

VI TELEFILTER

Filter specification

TFS 35C

Measurement condition

Ambient temperature: 25 °C
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 310 Ω || -25,7 pF
 Output: 690 Ω || -10,1 pF
 Source impedance: 50 Ω
 Output impedance: 50 Ω

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 35C 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 3 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 35,42 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	14,8 dB	max.	17 dB
Nominal frequency		f_N	35,42 MHz		
Centre frequency		f_c	35,42 MHz		
Passband					$f_c \pm 0,80$ MHz
Pass band ripple			0,6 dB	max.	1,6 dB
Bandwidth		BW			
1 dB			2,01 MHz	min.	1,7 MHz
3 dB			2,44 MHz		-
21 dB			3,32 MHz	max.	3,74 MHz
Relative attenuation		a_{rel}			
34,62 MHz	...	36,22 MHz	0,8 dB	max.	1,6 dB
0,1 MHz	...	7 MHz	55...27 dB		-
7 MHz	...	28 MHz	55...50 dB	min.	35 dB
28 MHz	...	31 MHz	35 dB	min.	30 dB
31 MHz	...	33,5 MHz	40...30 dB	min.	21 dB
37,34 MHz	...	39,84 MHz	27...42 dB	min.	21 dB
39,84 MHz	...	62,42 MHz	45...60 dB	min.	35 dB
62,42 MHz	...	72,42 MHz	36 dB	min.	30 dB
72,42 MHz	...	110,42 MHz	70...80 dB	min.	40 dB
Group delay		mean value in PB	1,6 μs	max.	1,7 μs
Group delay ripple within PB			200 ns	max.	300 ns
Deviation from linear phase within PB			±2 °		
Triple transit response suppression			35 dB		
Crosstalk attenuation compared to main signal			50 dB		
Operating temperature range		OTR	-		- 20 °C ... + 80 °C
Storage temperature range			-		- 40 °C ... + 85 °C
Temperature coefficient of frequency		TC_f **	-20 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.

***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$.

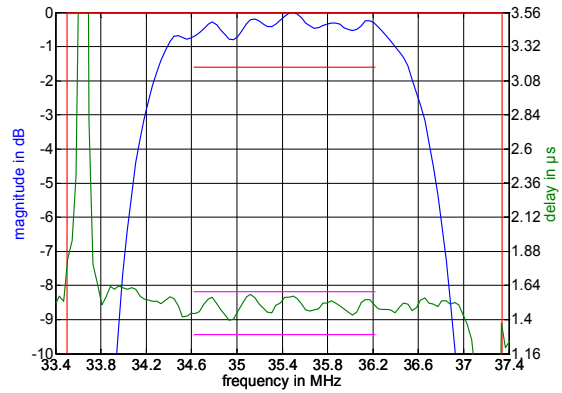
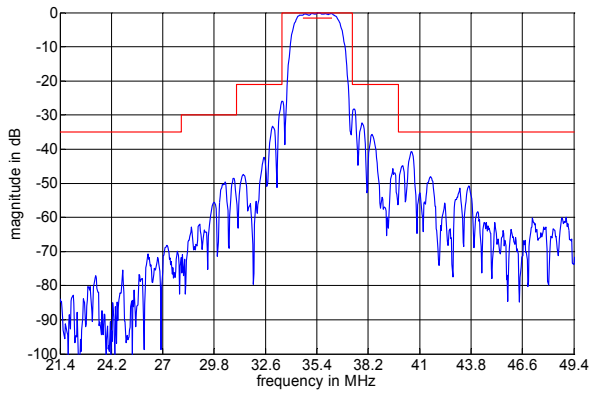
Generated:

Checked / Approved:

Tele Filter GmbH
 Potsdamer Straße 18
 D 14 513 TELTOW / Germany
 Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
 E-Mail: tft@telefilter.com

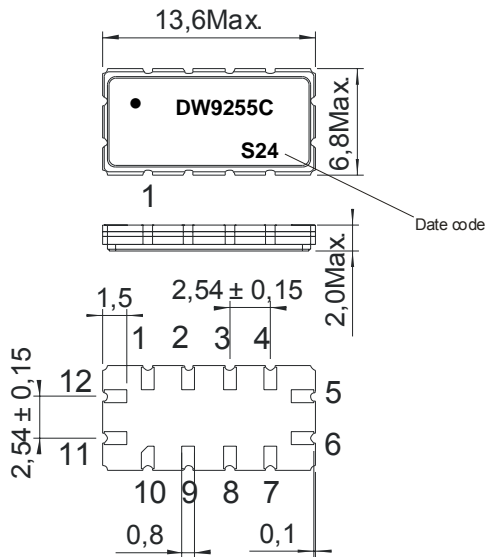
VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Filter characteristic



Construction and pin connection

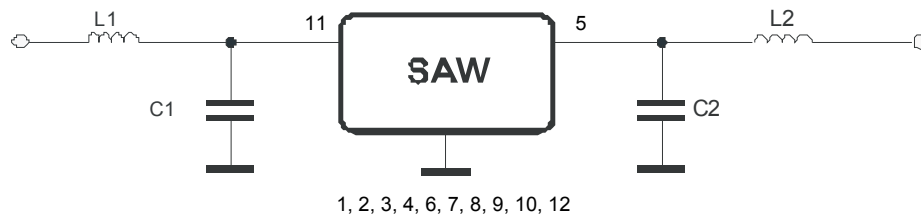
(All dimensions in mm)



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

Date code: Year + week
 S 2004
 T 2005
 U 2006
 ...

50 Ohm Test circuit



Tele Filter GmbH
 Potsdamer Straße 18
 D 14 513 TELTOW / Germany
 Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
 E-Mail: tft@telefilter.com

VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

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 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;

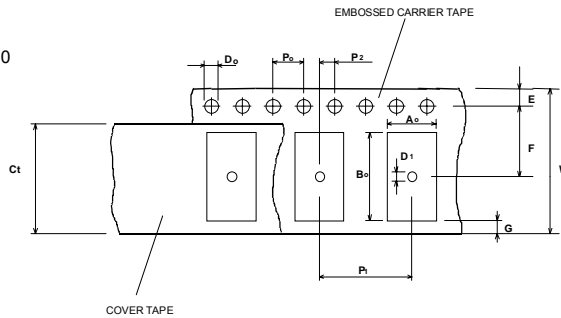
Packing

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

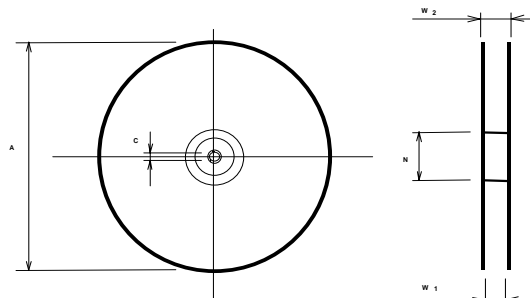
Tape (all dimensions in mm)

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. The mounting surface of the filters faces the bottom side of the embossed carrier tape. Marking of the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on the right.

Tele Filter GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
E-Mail: tft@telefilter.com

VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Air reflow temperature conditions

1st and 2nd air reflow profile

Name:	pre-heating periods	main-heating periods	peak temperature
Temperature:	150 °C - 170 °C	over 200 °C	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

Chip-mount air reflow profile

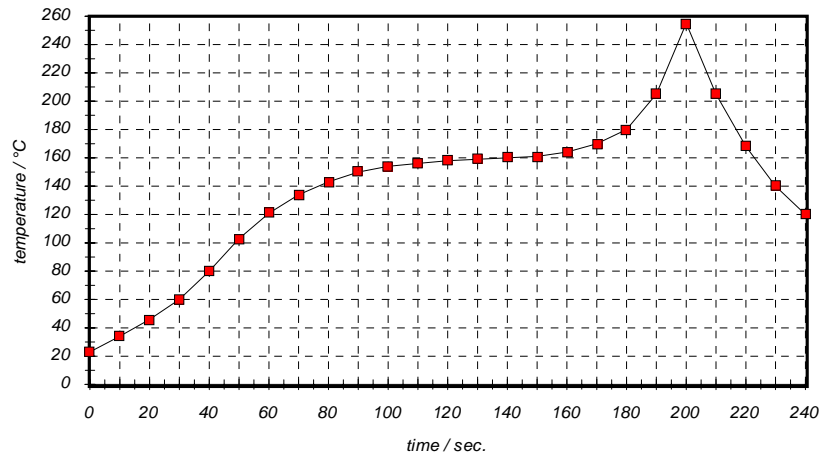


Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

time / sec.	temperature / °C	time / sec.	temperature / °C
0	23	140	160
10	34	150	161
20	46	160	164
30	60	170	170
40	80	180	180
50	103	190	205
60	121	195	230
70	134	200	255
80	143	205	230
90	150	210	205
100	154	215	180
110	156	220	165
120	158	230	140
130	159	240	120

VI TELEFILTER**Filter specification****TFS 35C****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- generation of development specification	Springfeldt	29.03.2004
1.1	- pinning corrected - filter characteristic added - labelling changed	Pfeiffer	10.06.2004
1.2	- labelling corrected (input mark)	Pfeiffer	15.06.2004

Tele Filter GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
E-Mail: tft@telefilter.com

VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.