

VI TELEFILTER

Filter specification

TFS 208B

1/5

Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 208B is the maximum attenuation in the pass band. The maximum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 208 MHz without any tolerance or limit. The values of relative attenuation a_{rel} 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.

Data		typ. value		tolerance / limit	
Insertion loss (reference level)		a_e	2,2 dB	1,5 ... 3,5	dB
Nominal frequency		f_N	-	208	MHz
Bandwidth		BW			
1 dB			4,9 MHz	800	kHz
Relative attenuation		a_{rel}			
$f_N - 400$ kHz	... $f_N + 400$ kHz		0,15 dB	max.	1 dB
$f_N - 207$ MHz	$f_N - 28$ MHz		57 dB	min.	38 dB
$f_N - 28$ MHz	$f_N - 14$ MHz		48 dB	min.	30 dB
$f_N + 14$ MHz	$f_N + 28$ MHz		37 dB	min.	5 dB
$f_N + 28$ MHz	$f_N + 242$ MHz		45 dB	min.	12 dB
Absolute group delay					
$f_N - 400$ kHz	... $f_N + 400$ kHz		180 ns	max.	300 ns
Group delay ripple		*)			
$f_N - 400$ kHz	... $f_N + 400$ kHz		8 ns	max.	30 ns
VSWR					
$f_N - 400$ kHz	... $f_N + 400$ kHz		1,3 : 1	max.	2 : 1
Intermodulation		**)			
IP3				min.	45 dB
Input power level				max.	10 dBm
Operating temperature range		OTR	-	- 10 °C ... + 85°C	
Storage temperature range			-	- 40 °C ... + 125°C	
Temperature coefficient of frequency		TC_f ***)	- 36 ppm/K		

*) measured with smoothing; smoothing aperture ≤ 50 kHz

**) modulation signals: f_N and $f_N + 14$ MHz, each of 10 dBm; measured signal: $f_N - 14$ MHz

***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (\Delta T) \times f_{T0}(\text{MHz})$

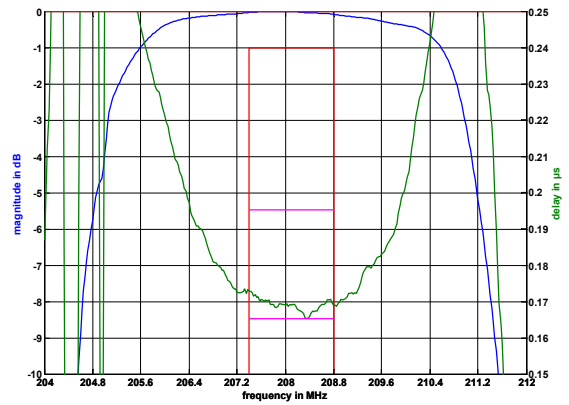
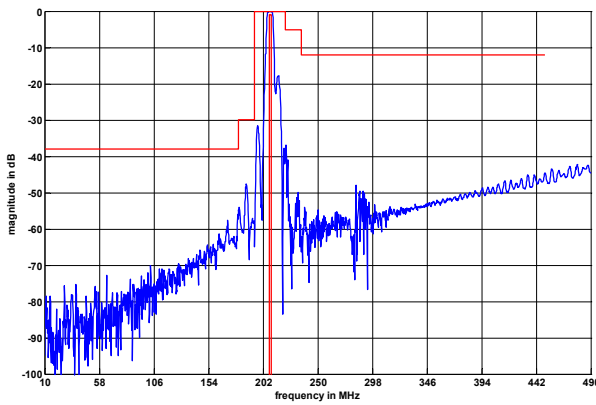
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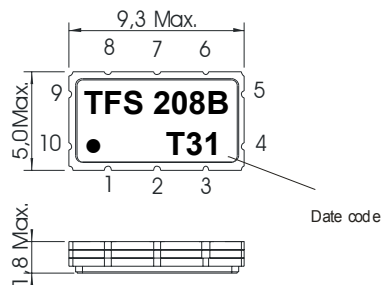
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Filter characteristic

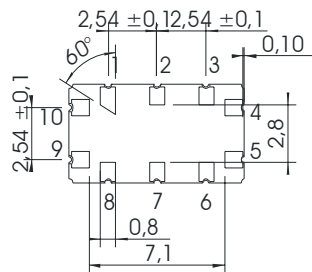


Construction and pin connection

(All dimensions in mm)

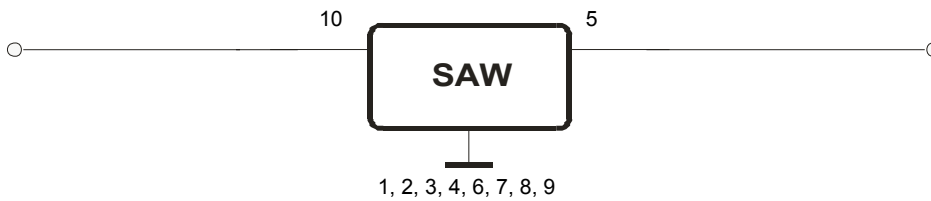


- 1 Ground
- 2 Ground
- 3 Ground
- 4 Ground
- 5 Output
- 6 Ground
- 7 Ground
- 8 Ground
- 9 Ground
- 10 Input



- Date code: Year + week
- T 2005
 - U 2006
 - V 2007
 - ...

50 Ω Test circuit



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Stability characteristics

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 plan, 3 plans;
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: twice max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

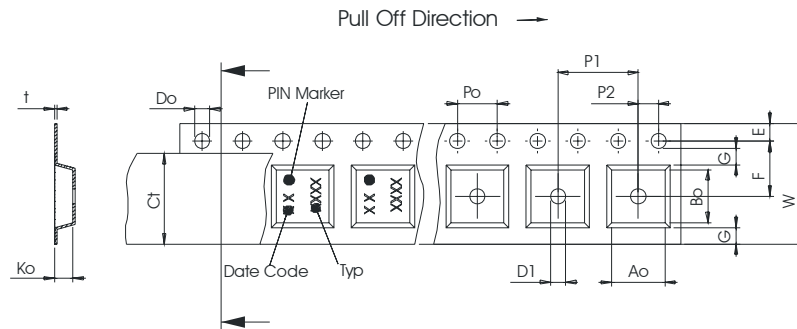
Packing

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 peer 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

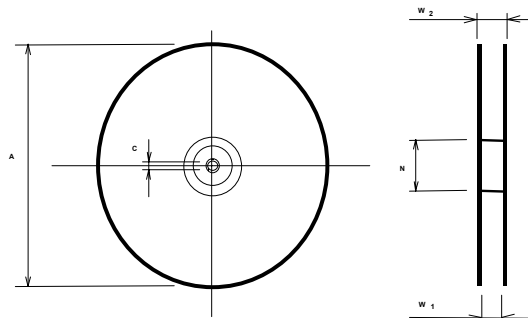
Tape (all dimensions in mm)

- 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) : 0,60
- P2 : 2,00 ± 0,1
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 5,30 ± 0,1
- Bo : 9,70 ± 0,1
- Ct : 13,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- 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.

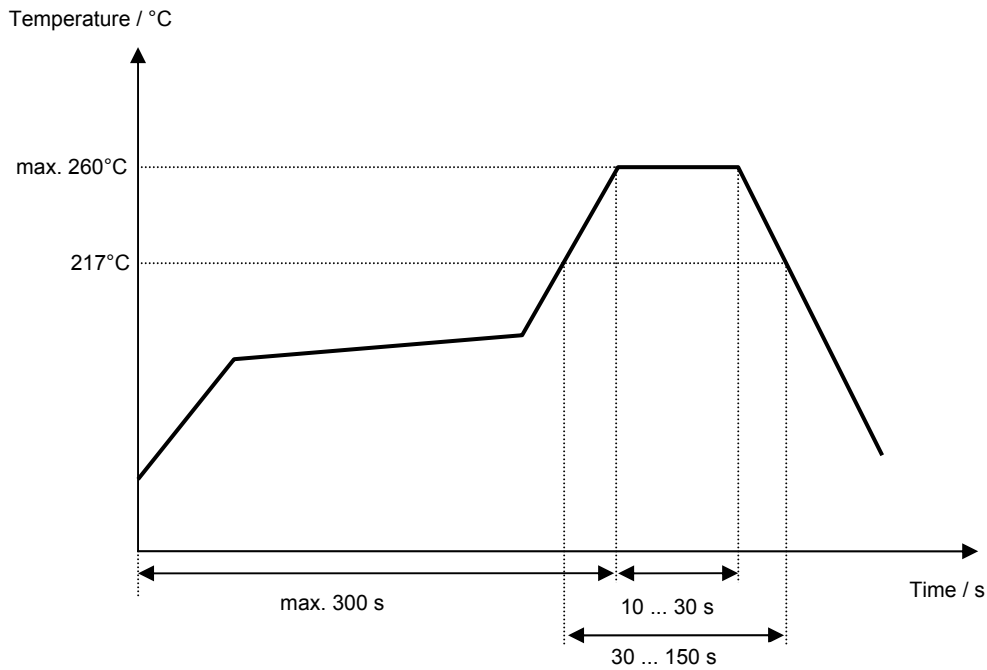
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Air reflow temperature conditions

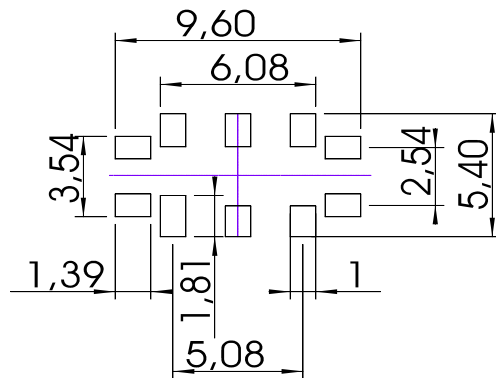
Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak 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



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Recommended land dimensions**History**

Version	Reason of Changes	Name	Date
1.0	- generate according to customer requirement specification	Dr. Sabah	22.11.2000
1.1	- stopband attenuation corrected	Steiner	23.11.2000
1.2	- change the high frequency side transition band edge frequency $f_0+13,5\text{MHz} \rightarrow f_0+14\text{MHz}$	Steiner	30.11.2000
1.3	- change the specification to customer updated specification version 1.0.0 (16-05-2001)	Dr. Sabah	30.05.2001
1.4	- change trailer to 300mm	Dr. Sabah	04.07.2001
1.5	- change packing and mark pin1 of pin connection - correct recommended land dimensions	Strehl	05.08.2005