Measurement condition :

Ambient temperature T_A:	23 °C		
Input power level:	0 dBm		
Terminating impedances at f_C *) :	for input:	29,5 Ω ‖	- 16,1 pF
	for output:	206 Ω ‖	- 9,0 pF

Characteristics

Remark: Reference level for the relative attenuation a_{rel} of the TFS 300D 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 300 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	20,2	dB	max.	21	dB
Nominal frequency	f_N	-			300	MHz
Centre frequency at ambient temperature (f_{CTA})		300,087	MHz		-	
Centre frequency at temperature T = 37,5°		300,000	MHz		-	
Pass band in OTR :	PB			f_N ... f_N ± 9,42 MHz		
Amplitude ripple in PB (p-p) :		0,4	dB	max.	1	dB
Bandwidth at T_C = 37,5 °C :						
1 dB		19,6	MHz	min.	18,84	MHz
5 dB		20,4	MHz	max.	21,70	MHz
15 dB		21,0	MHz	max.	22,24	MHz
Relative attenuation in OTR	a_{rel}					
f_N ... f_N ± 9,42 MHz		0,4	dB	max.	1	dB
f_N ± 10,58 MHz ... f_N ± 11,12 MHz		15	dB	min.	5	dB
f_N ± 11,12 MHz ... f_N ± 40 MHz		23	dB	min.	15	dB
Group delay (mean value in PB):		1,28	µs	max.	1,5	µs
Group delay ripple (p-p) in PB :		60	ns	max.	100	ns
Triple transit attenuation compared to main signal		42	dB	max.	34	dB
Temperature coefficient of frequency (Tc_f)		- 20	ppm/K		-	
Frequency deviation of f_C over temperature: **)		Δf_C(Hz) = Tc_f(ppm/K) x (T - T_{CTA}) x f_{CTA} (MHz)			-	
Operating temperature range	**OTR**	**-**		+ 10 °C ... + 65 °C		
Storage temperature range		**-**		- 40 °C ... + 85 °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.

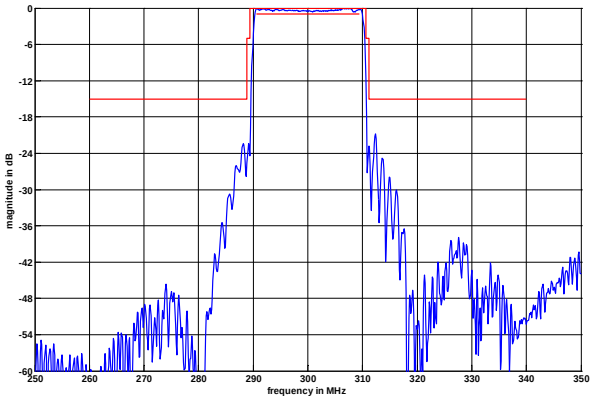
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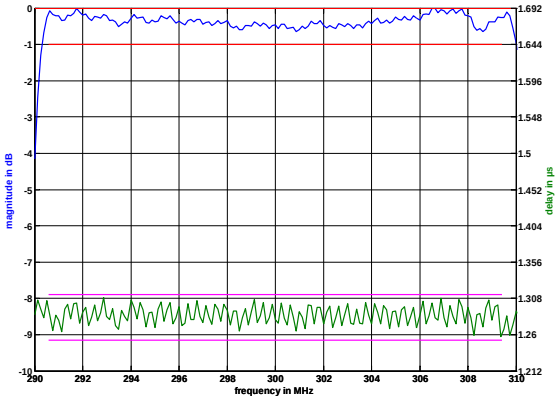
Checked / Approved:

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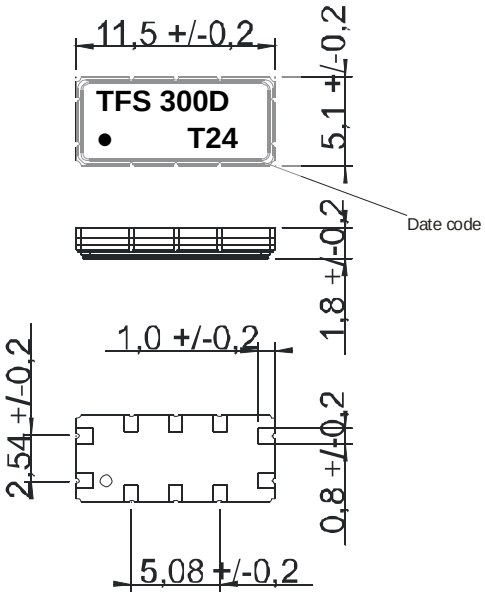
Filter characteristic





Construction and pin connection

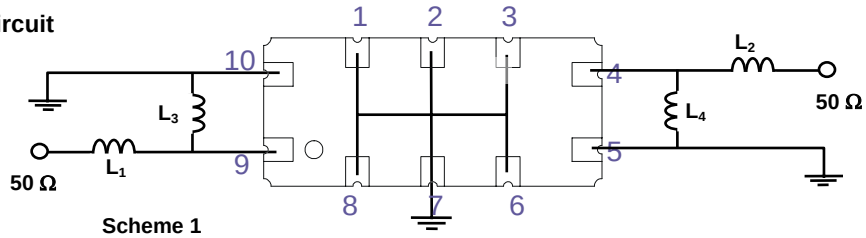
(All dimensions in mm)



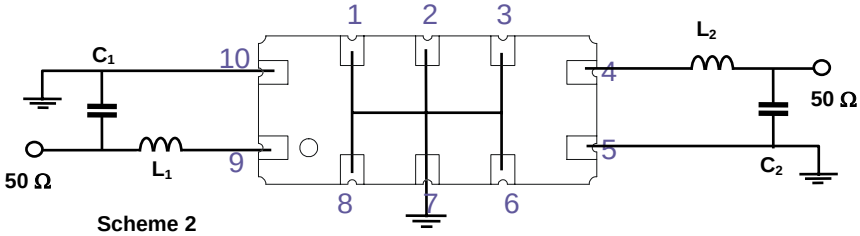
1	Ground
2	Ground
3	Ground
4	Output
5	Output RF Return
6	Ground
7	Ground
8	Ground
9	Input
10	Input RF Return

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

50 Ω test circuit



Scheme 1



Scheme 2

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Stability characteristics

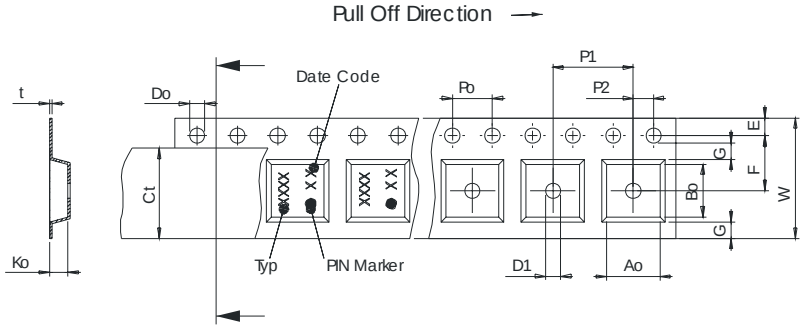
After the following tests the filter shall meet the whole specification:

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;

Packing

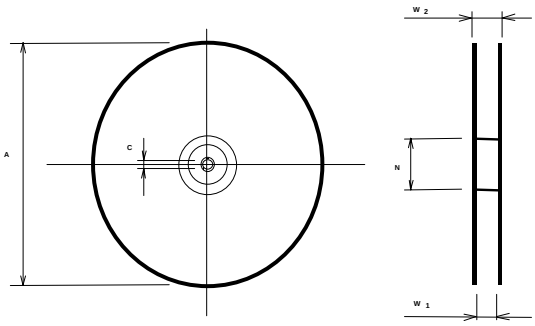
Tape & Reel: IEC 286 – 3, with exeption of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer reel:	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	: 21,5	± 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.

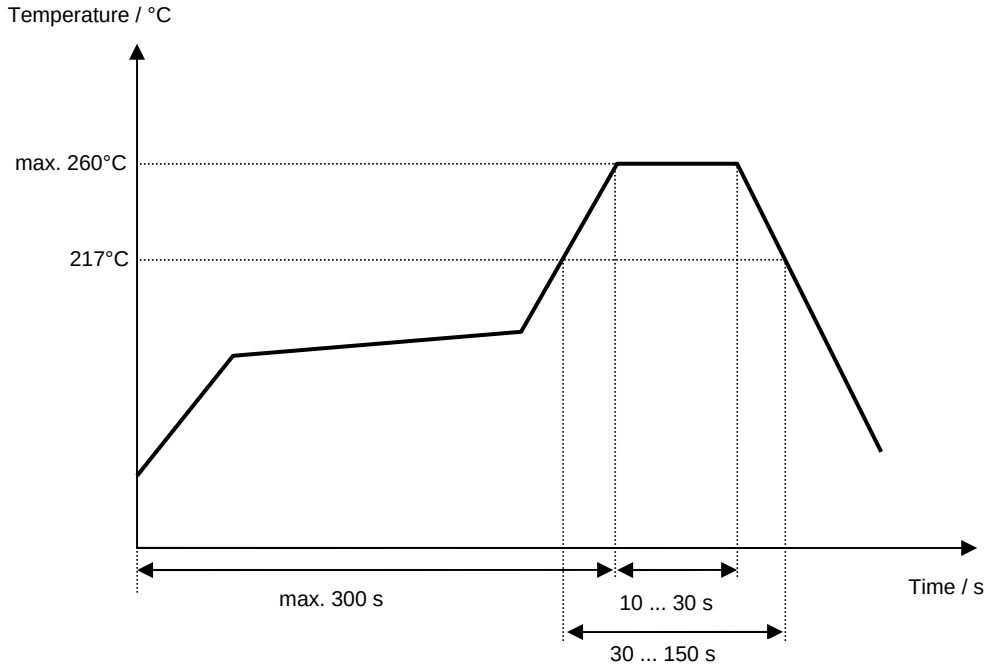
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Air reflow temperature conditions

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 according to customer requirements	Dunzow W.	13.01.2003
1.1	- change limit lines according to customer requirements	Dunzow W.	04.02.2003
1.2	- add terminating impedances - change from development specification to preliminary specification	Braun T.	03.07.2003
1.3	- add typical value data - change from preliminary specification to filter specification	Braun T.	25.08.2003
1.4	- package dimensions corrected - stability characteristics, packing and air reflow temperature conditions modified	Pfeiffer	09.06.2005
1.5	- filter characteristic added	Pfeiffer	15.06.2005

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