

Microchip**Filter specification****TFS 243A****1/5****Measurement condition**

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	400 Ω	-3.1 pF
Output:	400 Ω	-3.1 pF
External Coil:	116	nH

Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the TFS243A 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 3 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 243 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 even 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	3.2	dB	max.	5	dB
Nominal frequency	f_N	-		243		MHz
Centre frequency	f_c	243.02	MHz	-		
Relative attenuation	a_{rel}					
f_N ... $f_N \pm 25$ kHz		-		max.	3	dB
$f_N \pm 425$ kHz ... $f_N \pm 625$ kHz		30	dB	min.	25	dB
$f_N \pm 625$ kHz ... $f_N \pm 825$ kHz		40	dB	min.	36	dB
$f_N \pm 825$ kHz ... $f_N \pm 1.6$ MHz		50	dB	min.	36	dB
$f_N - 1.6$ MHz ... $f_N - 25$ MHz		57	dB	min.	50	dB
$f_N + 1.6$ MHz ... $f_N + 15$ MHz		58	dB	min.	45	dB
$f_N + 15$ MHz ... $f_N + 25$ MHz		55	dB	min.	50	dB
Temperature coefficient of frequency	TC_f **)	- 0.036	ppm/K ²	-		
Frequency inversion temperature	T_0	+ 25	°C	-		
Operating temperature range		-		- 40 °C + 85 °C		
Storage temperature range		-		- 55 °C + 125 °C		

*) 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.

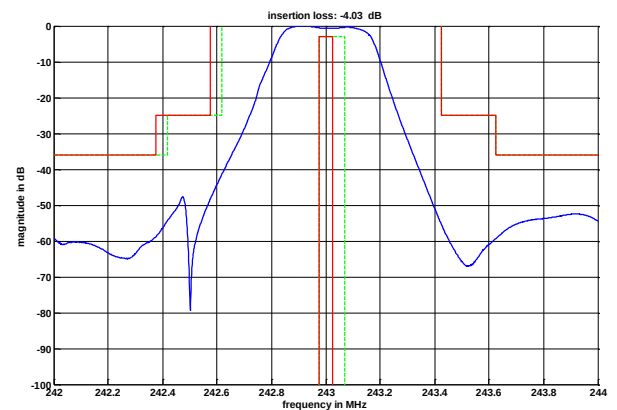
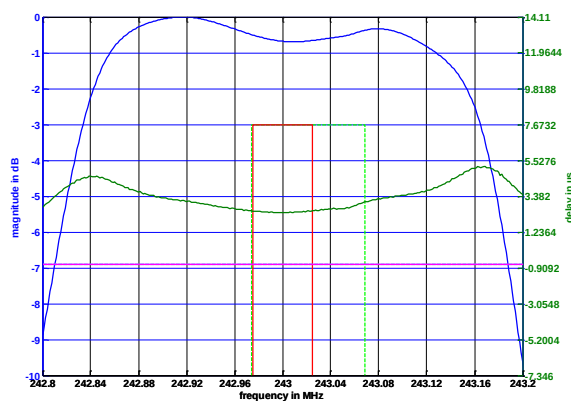
**) $\Delta f = TC_f (T - T_0)^2 f_N$

Generated:**Checked / Approved:**

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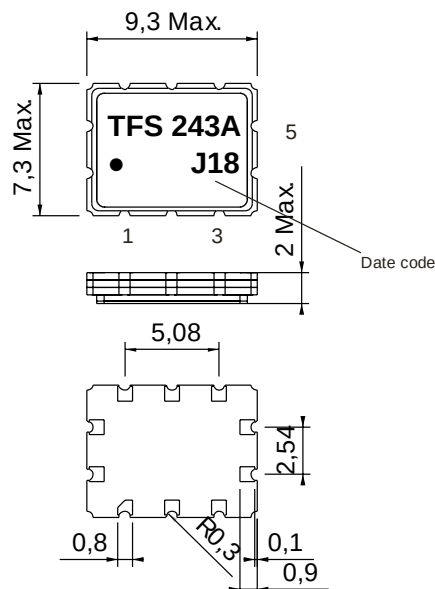
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Filter characteristic



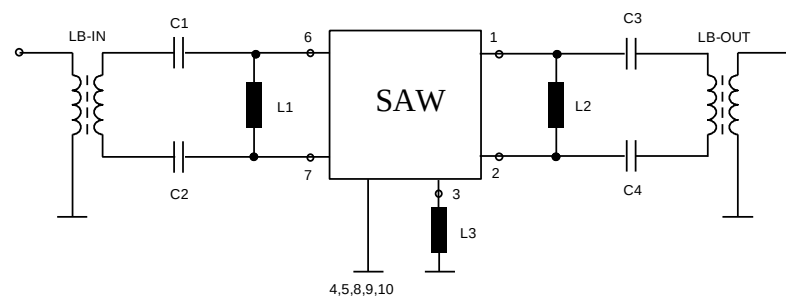
Construction and pin connection

(All dimensions in mm)



1	Output
2	Output
3	External Coil
4	Ground
5	Ground
6	Input
7	Input
8	Ground
9	Ground
10	Ground

Date code: Year + week
 J 2017
 K 2018
 L 2019
 ...

Construction, pin connection and 50 Ω - matching network50 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 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: three times max.;
for temperature conditions, see page 4: "Air reflow temperature conditions"
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

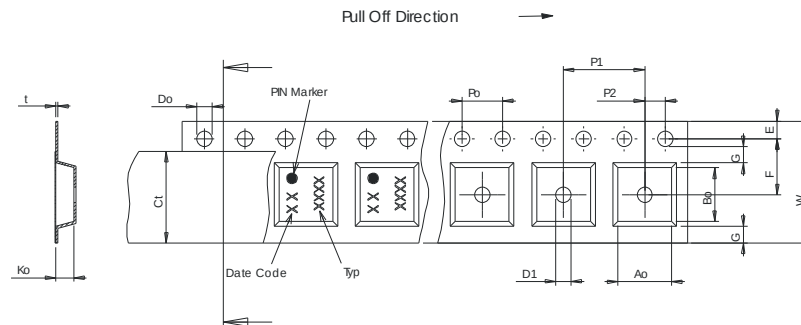
Packing

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;

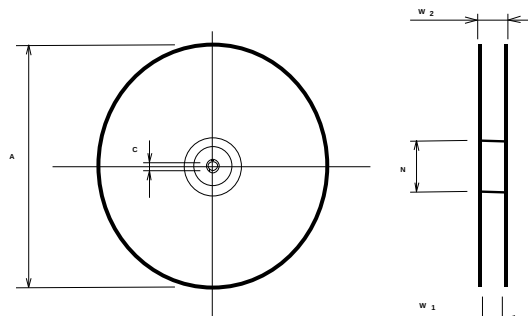
max. pieces of filters per reel: 2000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

Tape (all dimensions in mm)

W	: 16,00 ± 0,3
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,10
F	: 7,50 ± 0,10
G(min)	: 0,60
P2	: 2,00 ± 0,1
P1	: 12,00 ± 0,1
D1(min)	: 1,50
Ao	: 7,60 ± 0,10
Bo	: 9,60 ± 0,10
Ct	: 13,3

**Reel (all dimensions in mm)**

A	: 330
W1	: 16,4
W2(max)	: 22,4
N(min)	: 50
C	: 13,0



The minimum bending radius is 45 mm.

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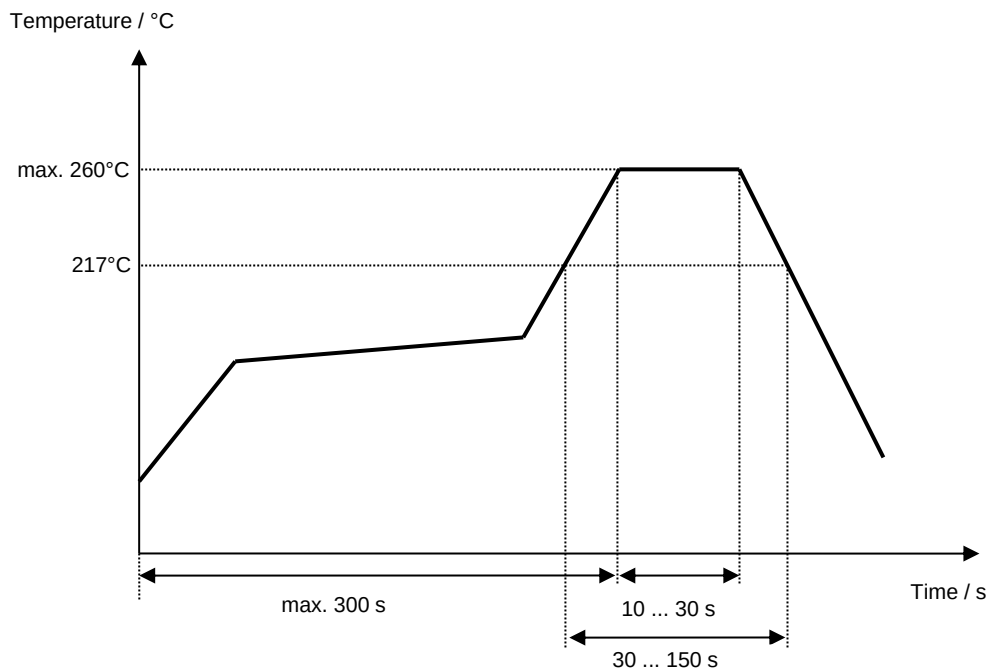
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Air reflow temperature conditions

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 243A****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of specification according to customer requirement specification.	Dr. Wall	05/97
2.0	- Add History. - Change measurement condition (input power level from -10 dBm to 0 dBm, termination impedance for input and output changed from 390 Ohm -3,4 pF to 400 Ohm -3,1 pF to reflect improved accuracy of measurement of this parameter). - Add commentary for termination impedances. - Change remark for characteristic to reflect that the frequency shift over temperature is included in the production tolerance scheme. - Marking changed. - Date code changed from month to week. - Stability characteristic corrected. - Packing information corrected.	Dr. Wall	09.09.2002
2.1	- Reworked specification according to new specification layout	Martens	29.4.2011
2.2	- Changed storage temperature range - Changed comma's with points - Update datecode	Bonnen	28.4.2017

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