

**VI TELEFILTER**

**Filter specification**

**TFS 121B**

**1/5**

**Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50 Ω	
Output:	50 Ω	

**Characteristics**

**Remark:**

The reference level for the relative attenuation  $a_{rel}$  of the TFS 121B 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 dB filter attenuation level relative to the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed at 121,5 MHz without any tolerance. The given values for both the relative attenuation  $a_{rel}$  and the group delay ripple have to be achieved at the frequencies given below even if the centre frequency  $f_c$  is shifted due to the temperature coefficient of frequency  $TC_f$  in the operating temperature range and due to a production tolerance for the centre frequency  $f_c$ .

<b>D a t a</b>		<b>typ. value</b>	<b>tolerance / limit</b>
<b>Insertion loss</b> (reference level)	$a_e$	1,25 dB	max. 2,5 dB
<b>Nominal frequency</b>	$f_N$	-	121,5 MHz
<b>Passband</b>	PB		$f_N \pm 25$ kHz
<b>Pass band ripple</b>		-	max. $\pm 0,5$ dB
<b>Bandwidth</b>	BW		
1 dB		-	min. $\pm 25$ KHz
3 dB		2,8 MHz	-
<b>Relative attenuation</b>	$a_{rel}$		
$f_N \pm 2,20$ MHz ... $f_N \pm 3,00$ MHz			min. 5 dB
$f_N \pm 3,00$ MHz ... $f_N \pm 5,00$ MHz		22 dB	min. 15 dB
$f_N \pm 5,00$ MHz ... $f_N \pm 8,00$ MHz		35 dB	min. 20 dB
$f_N \pm 8,00$ MHz ... $f_N \pm 20,00$ MHz		53 dB	min. 40 dB
<b>Input power level</b>		-	max. 15 dBm
<b>Operating temperature range</b>	OTR	-	- 40 °C ... + 85 °C
<b>Storage temperature range</b>		-	- 45 °C ... + 90 °C
<b>Temperature coefficient of frequency</b>	$TC_f$ *	-32 ppm/K	

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

**Generated:**

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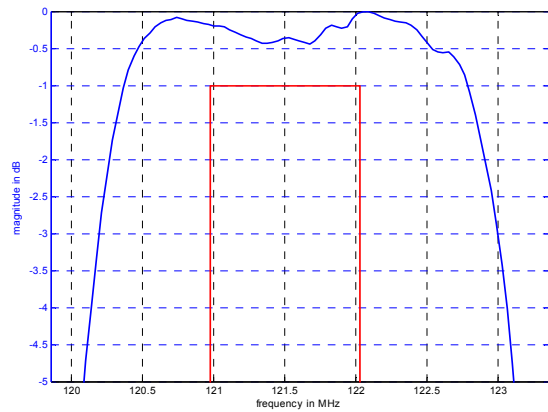
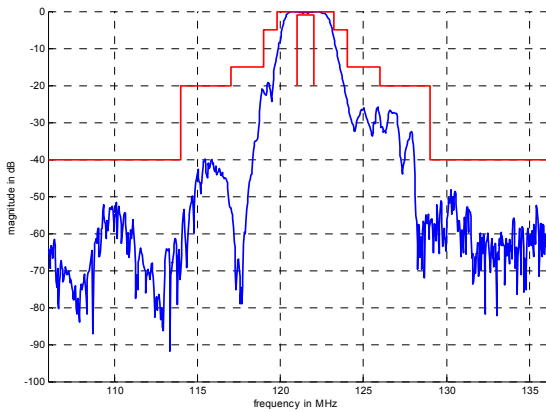
**Checked / Approved:**

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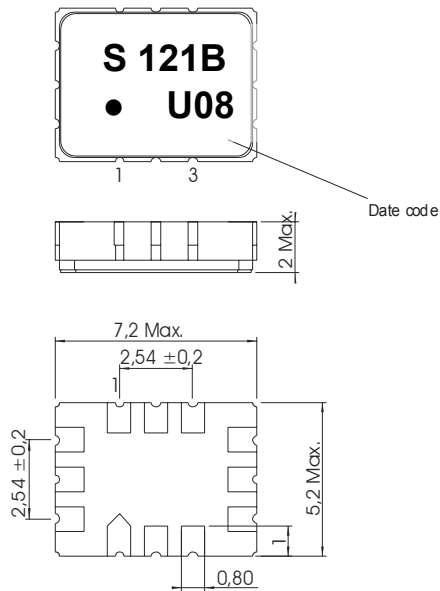
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**Filter characteristic**



**Construction and pin connection**

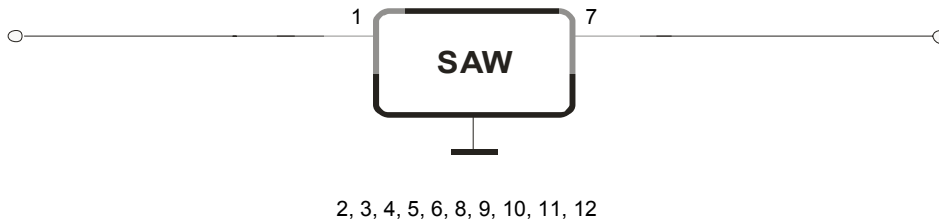
(All dimensions in mm)



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

Date code: Year + week  
 U 2006  
 V 2007  
 W 2008  
 ...

**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: 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)

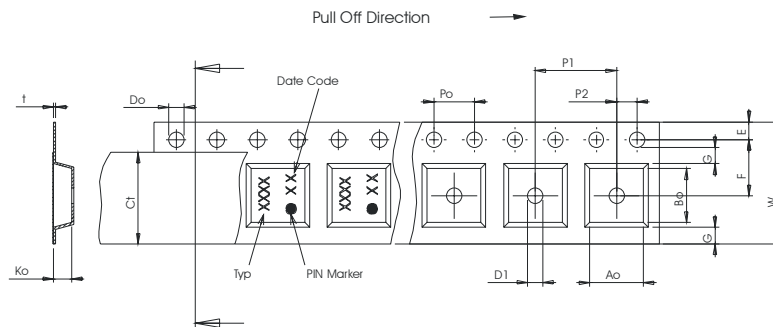
**Packing**

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: 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

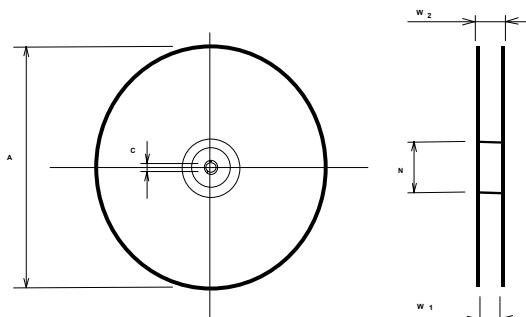
**Tape (all dimensions in mm)**

- 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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**VI TELEFILTER****Filter specification****TFS 121B****5/5****History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Strehl	28.07.2005
1.1	- Add bandwidth@1dB	Strehl	30.08.2005
1.2	- Change terminating impedance	Sabah	26.09.2005
1.3	- Generation of Filter specification and add of typical values	Sabah	27.10.2005
1.4	- Change insertion loss and relative attenuation - Change stability characteristics	Strehl	08.02.2006
1.5	- Correct filter characteristic	Strehl	21.02.2006

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