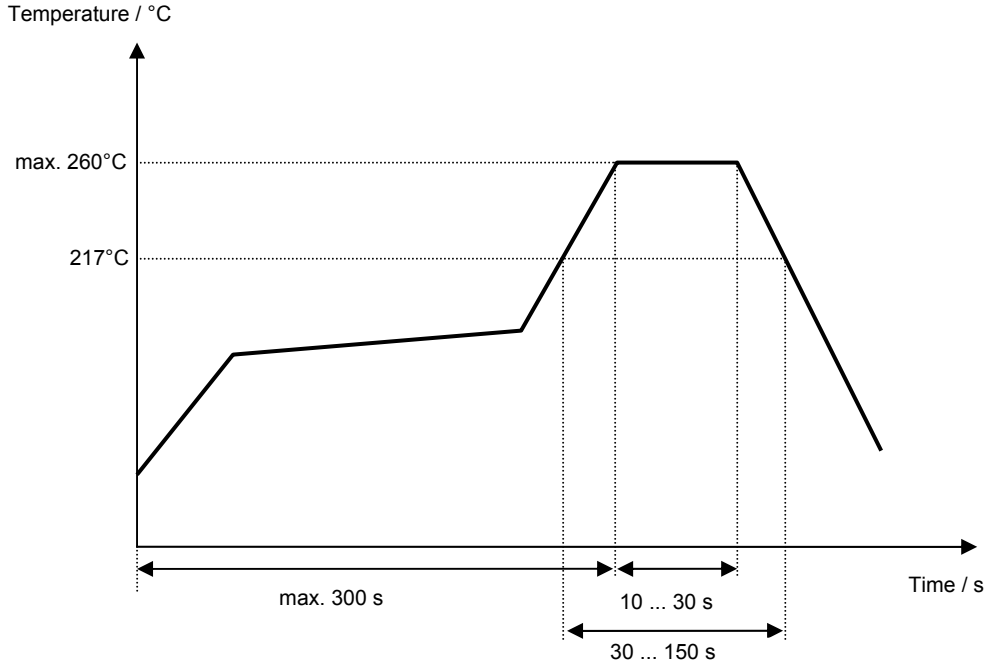
Air reflow temperature conditions

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	- generation of development specification	Strehl	12.05.2006
1.1	- extend of storage temperature range	Strehl	17.05.2006
1.2	- terminating impedances, typical values, filter characteristics and matching configuration added - frequencies of input signals for intermodulation measurements corrected	Pfeiffer	29.08.2006
1.3	- temperature coefficient of frequency and typical values corrected - change of relative attenuations	Pfeiffer	31.08.2006
1.4	- add plating in construction	Strehl	15.05.2007
1.5	- change stability characteristics	Strehl	11.01.2008

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