

VI TELEFILTER**Filter specification****TFS 411A****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics**Remark:**

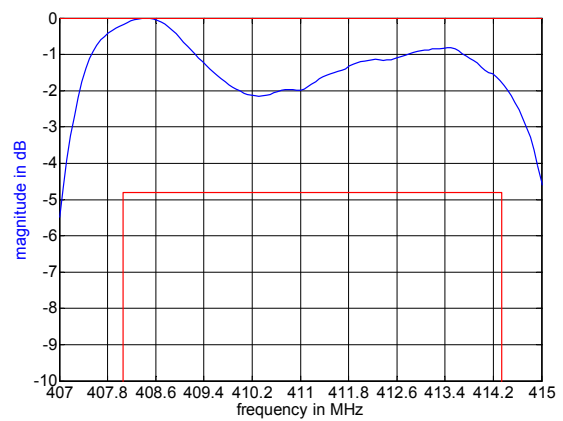
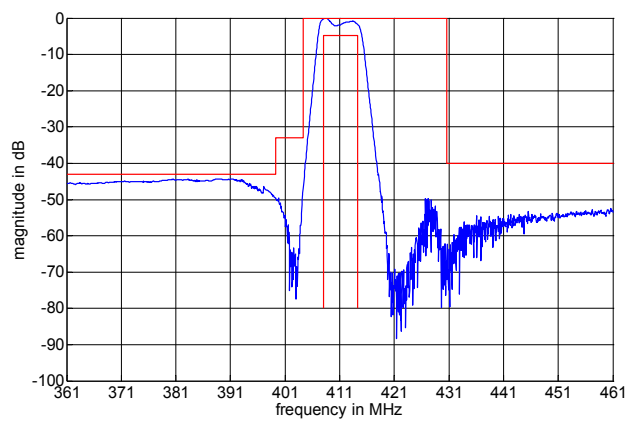
The maximum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 411 MHz without any tolerance or limit. The values of absolute attenuation a_{abs} are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit		
Insertion loss within PB		a_e	2,36 dB	max.	4,8	dB
Nominal frequency		f_N	-		411	MHz
Passband		PB	8,9 MHz	$f_N \pm$	2,5	MHz
Absolute attenuation		a_{abs}				
$f_N - 410$ MHz ...	$f_N - 12,5$ MHz	55	dB	min.	43	dB
$f_N - 12,5$ MHz ...	$f_N - 7,5$ MHz	50	dB	min.	33	dB
$f_N + 20$ MHz ...	$f_N + 735$ MHz	62	dB	min.	40	dB
$f_N + 735$ MHz ...	$f_N + 1235$ MHz	40	dB	min.	30	dB
$f_N + 1235$ MHz ...	$f_N + 1535$ MHz	35	dB	min.	15	dB
Operating temperature range		OTR	-	- 10 °C ... + 85 °C		
Storage temperature range			-	- 30 °C ... + 85 °C		
Temperature coefficient of frequency		TC_f	-32 ppm/K	-		

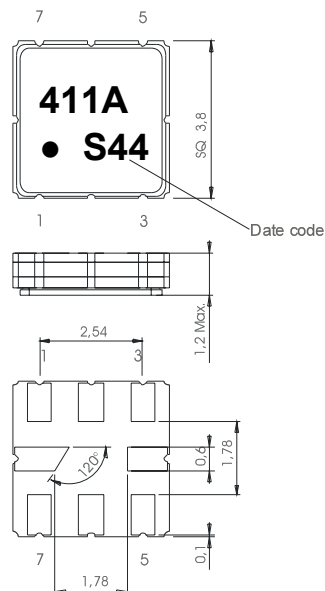
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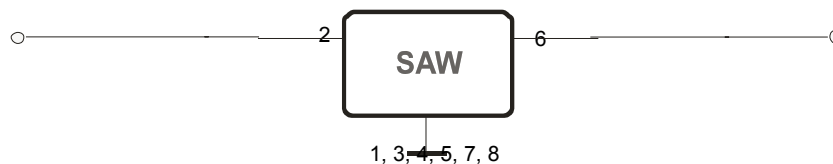
VI TELEFILTER**Filter specification****TFS 411A****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



1	Ground
2	Input
3	Ground
4	Ground
5	Ground
6	Output
7	Ground
8	Ground

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

50 Ω Test circuit

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VI TELEFILTER**Filter specification****TFS 411A****3/5****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;

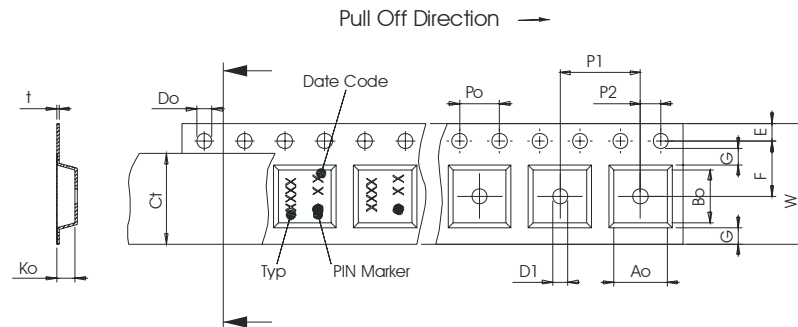
Packing

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

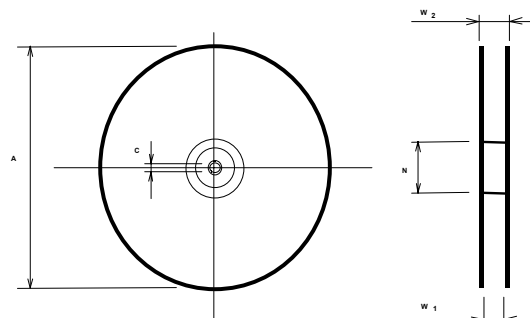
max. pieces of filters peer reel: 3000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

Tape (all dimensions in mm)

W	: 12,00 ± 0,3
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,1
F	: 5,50 ± 0,05
G(min)	: 0,75
P2	: 2,00 ± 0,05
P1	: 8,00 ± 0,1
D1(min)	: 1,50
Ao	: 4,30 ± 0,1
Bo	: 4,30 ± 0,1
Ct	: 9,5 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 12,4 +2/-0
W2(max)	: 18,4
N(min)	: 50
C	: 13,0 +0,5/-0,2



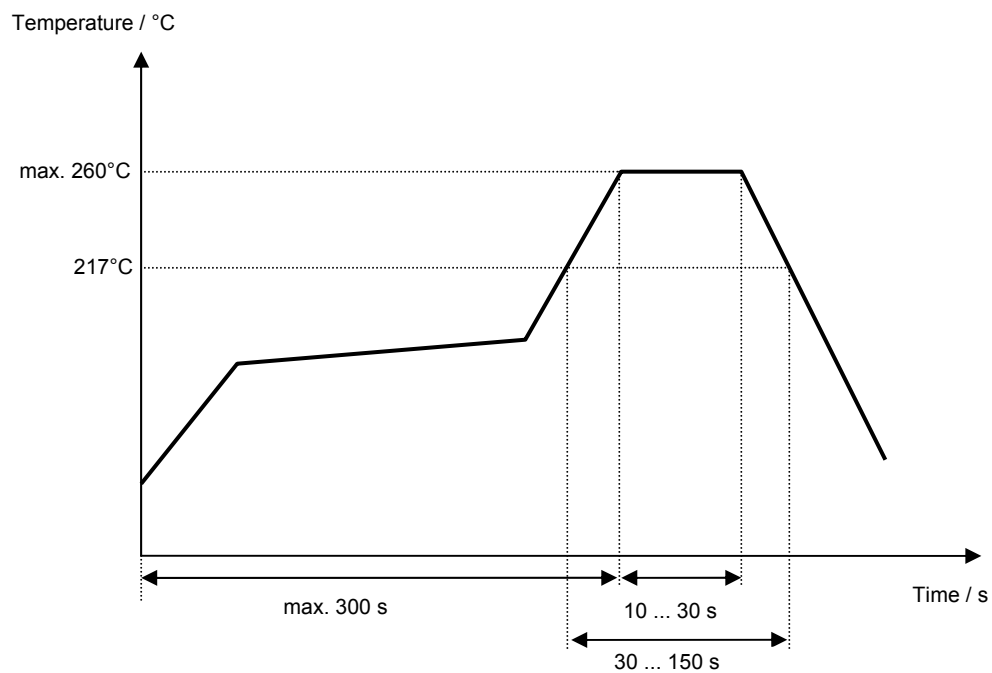
The minimum bending radius is 45 mm.

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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 411A****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of filter specification	T. Martens	21.10.2004