

Vectron International

Filter specification

TFS 107

1/5

Measurement condition

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	105 Ω	-30,7 pF
Output:	84 Ω	-37,2 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS107 is the insertion loss. The attenuation at the nominal frequency is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 107,52 MHz without any tolerance or limit. The values of relative attenuation a_{rel} are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit	
Insertion loss (reference level)	a_e	17,2	dB	max.	18 dB
Nominal frequency	f_N				107,52 MHz
Passband	PB	-			$f_N \pm 1,89$ MHz
Pass band ripple ***,**		0,6	dB	max.	1,5 dB
Relative attenuation	a_{rel}				
$f_N - 85$ MHz ... $f_N - 30$ MHz		60	dB	min.	50 dB
$f_N - 30$ MHz ... $f_N - 4$ MHz		52	dB	min.	40 dB
$f_N + 4$ MHz ... $f_N + 28,82$ MHz		52	dB	min.	40 dB
$f_N + 28,82$ MHz ... $f_N + 32,62$ MHz		75	dB	min.	45 dB
$f_N + 32,62$ MHz ... $f_N + 205,04$ MHz		70	dB	min.	40 dB
$f_N + 205,04$ MHz ... $f_N + 225,04$ MHz		75	dB	min.	35 dB
$f_N + 225,04$ MHz ... $f_N + 792,48$ MHz		65	dB	min.	40 dB
$f_N + 792,48$ MHz ... $f_N + 1000$ MHz		62	dB	min.	30 dB
Group delay ripple within PB ***		50	ns	max.	90 ns
Phase ripple within PB	***	1,5	°rms	max.	2 °rms
Intermodulation	Output-IP3 *****	43	dBm	min.	30 dBm
Return loss within PB		20	dB	min.	10 dB
Input power level				max.	15 dBm
Operating temperature range	OTR	-			0 °C ... + 80 °C
Storage temperature range		-			- 40 °C ... + 85 °C
Temperature coefficient of frequency	TC_f **	20	ppm/K		

**) $\Delta f_G(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_N (\text{MHz})$

***) For a cascade of TFS 107 and TFS 107A;

****) In addition 1dB ripple should be fulfilled in any 1,26 MHz band for the cascade

*****) $f_{in1} = 106,52$ MHz; $f_{in2} = 107,02$ MHz; $P_{in} = 10$ dBm $f_{measurement} = 107,52$ MHz

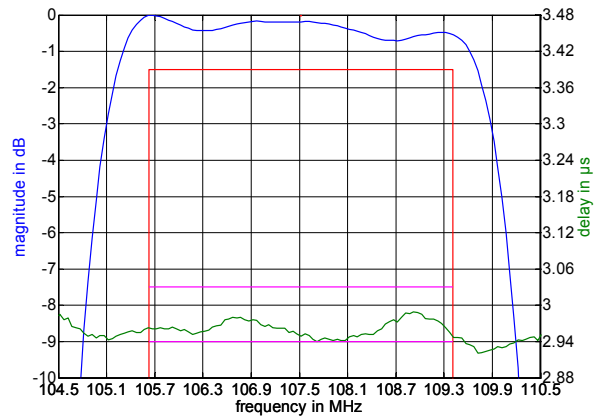
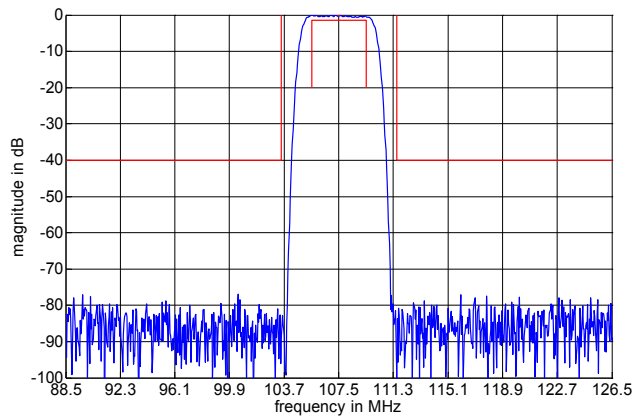
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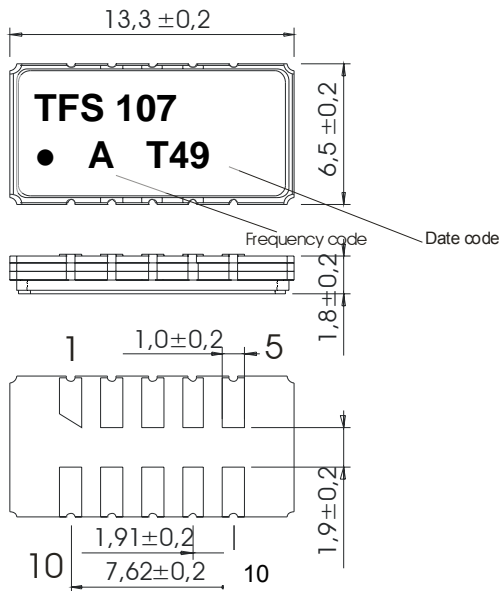
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Filter characteristic



Construction and pin connection

(All dimensions in mm)



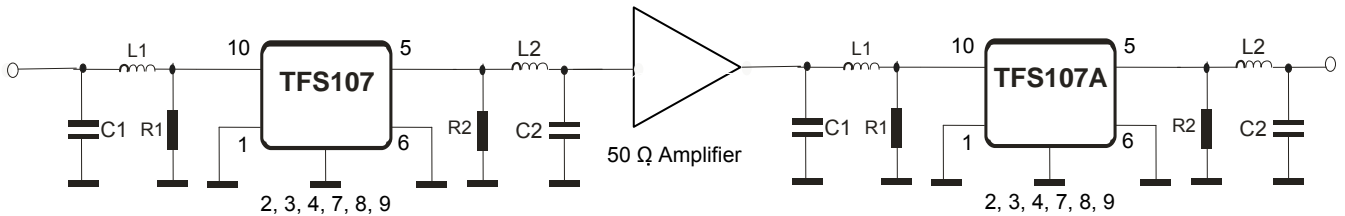
- 1 Input RF Return
- 2 Ground
- 3 Ground
- 4 Ground
- 5 Output
- 6 Output RF Return
- 7 Ground
- 8 Ground
- 9 Ground
- 10 Input

Date code: Year + week
 T 2005
 U 2006
 V 2007
 ...

Frequency code: A, B, C, D, E

Frequency code labelling only in case of delivering pairs TFS107 and TFS107A

50 Ω matching network :



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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 plane, 3 planes;
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;

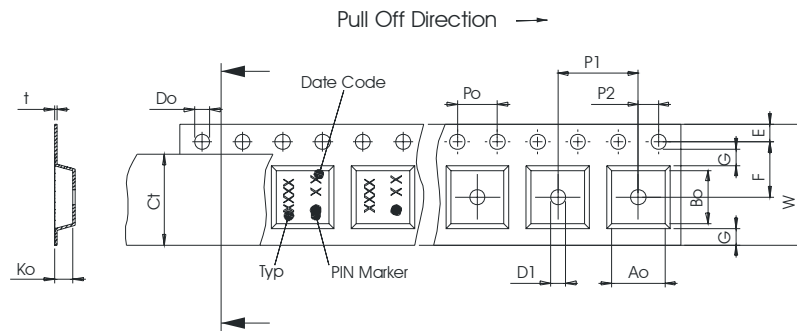
This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

Packing

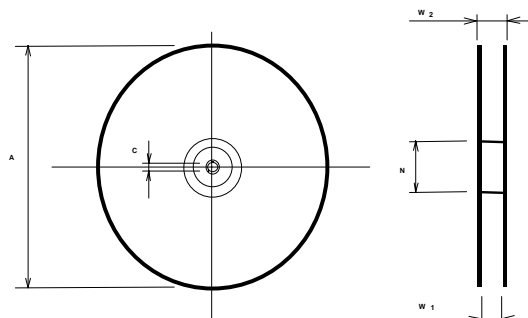
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer reel: 1700
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 +0,30/-0,10
 - Po : 4,00 ± 0,1
 - Do : 1,50 +0,1/-0
 - E : 1,75 ± 0,10
 - F : 11,50 ± 0,10
 - G(min) : 0,60
 - P2 : 2,00 ± 0,1
 - P1 : 12,00 ± 0,1
 - D1(min) : 1,50
 - Ao : 7,10 ± 0,10
 - Bo : 13,90 ± 0,10
 - Ct : 21,5 ± 0,1



- Reel (all dimensions in mm)**
- A : 330
 - W1 : 24,4 +2/-0
 - W2(max) : 30,4
 - N(min) : 60
 - C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

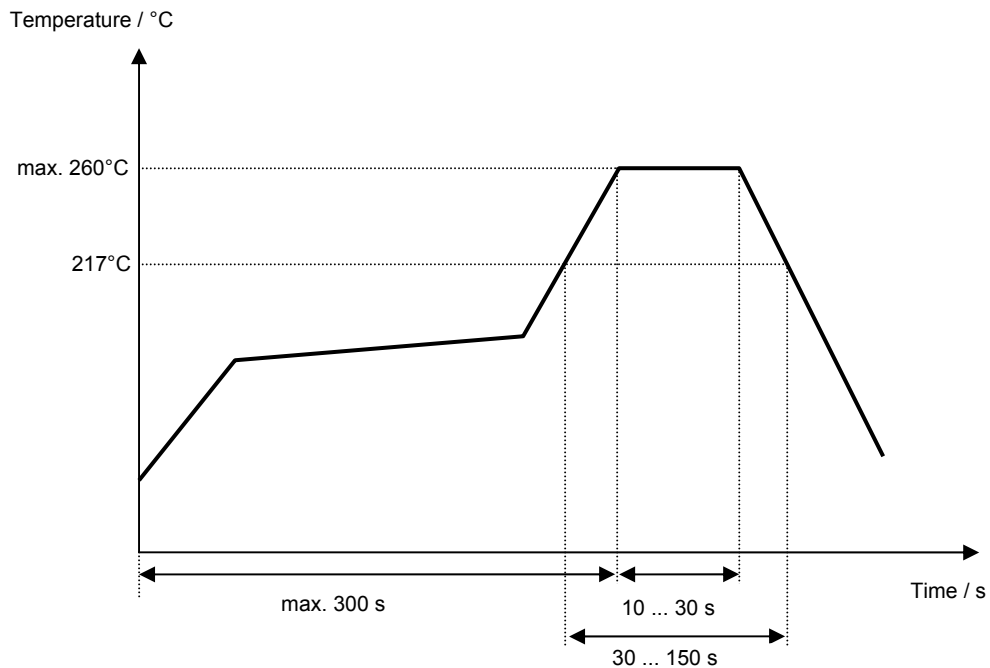
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Air reflow temperature conditions

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	- generate development specification	Strehl	12.10.2004
1.1	- adding phase ripple and IP3 - added new reflow profile - changed pinning	Martens	27.10.2004
1.2	- intermodulation defined more precisely	Steiner	29.10.2004
1.3	- typical values, terminating impedances (preliminary values) and filter characteristic added - matching configuration changed - lower frequency range for relative attenuation changed	Pfeiffer	20.12.2004
1.4	- terminating impedance, matching configuration and filter characteristic changed - typical values modified	Pfeiffer	08.02.2005
1.5	- labelling changed - stability characteristics modified	Pfeiffer	05.12.2005
2.0	- labelling changed, re-formated	Chilla	09.03.2010