

Microchip	Filter specification	TFS1581B	1/5
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Measurement condition

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	200	Ω
Output:	200	Ω

Remark:

The maximum attenuation in the passband is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 1581.5 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	
Insertion loss within PB	a_e	3.8	dB	max.	5.0 dB
Nominal frequency	f_N	-			1581.5 MHz
Passband	PB	-		$f_N \pm$	28.5 MHz
Passband variation		0.8	dB	max.	3.0 dB
Absolute attenuation	a_{abs}				
0.3 MHz ... 1485 MHz		34	dB	min.	30 dB
1485 MHz ... 1510 MHz		17	dB	min.	7 dB
1665 MHz ... 1685 MHz		25	dB	min.	10 dB
1685 MHz ... 3000 MHz		37	dB	min.	30 dB
Group delay ripple					
1553 MHz ... 1585 MHz		4	ns	max.	10 ns
1593 MHz ... 1610 MHz		4	ns	max.	10 ns
Group delay variation (unit to unit)	*)				
1553 MHz ... 1585 MHz		+/-3	ns	max.	+/-6 ns
1593 MHz ... 1610 MHz		+/-3	ns	max.	+/-6 ns
Return loss within PB		10	dB	min.	7 dB
Input power level within PB		-		max.	10 dBm
Operating temperature range	OTR	-			- 40 °C ... + 85 °C
Storage temperature range		-			- 55 °C ... + 125 °C
Temperature coefficient of frequency	TC_f **)	-70	ppm/K		

*) measured at: f_N , $f_N + 28.5$ MHz, $f_N - 28.5$ MHz

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

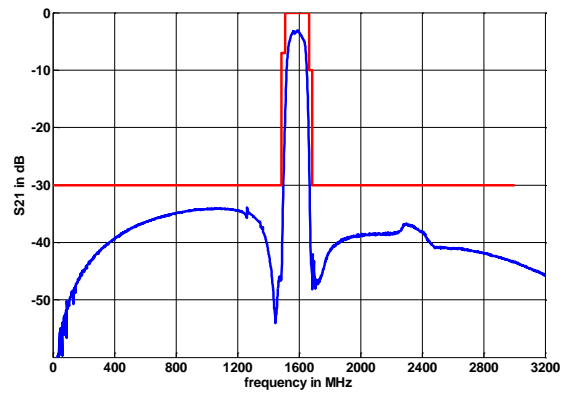
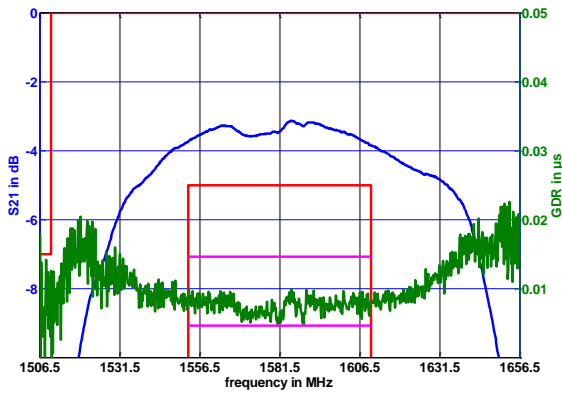
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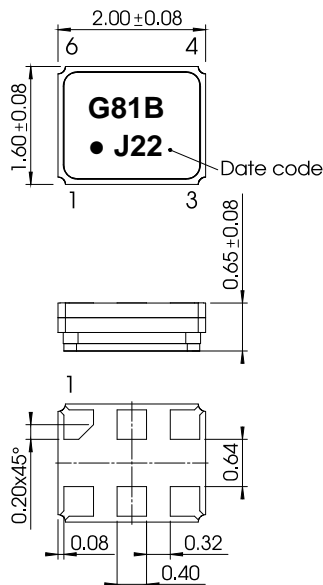
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Filter characteristic



Construction and pin connection

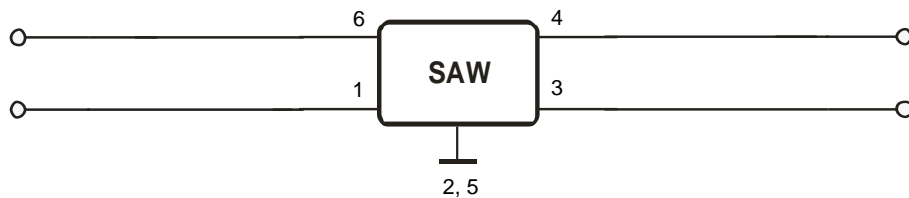
(All dimensions in mm)



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

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

200 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)

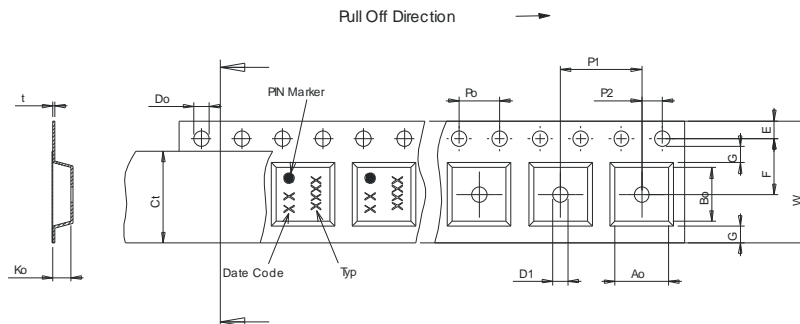
Packing

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:	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

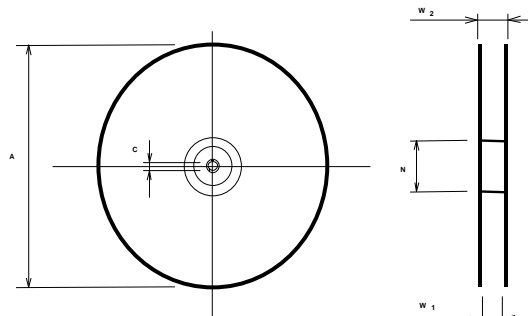
Tape (all dimensions in mm)

- W : 8.00 +0.3/-0.1
- Po : 4.00 ±0.1
- Do : 1.55 ±0.05
- 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) : 1.00
- Ao : 1.80 ±0.05
- Bo : 2.25 ±0.05
- Ct : 5.30 ±0.1
- Ko : 0.90 ±0.05
- t : 0.30 ±0.05



Reel (all dimensions in mm)

- A : 330 or 180
- W1 : 8.40 +1.5/-0
- W2(max) : 14.40
- N(min) : 60.00
- C : 13.0 ±0.2



The minimum bending radius is 45 mm.

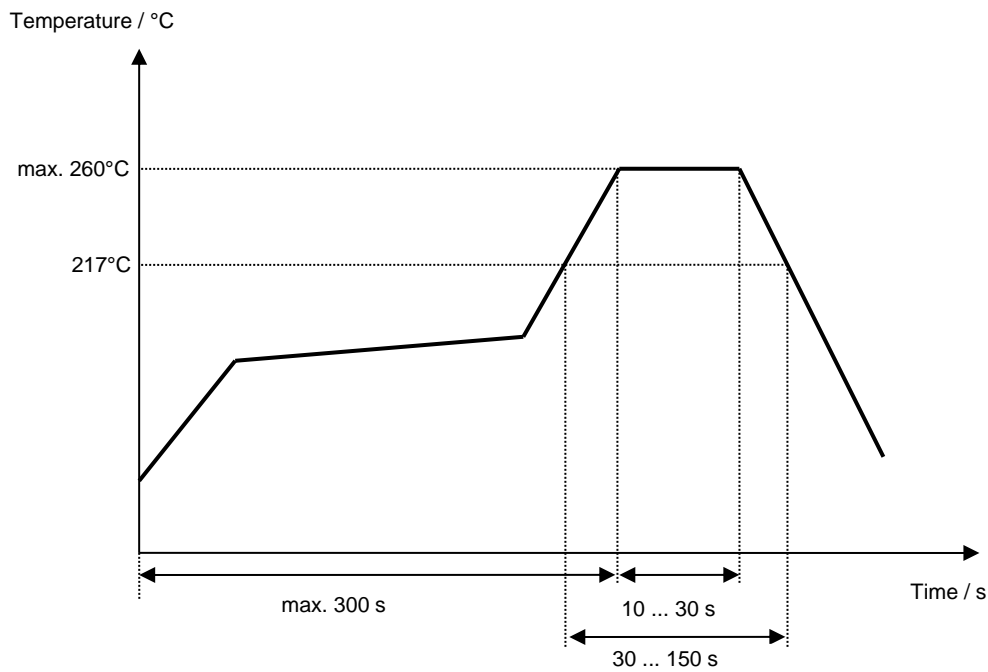
Air reflow temperature conditions

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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



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Microchip**Filter specification****TFS1581B****5/5**

History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	C. Noack	09.11.2015
1.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	17.02.2016
1.2	- Tape and reel dimensions corrected	A. Molke	09.06.2016
1.3	- Change of package	A. Molke	01.06.2017

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