

VI TELEFILTER**Filter specification****TFS 70AC****1/5****Measurement condition**

Ambient temperature T_A : 25 °C
 Input power level: 0 dBm
 Terminating impedances at f_C *):
 Input: 484 Ω || -22,0pF
 Output: 127 Ω || -33,4pF

Characteristics

Remark: Reference level for the relative attenuation a_{rel} of the **TFS 70AC** 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.

Data		typ. value	tolerance / limit
Insertion loss (reference level)	a_e	7,5 dB	max. 9,5 dB
Centre frequency at ambient temperature	f_C	70 MHz	70,0 $\pm$ 0,1 MHz
Pass band Amplitude ripple within PB	PB	$f_C \pm 3,6$ MHz 0.3 dB	$f_C \pm 2,8$ MHz max. 1 dB
Relative attenuation	a_{rel}		
f_C $f_C \pm 3,1$ MHz		0,5 dB	max. 1 dB
$f_C \pm 3,1$ MHz $f_C \pm 3,5$ MHz		2 dB	max. 3 dB
$f_C \pm 5,975$ MHz $f_C \pm 20$ MHz		50 dB	min. 40 dB
Group delay at f_C		1,21 μ s	
Group delay ripple in PB		68 ns	max. 120 ns
Phase linearity in $f_C \pm 2,45$ MHz		4 deg p-p	max. 8 deg p-p
Operating temperature range		-	- 30 °C ... + 80 °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.

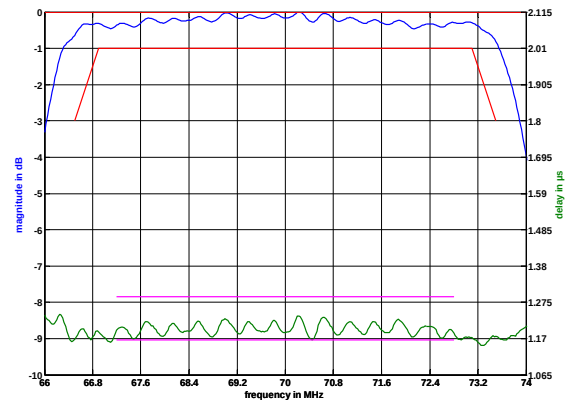
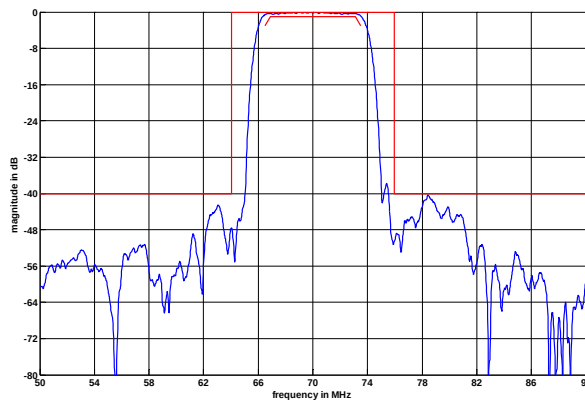
**) $\Delta f_C(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_N(\text{MHz})$

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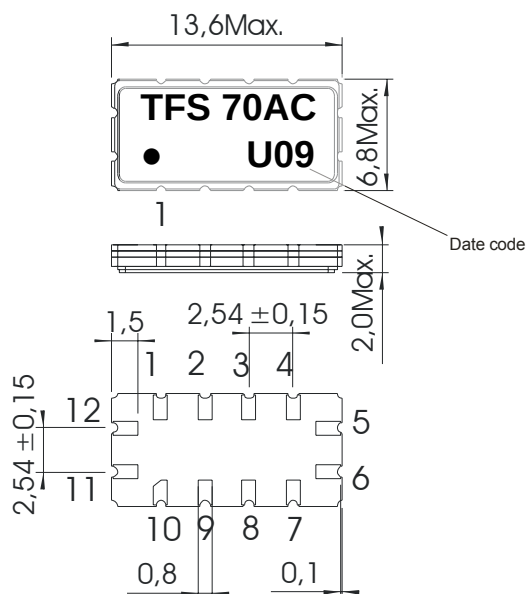
Checked / Approved: _____

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VI TELEFILTER**Filter specification****TFS 70AC****2/5****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

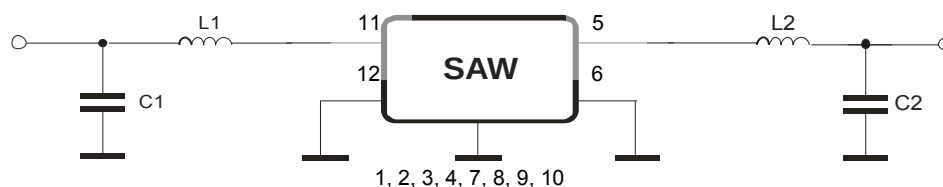
Date code: Year + week

U 2006

V 2007

W 2008

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50 Ohm Test circuit

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VI TELEFILTER**Filter specification****TFS 70AC****3/5****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: 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)

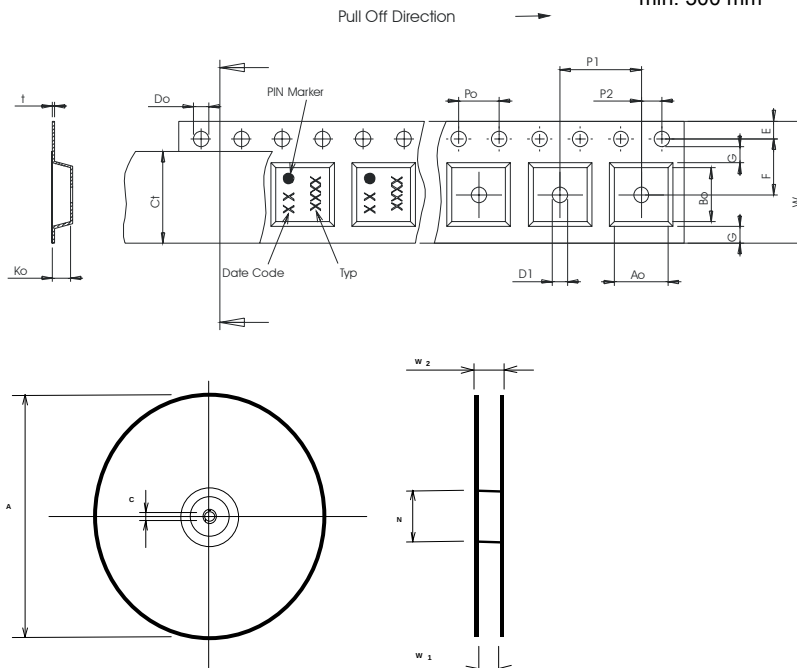
Packing

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 per 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
W2(max)	: 30,4
N(min)	: 60
C	: 13,0

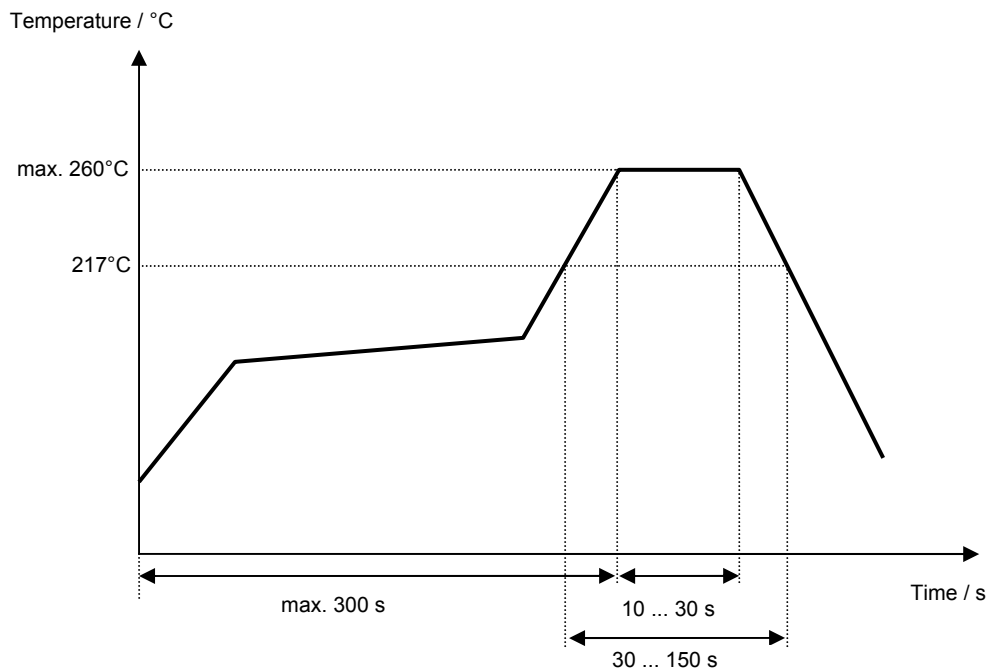
The minimum bending radius is 45 mm.

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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 70AC****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- generate development specification	Pfeiffer	14.05.2003
1.1	- f_N changed to f_c generate development specification - remove nominal frequency f_N	Chilla	08.09.2003
1.2	- changed to filter specification - terminating impedances added - typical values added - group delay at f_N changed to 1,21 μ s typical value - matching network added	Chilla	24.11.2003
1.3	- filter characteristics added - test circuit updated - RoHS compliant added - air reflow temperature conditions updated	Chilla	03.03.2006