

Microchip**Filter specification****TFS1397****1/5****Measurement condition**

Ambient temperature T_A :	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 1397.5 MHz without any tolerance or limit. The values of absolute attenuation a_{abs} are guaranteed over the whole operating temperature range. The frequency shift of the filter within 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	3.2 dB	max. 4.0 dB
Nominal frequency	f_N	-	1397.5 MHz
Passband		-	$f_N \pm 2.5$ MHz
Absolute attenuation	a_{abs}		
0.3 MHz ... 1353 MHz		48 dB	min. 45 dB
1353 MHz ... 1370 MHz		38 dB	min. 36 dB
1370 MHz ... 1382 MHz		11 dB	min. 7 dB
1427 MHz ... 1432 MHz		57 dB	min. 43 dB
1432 MHz ... 1800 MHz		52 dB	min. 40 dB
1800 MHz ... 3000 MHz		34 dB	min. 20 dB
Return loss within PB		12 dB	min. 10 dB
Input power level		-	max. 14 dBm
Operating temperature range	OTR	-	0 °C ... +85 °C
Operable temperature range		-	-40 °C ... +85 °C
Storage temperature range		-	-55 °C ... +125 °C
Temperature coefficient of frequency	TC_f *)	-36 ppm/K	-

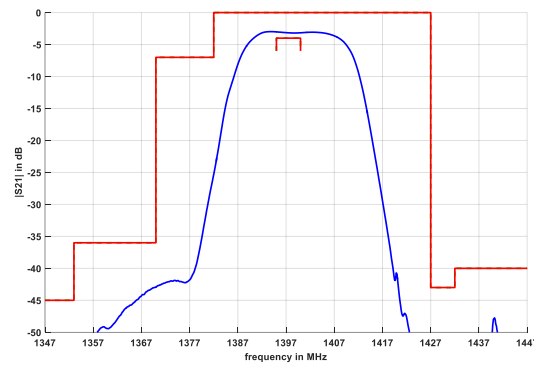
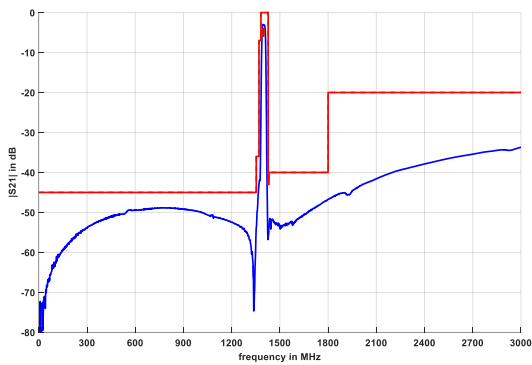
*) $\Delta f = TC_f(T - T_A)f_N$

Generated:**Checked / Approved:**

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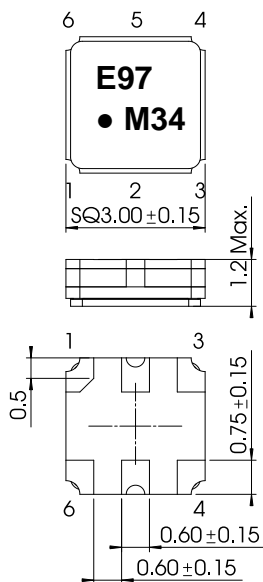
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Filter characteristic



Construction and pin connection

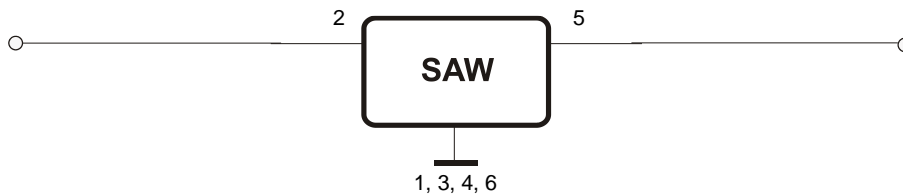
(All dimensions in mm)



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

Date code: Year + week
 M 2020
 N 2021
 P 2022
 ...

50 Ohm Test circuit



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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 60068 T2 - 27
2. Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 60068 T2 - 6
3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
DIN IEC 60068 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

This filter is RoHS compliant (2011/65/EU+2015/863/EU)

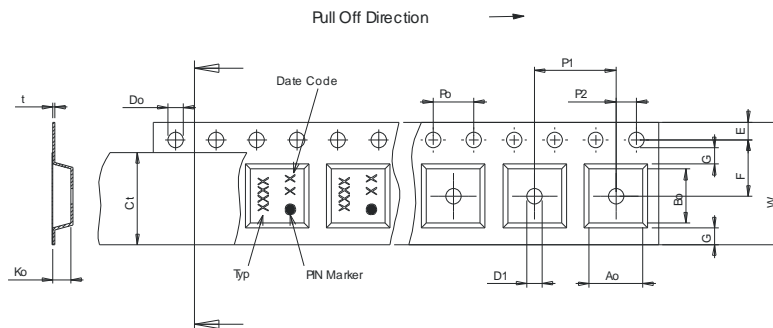
Packing

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;

reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

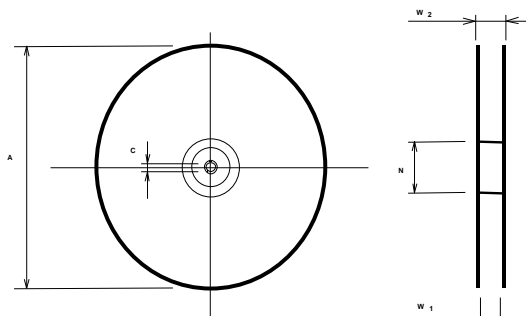
Tape (all dimensions in mm)

- 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.

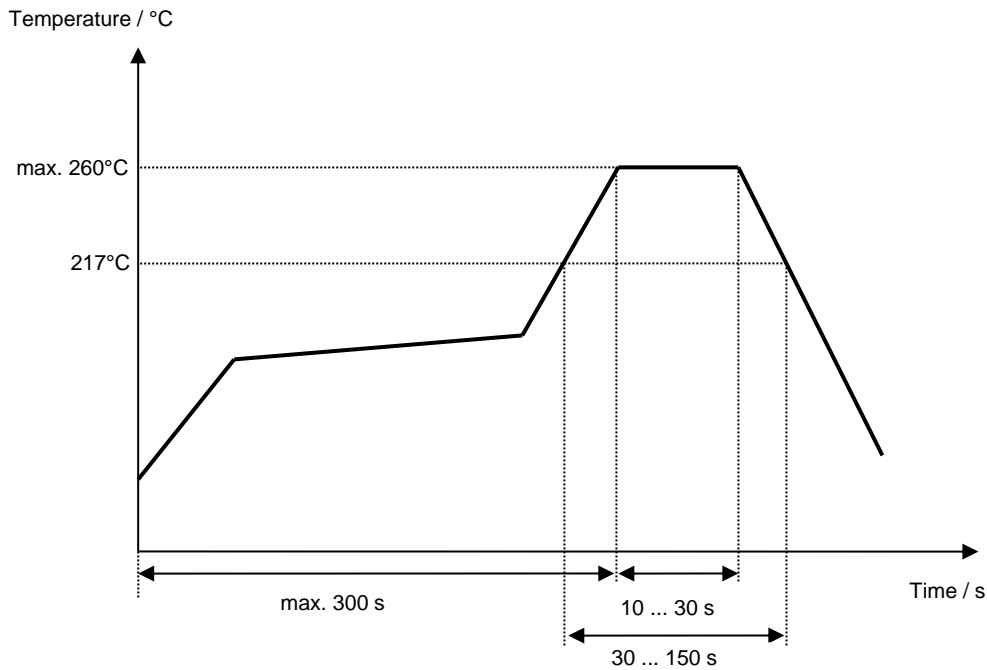
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Air reflow temperature conditions

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



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Microchip**Filter specification****TFS1397****5/5**

History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Strehl	26.08.2005
1.1	- Change absolute attenuation and stability characteristics	Strehl	15.01.2008
1.2	- Generation of filter specification	S.Springfeldt	18.04.2008
2.0	- Change of temperature coefficient after tc-measurement	S.Springfeldt	29.04.2009
3.0	- Change of 7dB transition range (1385MHz → 1382MHz)	S.Springfeldt	28.01.2011
3.1	- Added operable temperature and updated storage temperature	P. Jaster	19.08.2020

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