

VI TELEFILTER

Filter specification

TFS 299

1/5

Measurement condition

Ambient temperature:	23	°C
Input power level:	0±2	dBm
Terminating impedance: *		
Input:	625 Ω	-5,3 pF
Output:	520 Ω	-5,1 pF

Characteristics

Remark:

The nominal frequency f_N is fixed at 299 MHz. The insertion loss a_e is defined as loss value determined at f_N . Reference level for the relative attenuation a_{rel} of the TFS 299 is 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 . All specified data are met within the operating temperature range.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	a_e	6,2	dB	max.	8,0	dB
Nominal frequency	f_N	-			299,0	MHz
Passband	PB	-		f_N	± 80	kHz
Pass band ripple	p-p	0,3	dB	max.	±0,5	dB
Bandwidth 3 dB	BW	1,1	MHz	min.	400	kHz
Relative attenuation	a_{rel}					
$f_N ± 1,8$ MHz ...	$f_N ± 6,0$ MHz	23	dB	min.	20	dB
$f_N ± 6,0$ MHz ...	$f_N ± 60,0$ MHz	40	dB	min.	35	dB
$f_N - 298,0$ MHz ...	$f_N - 60,0$ MHz	45	dB	min.	20	dB
$f_N + 60,0$ MHz ...	$f_N + 701,0$ MHz	46	dB	min.	20	dB
Absolute group delay at f_N		0,77	µs	max.	1	µs
Group delay ripple within PB	p-p	95	ns	max.	1	µs
Input power level		-		max.	+10	dBm
Operating temperature range	OTR	-			-40 °C ... + 85 °C	
Storage temperature range		-			-40 °C ... + 90 °C	
Frequency inversion temperature		25	°C		-	
Temperature coefficient of frequency	TC_f^{**}	-0,036	ppm/K ²		-	

*) 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.

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

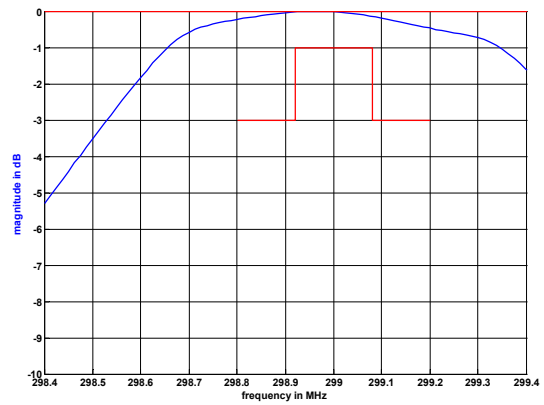
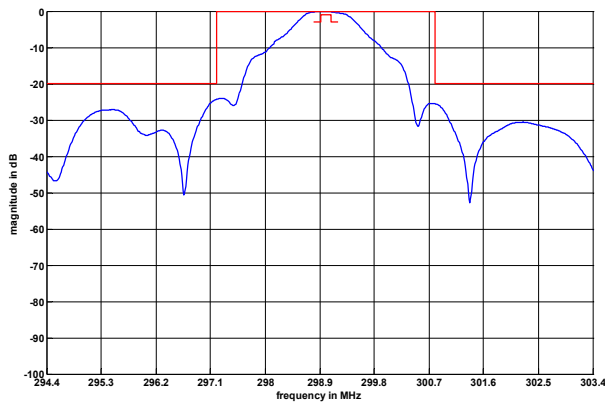
Generated:

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

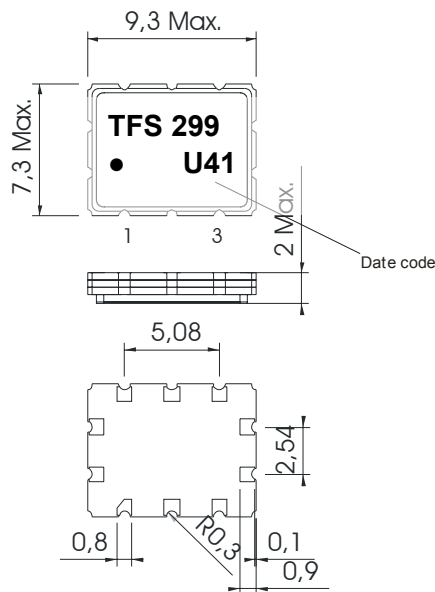
VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

Filter characteristic



Construction and pin connection

(All dimensions in mm)

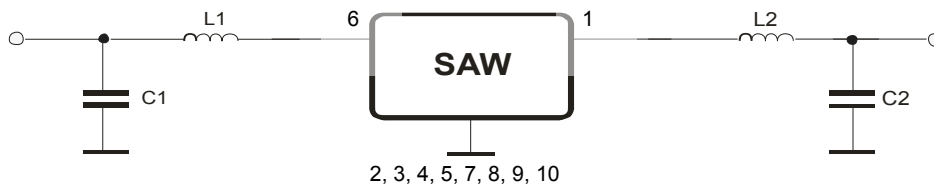


- 1 Output
- 2 Ground
- 3 Ground
- 4 Ground
- 5 Ground
- 6 Input
- 7 Ground
- 8 Ground
- 9 Ground
- 10 Ground

Date code: Year + week

- U 2006
- V 2007
- W 2008
- ...

50 Ω 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, 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: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
5. ESD MIL-STD-883E using coupling network of ISO 10605 and EN 6100-4-2
HBM:250V; MM:200V; CDM:V;

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

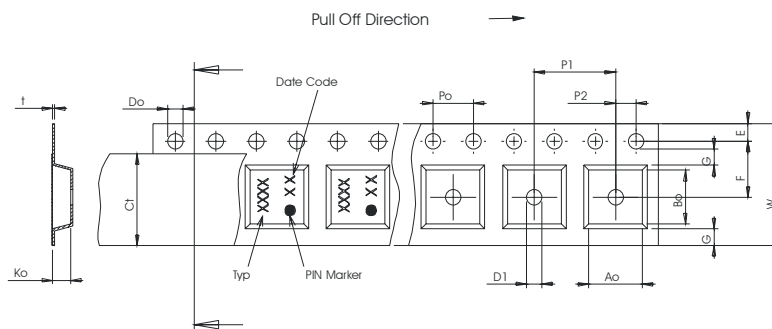
Packing

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:	2000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

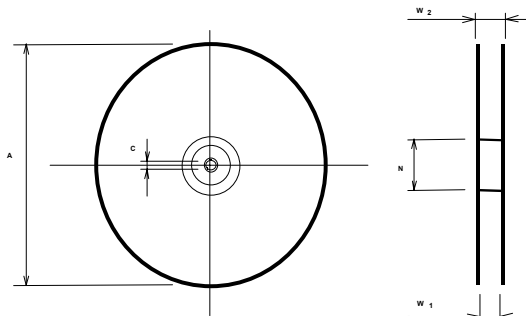
Tape (all dimensions in mm)

- W : 16,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,10
- F : 7,50 ± 0,10
- G(min) : 0,60
- P2 : 2,00 ± 0,1
- P1 : 12,00 ± 0,1
- D1(min) : 1,50 +0,1/-0
- Ao : 7,60 ± 0,10
- Bo : 9,60 ± 0,10
- Ct : 13,5



Reel (all dimensions in mm)

- A : 330
- W1 : 16,4
- W2(max) : 22,4
- N(min) : 50
- C : 13,0



The minimum bending radius is 45 mm.

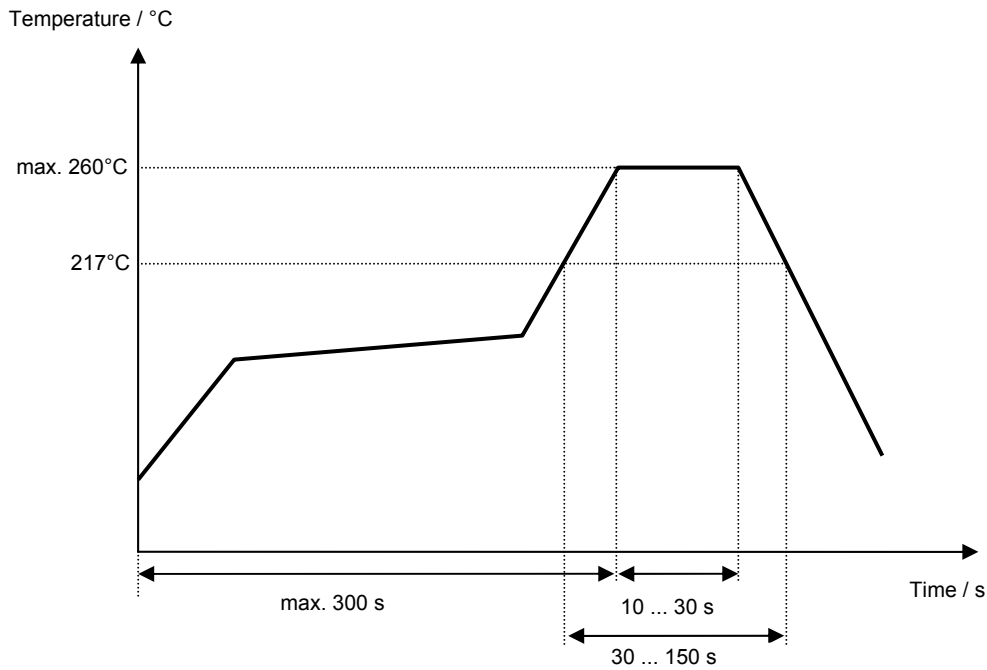
Tele Filter GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
E-Mail: tft@telefilter.com

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

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



VI TELEFILTER**Filter specification****TFS 299****5/5****History**

Version	Reason of Changes	Name	Date
1.6	- impedances modified - date code changed and explained	Steiner	24.03.2000
1.7	- tape and reel dimensions corrected	Steiner	12.07.2000
1.8.	- ESD limits added - Storage temperatur range added - Change remark	Strehl	17.09.2004
1.9	- Add typ. value and filter characteristic	Strehl	13.10.2006

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.