

Microchip**Filter specification****TFS 385B****1/5****Measurement condition**

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	56.5 Ω	15.2 pF
Output:	123.3 Ω	7.8 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 385B 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 385 MHz without any tolerance. The values of relative attenuation a_{rel} 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 at T_A (reference level)	a_e	21.2	dB	max.	21.2 ± 0.5 dB
Insertion loss variation -40°C to T_A		1.1	dB	max.	1.5 dB
Insertion loss variation T_A to +70°C		0.9	dB	max.	1.5 dB
Nominal frequency	f_N			385	MHz
Passband 1	PB1	-	MHz	$f_N \pm 1.7$	MHz
Passband 2	PB2	-	MHz	$f_N \pm 1.8$	MHz
Passband 3 (80% of PB1)	PB3	-	MHz	$f_N \pm 1.36$	MHz
Pass band ripple within any 500kHz of PB1 ***		0.37	dB	max.	0.9 dB
Pass band ripple within any 500kHz of PB3 ***		0.34	dB	max.	0.7 dB
Bandwidth	BW				
3dB		3.96	MHz	min.	3.85 MHz
10dB		4.42	MHz	max.	4.5 MHz
Relative attenuation	a_{rel}				
f_N	MHz ... $f_N \pm 1.8$	MHz	1.1 dB	max.	3 dB
$f_N \pm 2.2$	MHz ... $f_N \pm 2.3$	MHz	7.5 dB	min.	3 dB
$f_N \pm 2.3$	MHz ... $f_N \pm 4$	MHz	12 dB	min.	10 dB
$f_N - 285$	MHz ... $f_N - 4$	MHz	43 dB	min.	35 dB
$f_N + 4$	MHz ... $f_N + 615$	MHz	44 dB	min.	35 dB
Return loss within PB2		19	dB	min.	14 dB
Input power level				max.	15 dBm
Input power level (short overdrive, ≤ 1 s)				max.	30 dBm
Operating temperature range	OTR			- 40 °C ... + 70 °C	
Storage temperature range				- 55 °C ... + 125 °C	
Frequency inversion temperature	T_0	25	°C		
Temperature coefficient of frequency	TC_f **	-0.036	ppm/K ²		

*) 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.

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

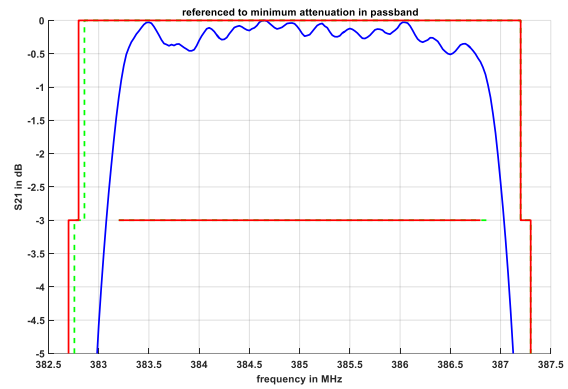
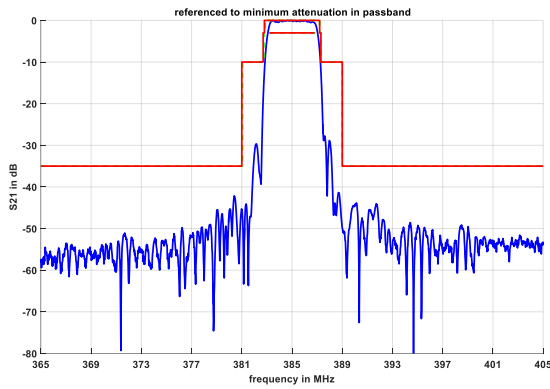
***) With time domain gating (0...4µs)

Generated:**Checked / Approved:**

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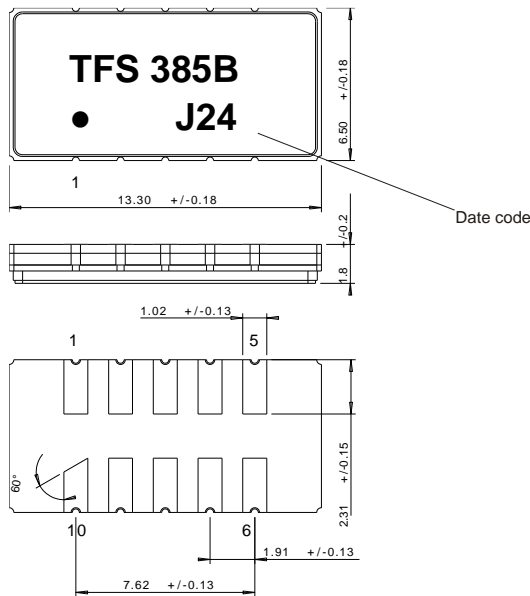
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Filter characteristic



Construction and pin connection

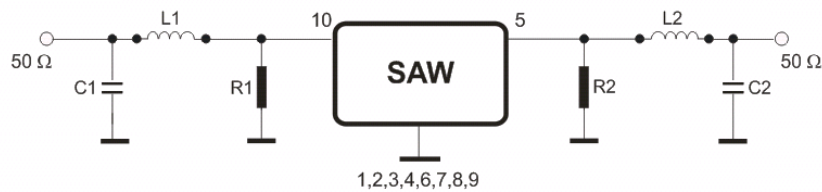
(All dimensions in mm)



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

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

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 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)

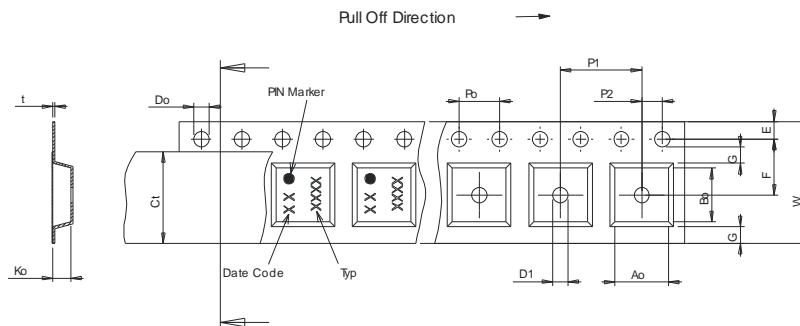
Packing

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:	1700
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

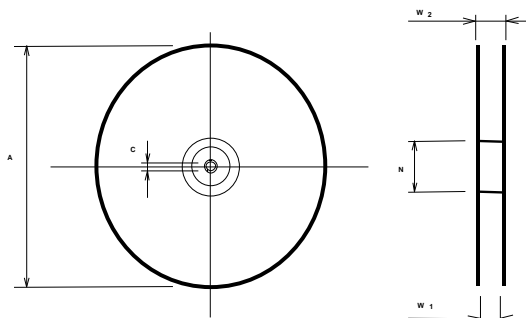
Tape (all dimensions in mm)

- 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 : 7.00 ±0.10
- Bo : 13.80 ±0.10
- Ct : 21.00 ±0.1
- Ko : 2.10 ±0.10
- t : 0.30 ±0.05



Reel (all dimensions in mm)

- A : 330 or 180
- W1 : 24.4 +2/-0
- W2(max) : 30.40
- N(min) : 60.00
- C : 13.0 +0.5/-0.2



The minimum bending radius is 45 mm.

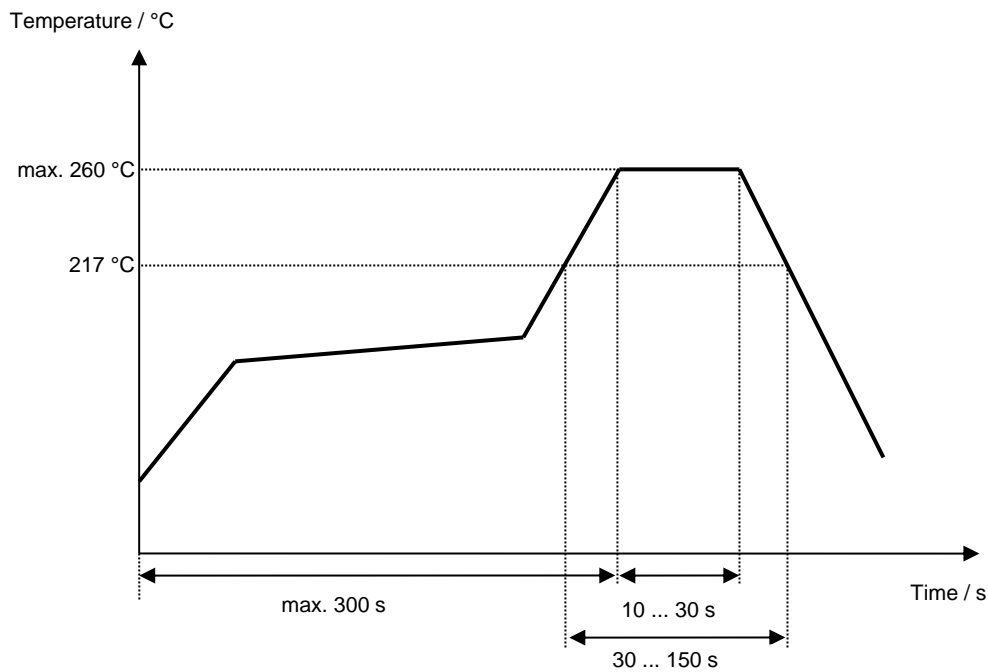
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Air reflow temperature conditions

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****TFS 385B****5/5**

History

Version	Reason of Changes	Name	Date
1.0	- Generate development specification	Jaffer	12.06.2017
1.1	- Customer request to add limit for "Device RF input power (short overdrive, ≤ 1 s)"	Jaffer	10.08.2017
2.0	- PB3 added, increased loss to 21.2dB max and RTL now 14dB min. - Customer request to add 3dB & 10dB bw limits.	Jaffer	04.06.2018
2.1	- Correct typo in data section	Bonnen	31.07.2018

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