

Microchip**Filter specification****TFS 706****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 within passband 1 is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 706 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		
Nominal frequency		f_N		706		MHz
Passband 1		PB1		$f_N \pm 12.0$		MHz
Insertion loss within PB1		a_e	2.1 dB	max.	3.0	dB
Passband 2		PB2		$f_N \pm 15.0$		MHz
Insertion loss within PB2			2.4 dB	max.	4.0	dB
Passband variation within PB2			0.6 dB	max.	2.0	dB
Absolute attenuation		a_{abs}				
$f_N \pm 80$	MHz ... $f_N \pm 149$	MHz	45 dB	min.	33.5	dB
$f_N + 149$	MHz ... $f_N + 300$	MHz	48 dB	min.	45.0	dB
1	MHz ... 200	MHz	58 dB	min.	50.0	dB
200	MHz ... $f_N - 149$	MHz	65 dB	min.	55.0	dB
Group delay ripple within PB1		p-p	10 ns	max.	0.2	μs
IIP3		*	-	min.	36	dBm
Input power level			-	max.	10	dBm
Operating temperature range		OTR	-	- 10 °C ... + 75 °C		
Storage temperature range			-	- 40 °C ... + 85 °C		
Temperature coefficient of frequency		TC_f **	-76 ppm/K			

*) $f_{in1} = f_C - 14$ MHz; $f_{in2} = f_C - 14.4$ MHz; $P_{in} = 0$ dBm; $f_{measurement1} = f_C - 13.6$ MHz; $f_{measurement2} = f_C - 14.8$ MHz. 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 .

**) $\Delta f(\text{Hz}) = TC_f (\text{ppm/K}) \times (T - T_0) \times f_{T0} (\text{MHz})$

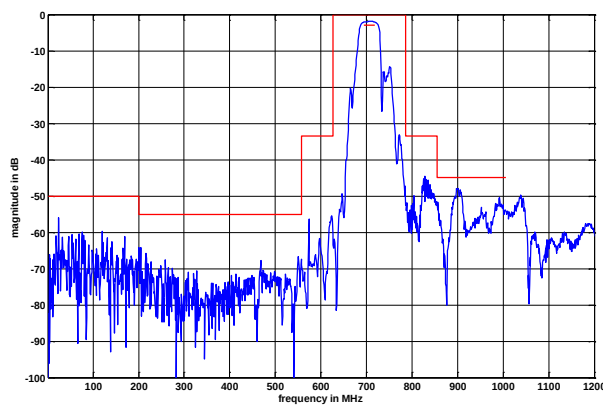
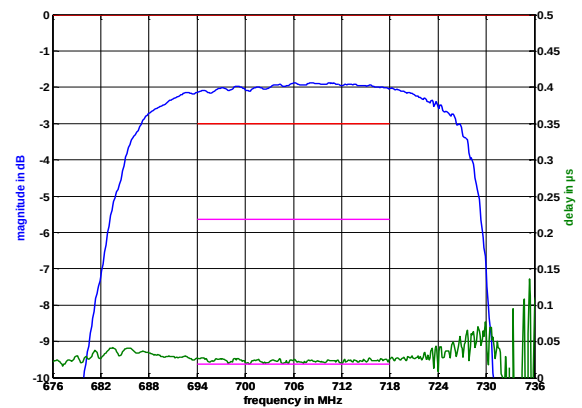
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Checked / Approved:

Microchip Frequency Technology GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30

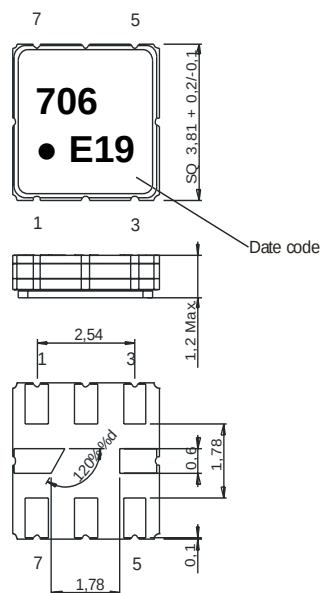
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Filter characteristic



Construction and pin connection

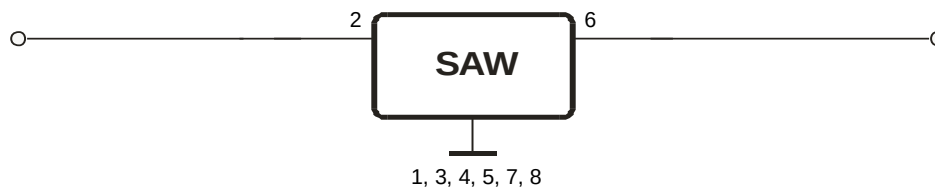
(All dimensions in mm)



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

Date code:	Year + week
E	2014
F	2015
G	2016
...	

50 Ω 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 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 / 15 min. each / 100 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions, see page 4: "Air reflow temperature conditions"

This filter is RoHS compliant (2011/65/EU)

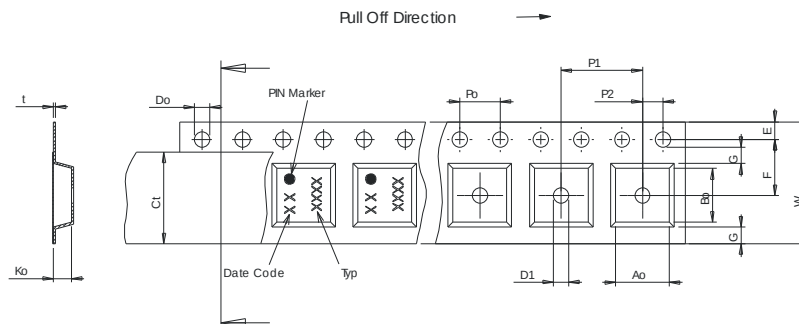
Packing

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;

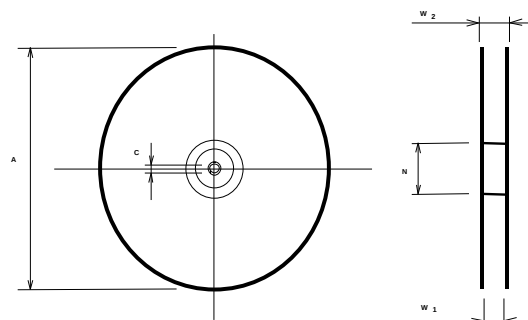
max. pieces of filters per reel: 3000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

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	: 9,2 ± 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



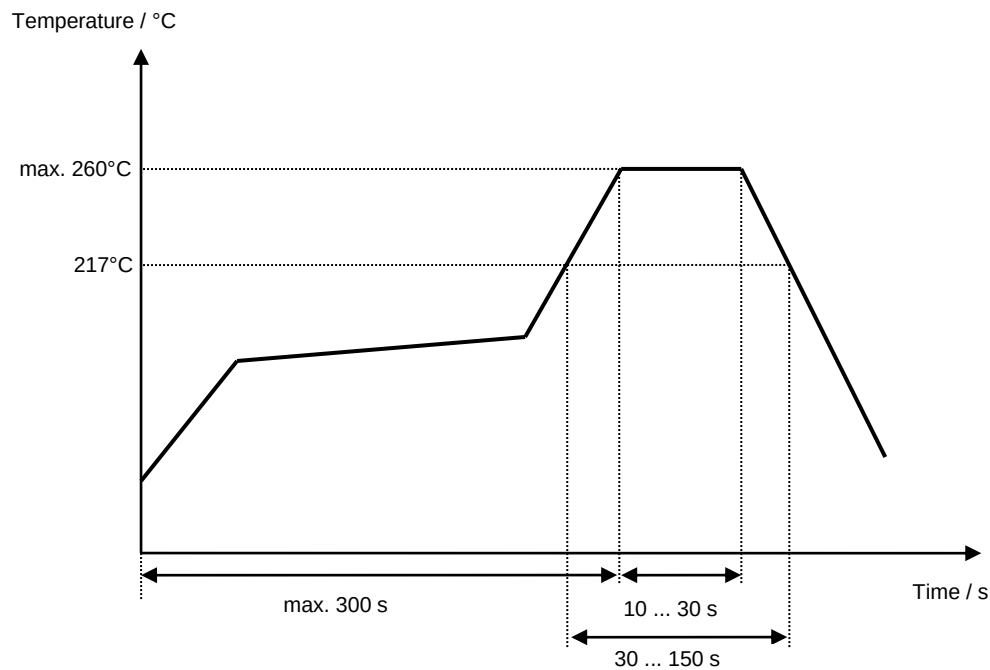
The minimum bending radius is 45 mm.

Air reflow temperature conditions

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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 706****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Springfeldt	14.04.2004
1.1	- Change of absolute attenuation $f_N + 149 \dots 300$ MHz - Change insertion loss	Strehl	20.01.2005
1.2	- Add typical values and filter characteristic - Generation of filter specification	Strehl	22.06.2005
1.3	- Add IIP3 and change stability characteristics	Strehl	19.07.2006
2.0	- Additional passband with larger bandwidth specified - Orientation of tape and reel updated - Typos corrected	Molke	07.05.2014