

Microchip**Filter specification****TFS 342****1/5****Measurement condition**

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	23.5 Ω	-17.8 pF
Output:	34.0 Ω	-18.9 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 342 is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 2.0 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed on 342.5 MHz without tolerance. The given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached at the frequencies given below also if the centre frequency f_C is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_C .

D a t a		typ. value	tolerance / limit
Insertion loss (reference level)	a_e	9.5 dB	max. 11 dB
Nominal frequency	f_N		342.5 MHz
Passband	PB		$f_N \pm 12.5$ MHz
Pass band ripple		1.2 dB	max. 2 dB
Relative attenuation	a_{rel}		
$f_N - 341.5$ MHz ... $f_N - 20.0$ MHz		40 dB	min. 35 dB
$f_N + 20.0$ MHz ... $f_N + 40.0$ MHz		35 dB	min. 30 dB
$f_N + 40.0$ MHz ... $f_N + 207.5$ MHz		40 dB	min. 35 dB
$f_N + 207.5$ MHz ... $f_N + 657.0$ MHz		50 dB	min. 27 dB
Group delay ripple within PB		80 ns	max. 150 ns
Input compression	1 dB		min. 12 dBm
Input Intermodulation IP3**			min. 35 dB
Input power level			max. 10 dBm
Operating temperature range	OTR		- 25 °C ... + 85°C
Storage temperature range			- 45 °C ... + 85°C
Temperature coefficient of frequency	TC_f^{***}	-72 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.

**) frequencies for IP3 measurement: $f_{in,1} = 330$ MHz and 330.6 MHz, $f_{in,2} = 342.2$ MHz and 342.8 MHz, $f_{in,3} = 354.4$ MHz and 355 MHz.

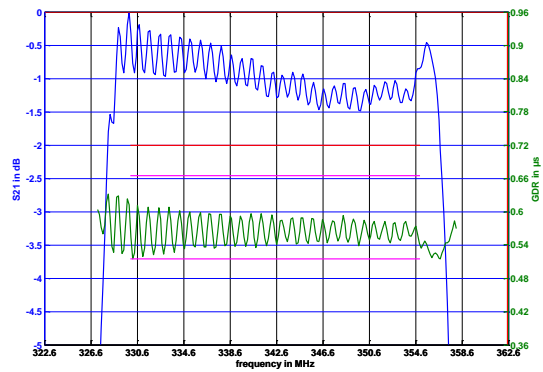
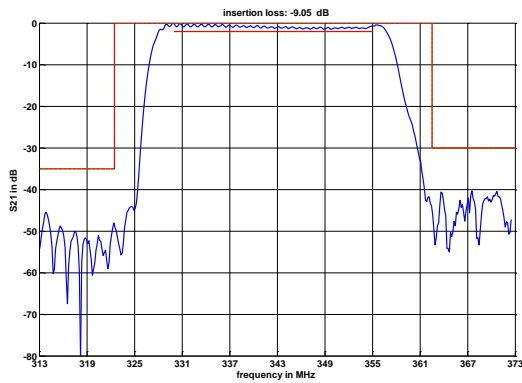
***) $\Delta f = TC_f(T - T_A)f_N$

Generated:**Checked / Approved:**

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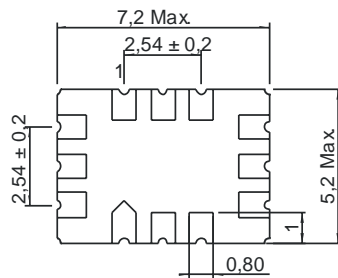
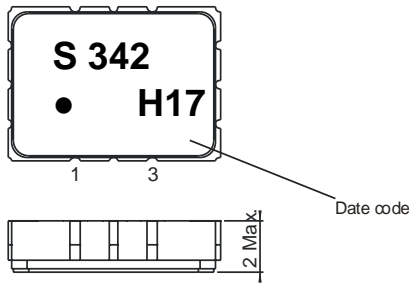
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Filter characteristic



Construction and pin connection

(All dimensions in mm)

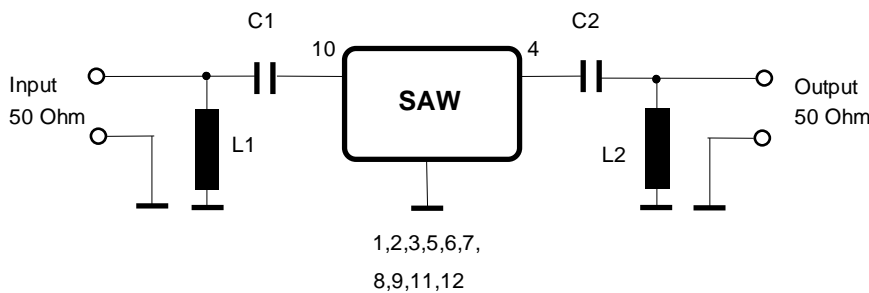


1	Ground
2	Ground
3	Output RF Return
4	Output
5	Package Ground
6	Ground
7	Ground
8	Ground
9	Input RF Return
10	Input
11	Package Ground
12	Ground

Date code: Year + week

H	2016
J	2017
K	2018
...	

50 Ω 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 68 T2 - 27
2. Vibration: 10 Hz to 2000 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 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)

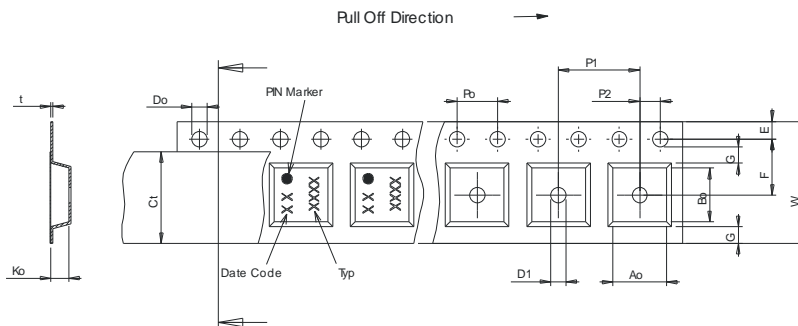
Packing

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

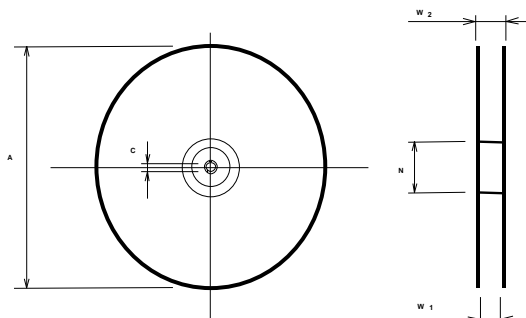
Tape (all dimensions in mm)

- W : 16.00 +0.3/-0.1
- Po : 4.00 ± 0.1
- Do : 1.50 +0.1/-0
- E : 1.75 ± 0.1
- F : 7.50 ± 0.1
- G(min) : 0.75
- P2 : 2.00 ± 0.1
- P1 : 8.00 ± 0.1
- D1(min) : 1.50
- Ao : 5.40 ± 0.1
- Bo : 7.60 ± 0.1
- Ct : 13.3 ± 0.1



Reel (all dimensions in mm)

- A : 330 or 180
- W1 : 16.4 +2/-0
- W2(max) : 22.4
- N(min) : 50
- C : 13.0 +0.5/-0.2



The minimum bending radius is 45 mm.

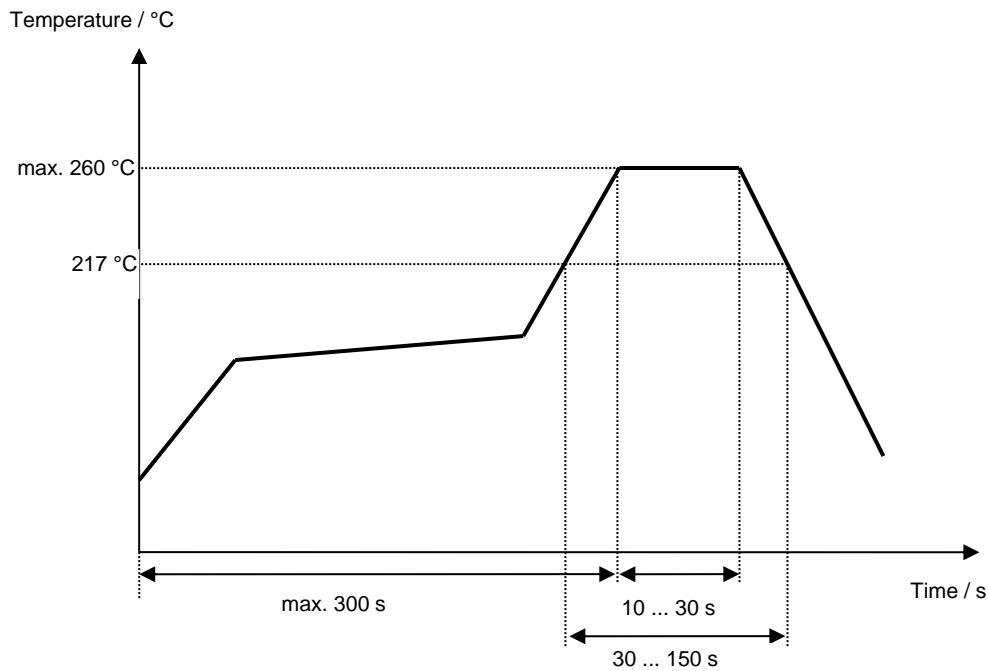
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Air reflow temperature conditions

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



Microchip**Filter specification****TFS 342****5/5****History**

Version	Reason of Changes	Name	Date
2.0	changes in: - loss : 10→11dB - Group delay ripple : 100ns→ 150ns - passband ripple : 1,6dB→2,0dB - stopband attenuation : f _N +20MHz...f _N +40MHz : 35dB→ 30dB	Steiner	08.03.2001
2.1	- updated filter specification - added filter characteristics - updated construction and pin connection - updated stability characteristics, reliability - updated packing - updated air reflow temperature conditions	Chilla	25.04.2016
2.2	- added input power level	Chilla	27.04.2016

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