

Measurement condition

Ambient temperature: 23°
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 1530 Ω || -1,57 pF
 Output: 1530 Ω || -1,57 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS121 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 3dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 121,5 MHz without tolerance. The given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached 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 .

D a t a		typ. value	tolerance / limit
Insertion loss (reference level)	$a_e = a_{min}$	3,75 dB	max. 5 dB
Nominal frequency	f_N	-	121,5 MHz
Centre frequency	f_c	121,5 MHz	-
Relative attenuation	a_{rel}		
f_N ... $f_N \pm 25$ kHz		1,5 dB	max. 3 dB
$f_N \pm 125$ kHz ... $f_N \pm 455$ kHz		33 dB	min. 20 dB
$f_N \pm 455$ kHz		67 dB	min. 60 dB
Operating temperature range	OTR	-	- 40°C ... + 85 °C
Storage temperature range		-	- 53°C ... + 100 °C
Temperature coefficient of frequency	TC_f **	- 0,036 ppm/K ²	
Frequency inversion temperature		25 °C	

*) 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.

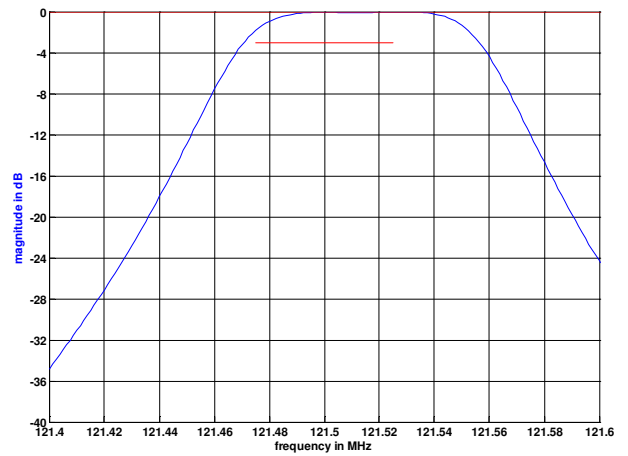
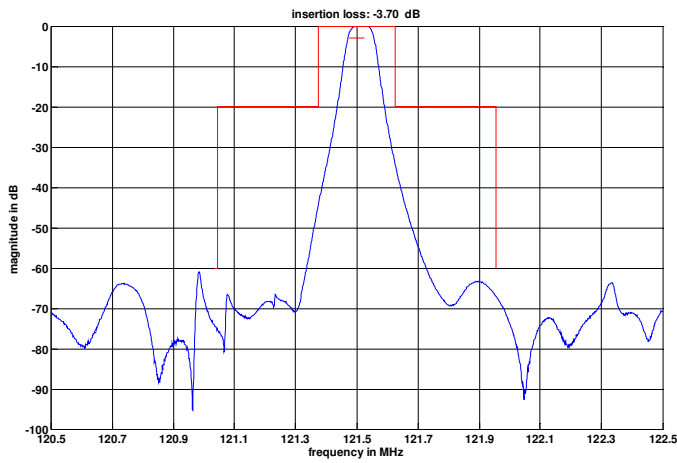
***) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_o)^2 \times f_{T_o}(\text{MHz})$

Generated:**Checked / Approved:**

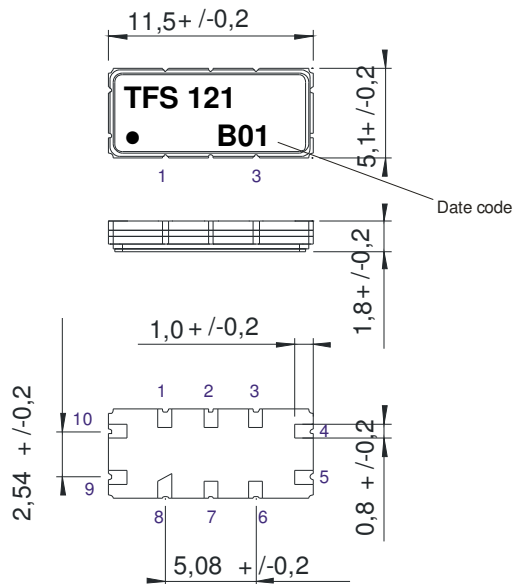
Vectron International GmbH & Co. KG
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
E-Mail: tft@vectron.com

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Filter characteristic



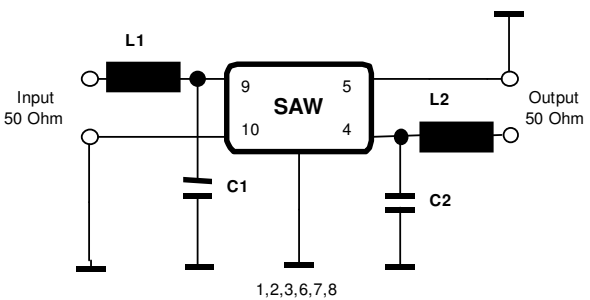
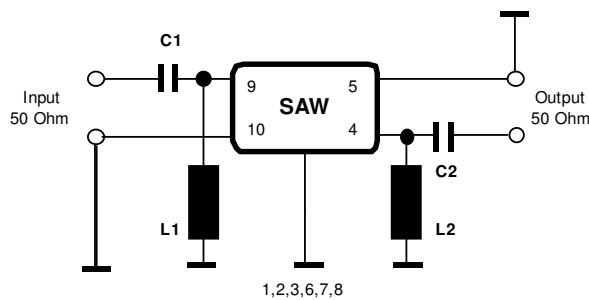
Construction and pin connection
(All dimensions in mm)



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

Date code: Year + week
 B 2011
 C 2012
 D 2013
 ...

50 Ω matching network



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Stability Characteristics

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

1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5g 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
3. Damp heat: 25 °C to 55°C / 95% r.H. / 10 cycles
(cycle) DIN IEC 68 - 2 – 30 Db
4. Resistance to solder heat (reflow): reflow possible: twice max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

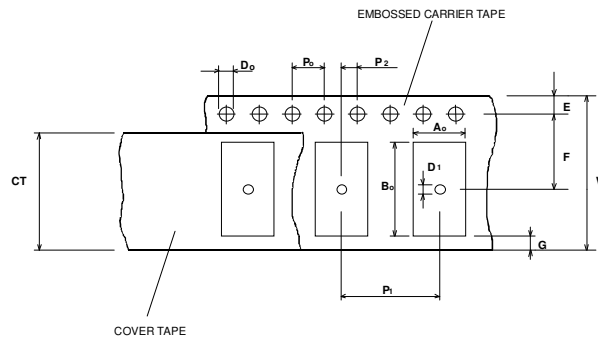
Packing

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

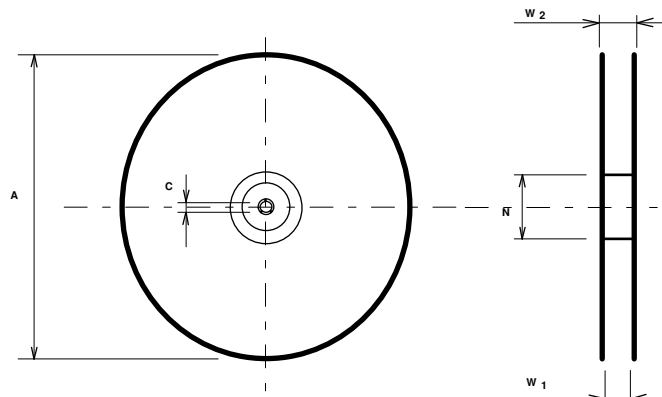
Tape (all dimensions in mm)

- W : 24,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 11,50 ± 0,1
- G(min) : 0,60
- P2 : 2,00 ± 0,1
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 5,60 ± 0,1
- Bo : 11,80 ± 0,1
- Ct : 21,0 ± 0,1



Reel (all dimensions in mm):

- A : 330
- W1 : 24,4 +2
- W2 (max) : 30,4
- N (min) : 60
- C : 13 +0,5/-0,2



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. Markings on the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on its right.

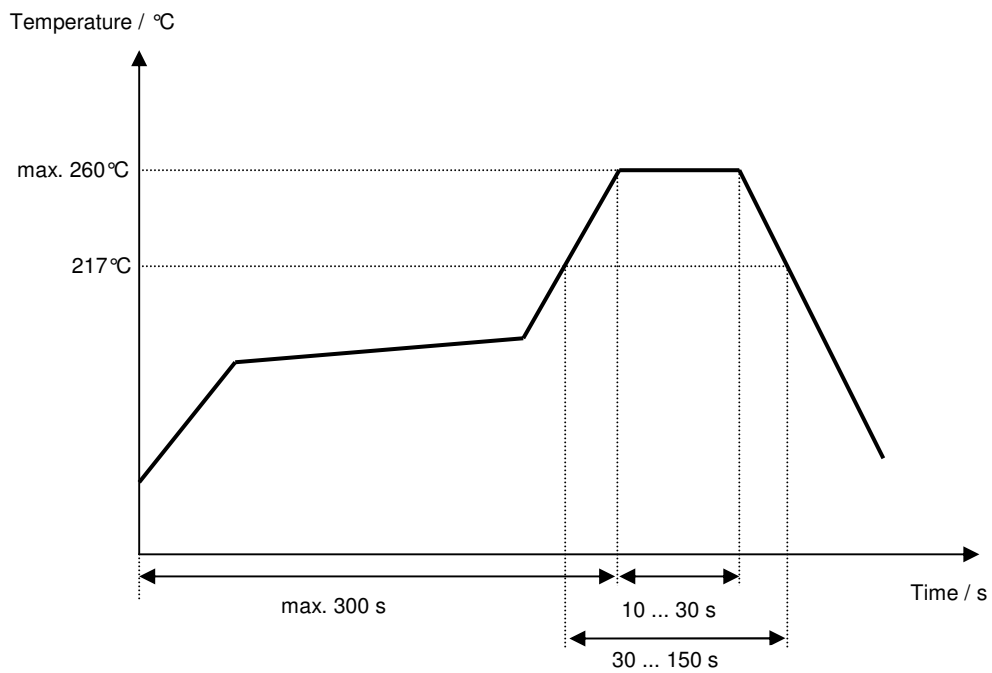
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Air reflow temperature conditions

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
2.3	<ul style="list-style-type: none">- Add history.- Use a more accurate remark for explanation of electrical data.- Change date code from month to week.- Add pin 1 marker.- Change stability characteristics.- Correct tape and reel information.	Dr. Wall	11.12.2001
2.4	<ul style="list-style-type: none">- Correct typo for nominal frequency.	Dr. Wall	27.05.2002
3.0	<ul style="list-style-type: none">- Updated characteristics table- Added filter characteristics graph- Updated construction and pin connection- Updated air reflow temperature conditions	Raura	19.01.2011