

VI TELEFILTER**Filter specification****TFS 1176****1/5****Measurement condition**

Ambient temperature:	22	°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 1176,5 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	a_e	2,5	dB	3	dB
Nominal frequency	f_N	-		1176,5	MHz
Passband		-		$f_N \pm 12,5$	MHz
Pass band ripple		0,8	dB	max. 1,5	dB
Absolute attenuation	a_{abs}				
1164 MHz ... 1189 MHz		2,5	dB	max. 3	dB
850 MHz ... 950 MHz		38	dB	min. 30	dB
950 MHz ... 1110 MHz		36	dB	min. 25	dB
1240 MHz ... 1525 MHz		46	dB	min. 25	dB
1525 MHz ... 1613 MHz		38	dB	min. 30	dB
1850 MHz ... 2200 MHz		32	dB	min. 25	dB
Return loss within PB	**	14	dB	min. 9	dB
Group delay ripple within PB		6	ns	max. 15	ns
Input power level		-		max. 10	dBm
Permissible DC voltage		-		max. 0	V
Operating temperature range	OTR	-		- 40 °C ... + 85	°C
Storage temperature range		-		- 40 °C ... + 85	°C
Temperature coefficient of frequency	TC_f *	- 73	ppm/K	-	

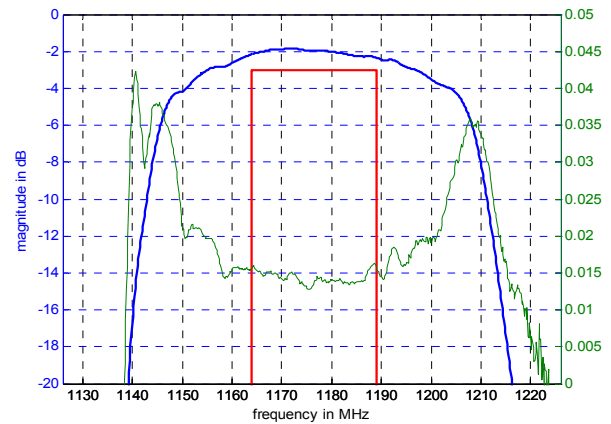
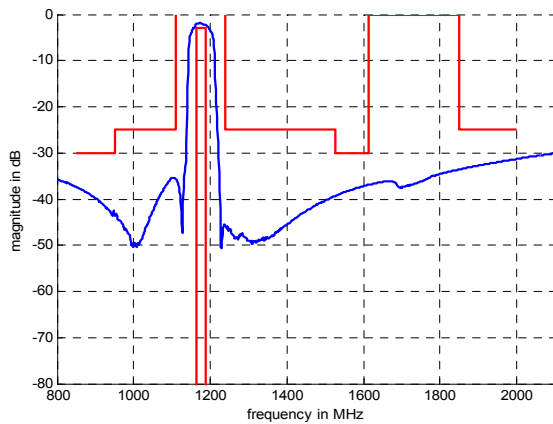
*) $\Delta f_C(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_{CTA}(\text{MHz})$

**) at ambient temperature

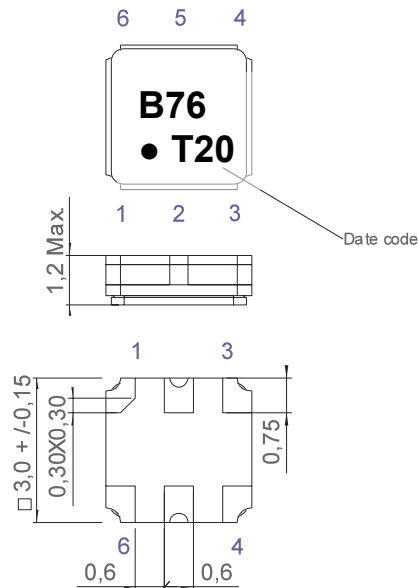
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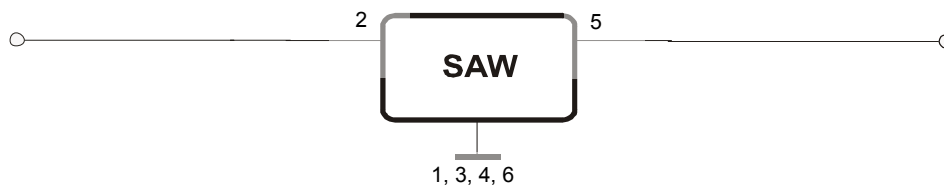
VI TELEFILTER**Filter specification****TFS 1176****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



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

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

Test circuit

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VI TELEFILTER**Filter specification****TFS 1176****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;

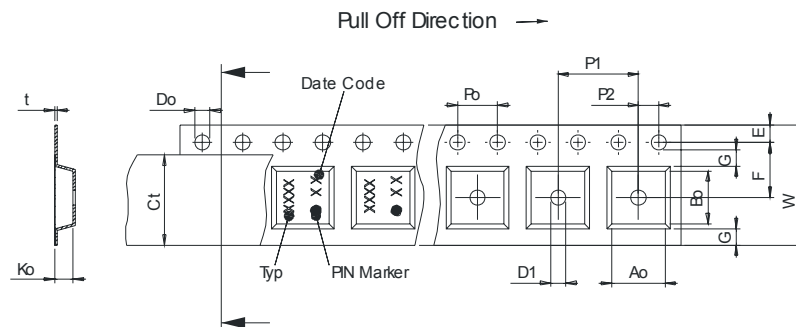
Packing

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;

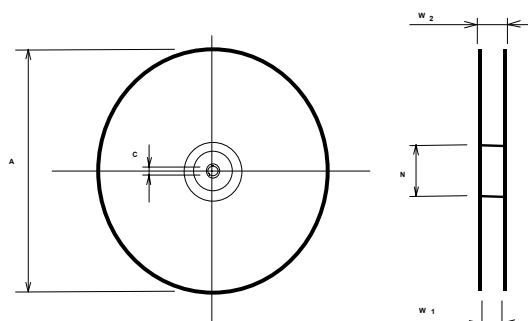
max. pieces of filters peer reel: 9000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

Tape (all dimensions in mm)

W	: 8,00 ± 0,3
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,1
F	: 3,50 ± 0,05
G(min)	: 0,75
P2	: 2,00 ± 0,05
P1	: 4,00 ± 0,1
D1(min)	: 1,50
Ao	: 3,25 ± 0,1
Bo	: 3,25 ± 0,1
Ct	: 5,5 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 8,4 +1,5/-0
W2(max)	: 14,4
N(min)	: 50
C	: 13,0 +0,5/-0,2



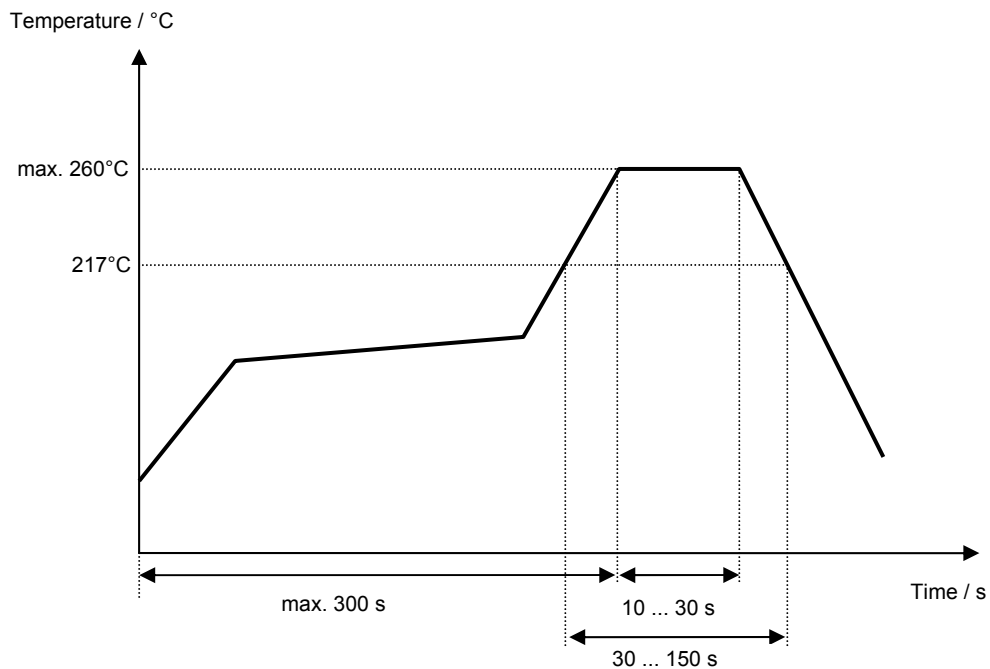
The minimum bending radius is 45 mm.

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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 1176****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Martens	18.11.2004
1.1	- Add typical values and filter characteristics - Generation of filter specification	Noack	11.05.2005

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