

VI TELEFILTER

Filter specification

TFS 70L14A

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Measurement condition

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	178 Ω	-12,8 pF
Output:	226 Ω	-12,2 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 70L14A 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 temperature coefficient of frequency TC_f is valid for both the reference frequency f_c and the frequency response of the filter in the operating temperature range. The frequency shift of the filter in the operating temperature range is not included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	a_e	11,5	dB	max.	12,5	dB
		-				
Centre frequency	f_c	-			70,0 $\pm$ 0,1	MHz
Passband	PB	-		f_c	$\pm$ 6,5	MHz
Amplitude ripple in PB	p-p	0,4	dB	max.	1	dB
Relative attenuation	a_{rel}					
$f_c \pm 6,5$ MHz	$f_c \pm 6,5$ MHz	0,4	dB	max.	1	dB
$f_c \pm 7$ MHz	$f_c \pm 7$ MHz	2,1	dB	max.	3	dB
$f_c - 20$ MHz	$f_c - 9,65$ MHz	40	dB	min.	35	dB
$f_c + 10,35$ MHz	$f_c + 20$ MHz	42	dB	min.	35	dB
Average group delay in PB		1,1	μ s	max.	1,5	μ s
Group delay ripple in $f_c \pm 6,3$ MHz	p-p	60	ns	max.	90	ns
Phase linearity in $f_c \pm 6,3$ MHz	p-p	6	deg	max.	11	deg
Operating temperature range	OTR	-			-20 °C ... + 70 °C	
Storage temperature range		-			-40 °C ... + 85 °C	
Temperature coefficient of frequency	TC_f **	-94	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.

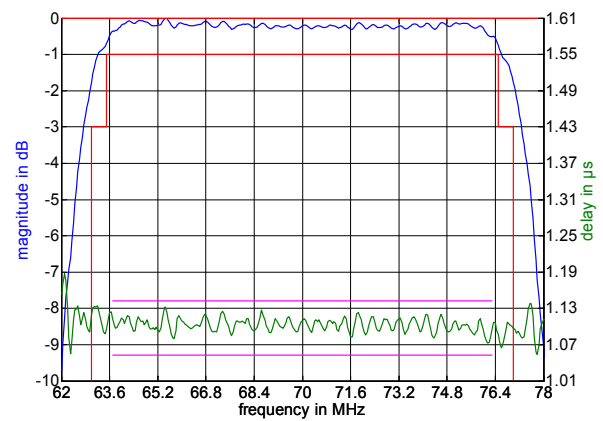
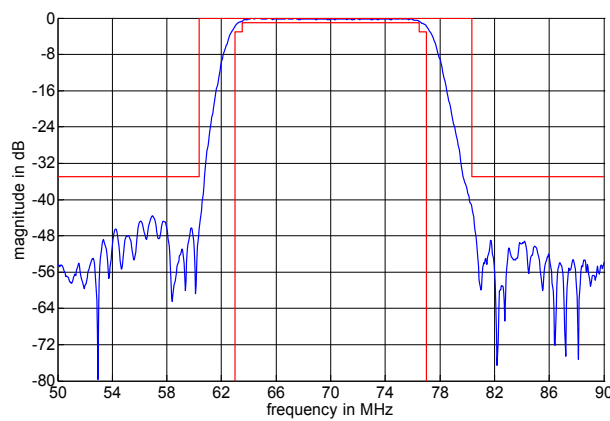
**) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T_0}(\text{MHz})$.

Generated:

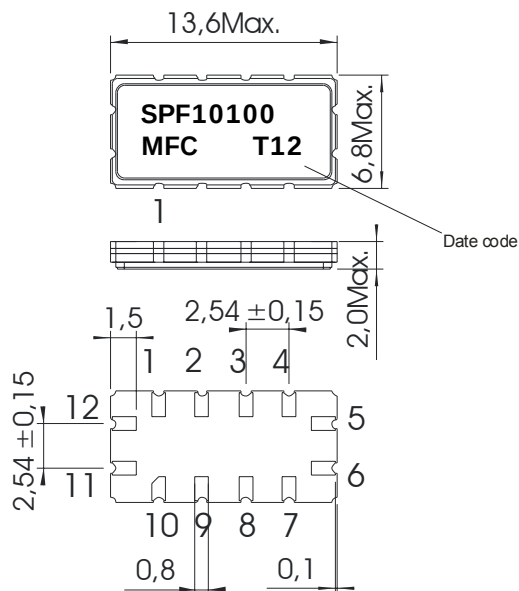
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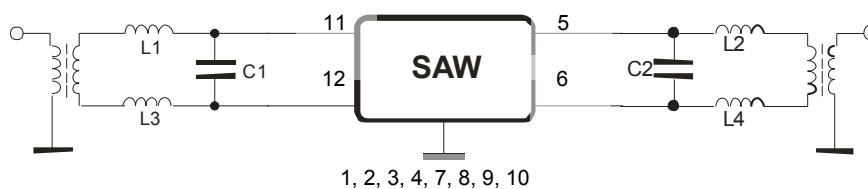
VI TELEFILTER**Filter specification****TFS 70L14A****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



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

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

50 Ω Test circuit

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VI TELEFILTER**Filter specification****TFS 70L14A****3/5****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;

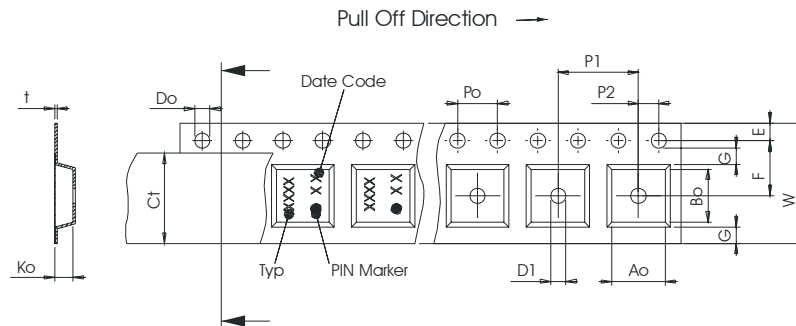
Packing

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;

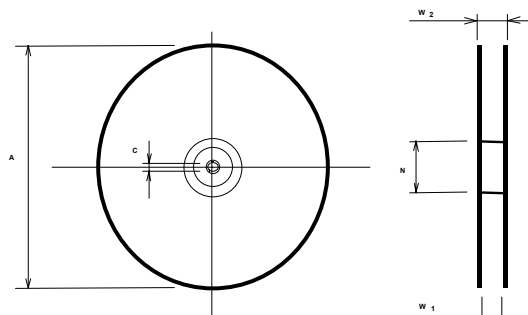
max. pieces of filters peer reel: 1700
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

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



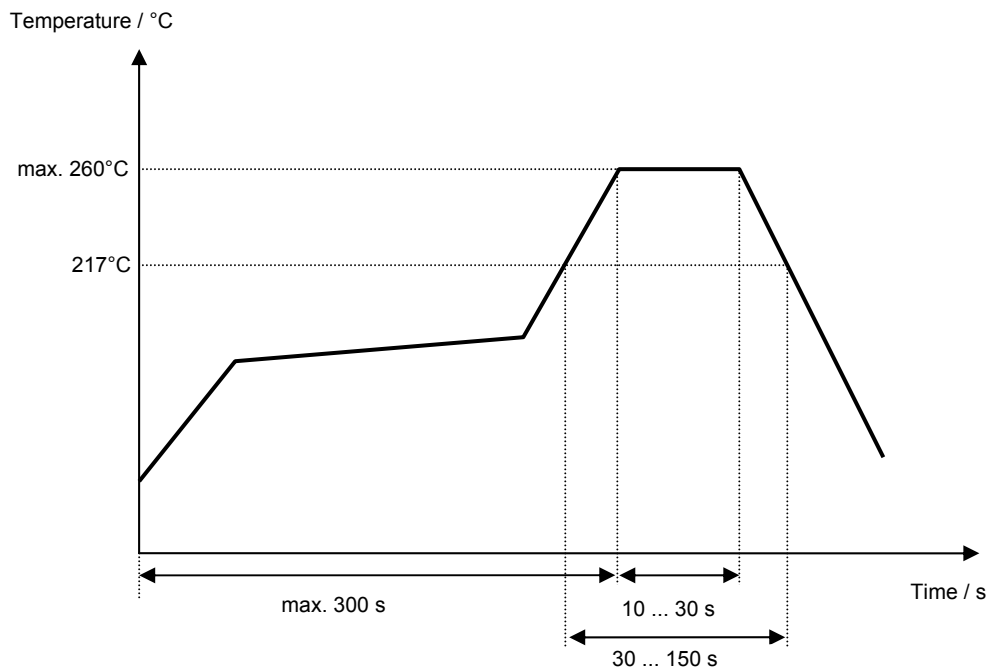
The minimum bending radius is 45 mm.

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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

VI TELEFILTER**Filter specification****TFS 70L14A****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- specification according customer requirements generated	Pfeiffer	04.03.2005
1.1	- terminating impedances, typical values and filter characteristic added	Pfeiffer	17.03.2005
1.2	- limit for insertion loss corrected	Pfeiffer	23.03.2005

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