

Microchip**Filter specification****TFS 200N****1/5****Measurement condition**

Ambient temperature:	25 °C
Input power level:	0 ∇ 2 dBm
Terminating impedance: *	
Input:	134 Ω -26 pF
Output:	134 Ω -26 pF

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of the filter is the minimum of the pass band attenuation. This value is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 200 MHz without any tolerance. The values of relative attenuation a_{rel} 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.

				typ. value		tolerance / limit	
D a t a							
Insertion loss (reference level)				a _e	11,5	dB	max. 13 dB
Nominal frequency				f _N			200 MHz
Passband				PB	17,4	MHz	f _N ± 7,5 MHz
Pass band ripple					0,4	dB	max. 0,9 dB
Relative attenuation				a _{rel}			
f _N ... f _N ± 7,5 MHz					0.4	dB	max. 0,9 dB
f _N ± 12 MHz ... f _N ± 25 MHz					40	dB	min. 30 dB
f _N ± 25 MHz ... f _N ± 50 MHz					50	dB	min. 45 dB
Group delay ripple in PB				GDR	55	ns	max. 120 ns
Triple transit signal attenuation					39	dB	min. 35 dB
Input power level							max. 10 dBm
Operating temperature range				OTR			-30 °C ... + 70°C
Operable temperature range							-40 °C ... + 85°C
Storage temperature							- 45 °C ... + 85°C
Temperature coefficient of frequency				TC _f **	-19	ppm/K	

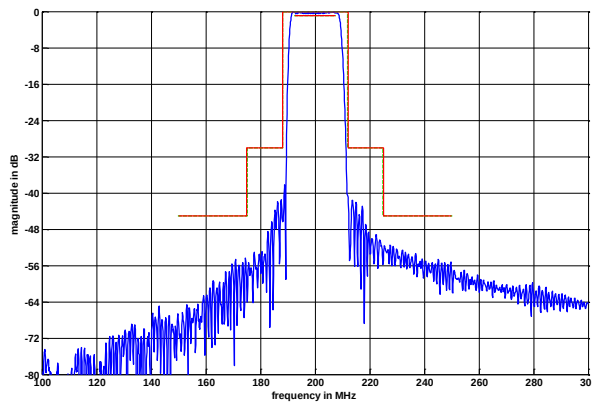
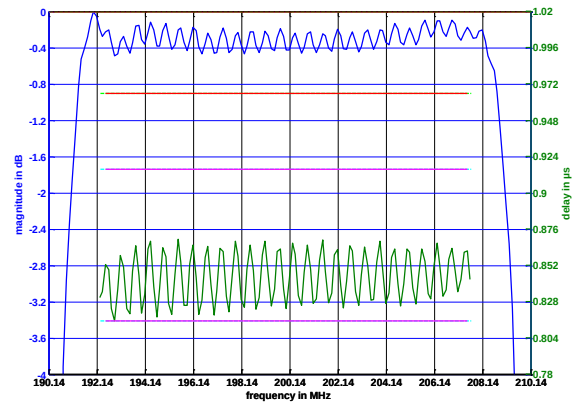
*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions, do not hesitate to ask for an application note or contact our design team.

Generated:**Checked / Approved:**

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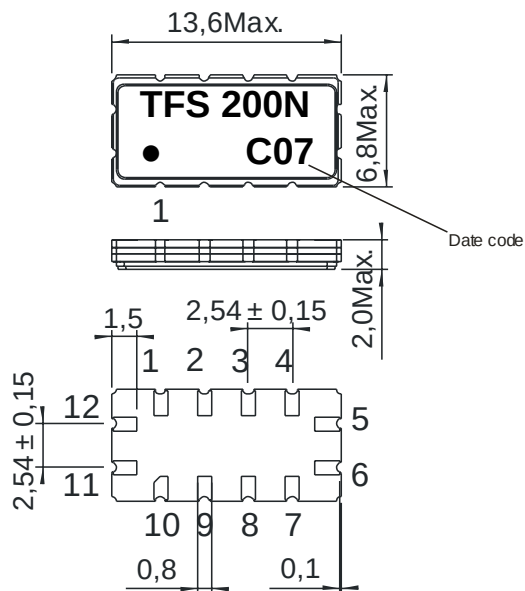
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Filter characteristic



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

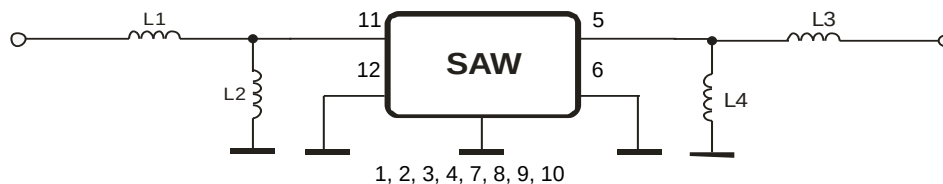
C 2012

D 2013

E 2014

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50 Ohm Test circuit



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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 plane, 3 planes;
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)

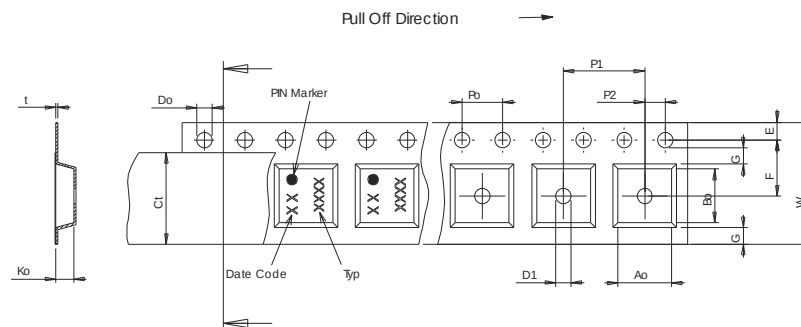
Packing

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;

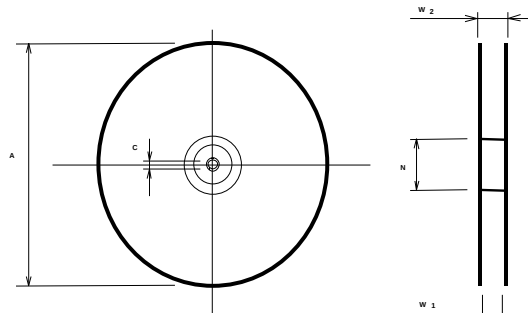
max. pieces of filters per reel:	<MAXPIECESPERREEL>
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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 ± 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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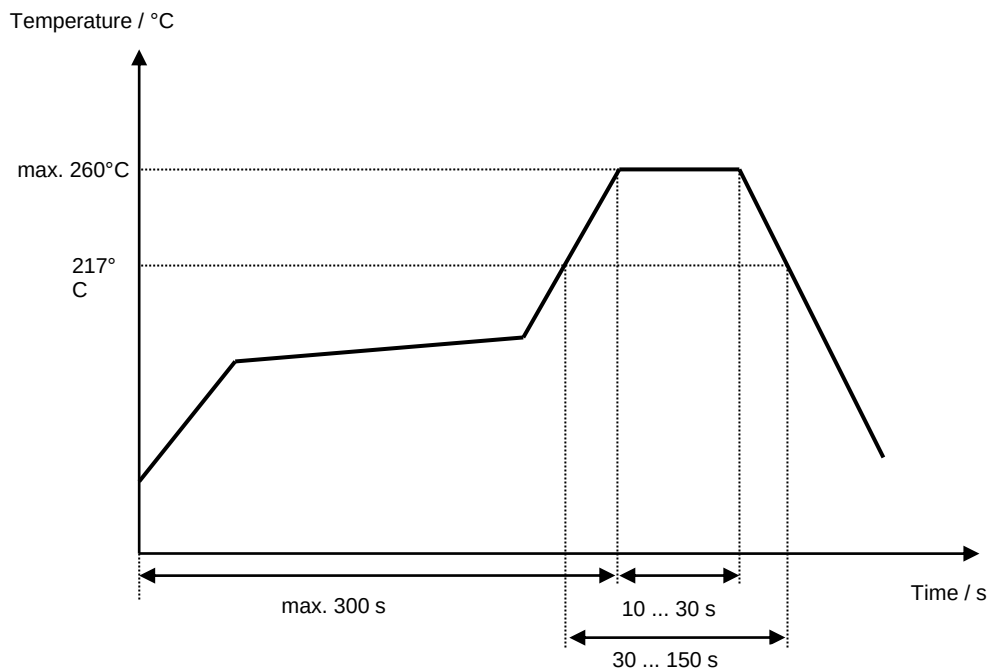
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Air reflow temperature conditions

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

Microchip**Filter specification****TFS 200N****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of specification according to customer requirements	E. Chilla	30.08.2011
1.1	operable temperature range added	E. Chilla	31.08.2011
1.2	Created filter specification Added terminating impedances Added typical values Added temperature coefficient of frequency Added filter characteristic Changed test circuit	E. Chilla	14.02.2012

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