

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 .

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

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

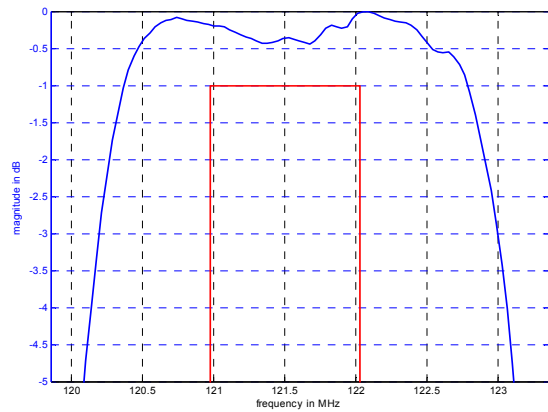
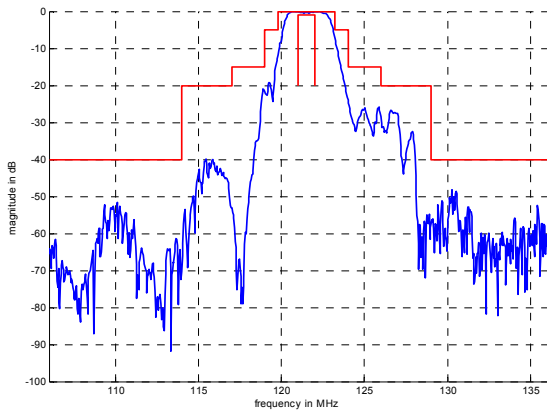
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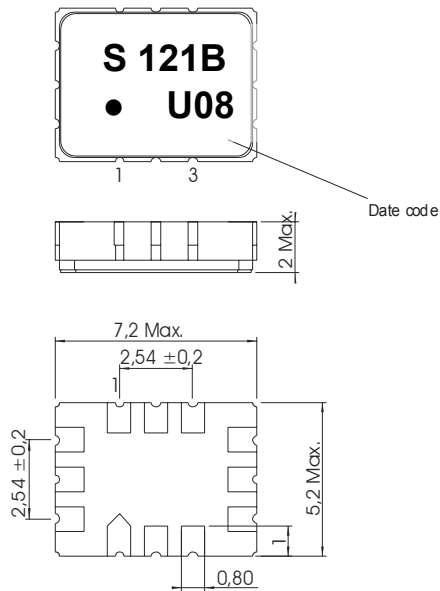
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Filter characteristic



Construction and pin connection

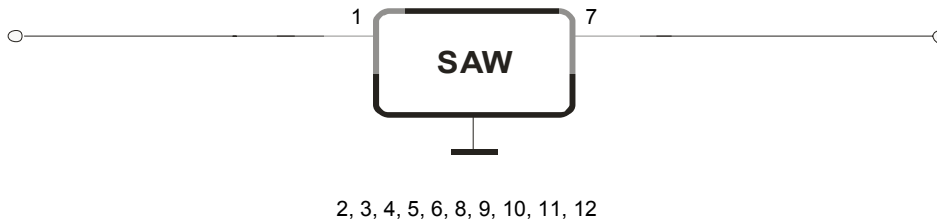
(All dimensions in mm)



- 1 Input
- 2 Ground
- 3 Ground
- 4 Ground
- 5 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)

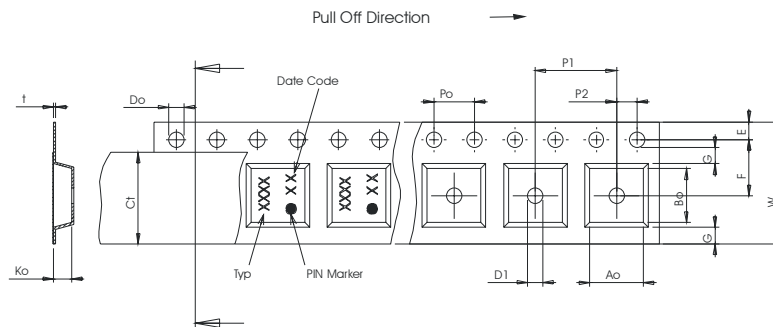
Packing

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

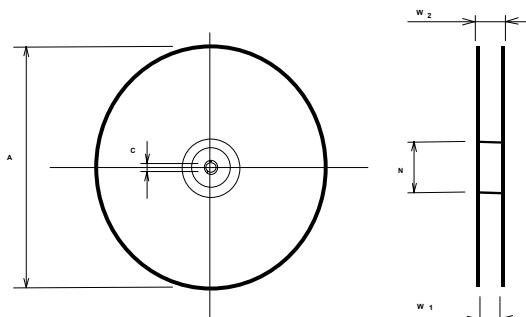
Tape (all dimensions in mm)

- 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**

| Version | Reason of Changes | Name | Date |
|----------------|--|-------------|-------------|
| 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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