

VI TELEFILTER

Filter specification

TFS 248F

1/5

Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	200	Ω

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 248F 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 248,6 MHz without any tolerance. 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.

D a t a		typ. value	tolerance / limit
Insertion loss (reference level)	a_e	2,95 dB	max. 3,5 dB
Nominal frequency	f_N	-	248,6 MHz
Passband	PB		$f_N \pm 352$ kHz
Pass band ripple		0,15 dB	max. 0,5 dB
Bandwidth 3 dB	BW	6,44 MHz	min. 5,0 MHz
Relative attenuation	a_{rel}		
$f_N - 238,6$ MHz ...	$f_N - 29,2$ MHz	50 dB	min. 45 dB
@ $f_N + 22,8$ MHz	$f_N + 22,8$ MHz	55 dB	min. 45 dB
@ $f_N + 52,0$ MHz	$f_N + 52,0$ MHz	58 dB	min. 45 dB
@ $f_N + 74,8$ MHz	$f_N + 74,8$ MHz	56 dB	min. 45 dB
@ $f_N + 104,0$ MHz	$f_N + 104,0$ MHz	55 dB	min. 45 dB
@ $f_N + 126,8$ MHz	$f_N + 126,8$ MHz	55 dB	min. 45 dB
Group delay ripple within PB		55 ns	max. 300,0 ns
Input power level		-	max. 20,0 dBm
Operating temperature range	OTR	-	- 20 °C ... + 80 °C
Storage temperature range		-	- 40 °C ... + 85 °C
Temperature coefficient of frequency	TC_f^*	-33,5 ppm/K	-

*) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{CAT}(\text{MHz})$.

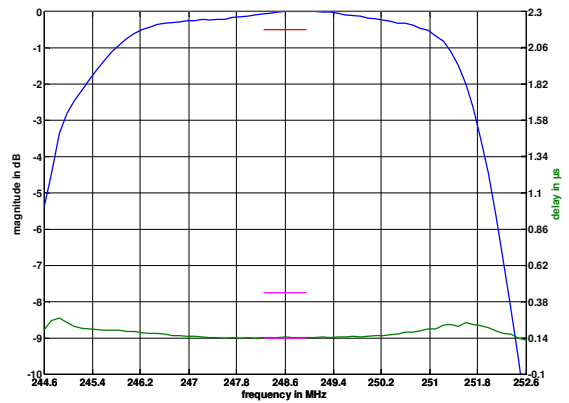
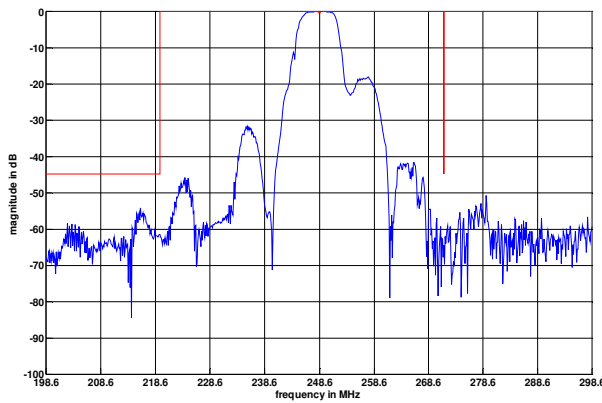
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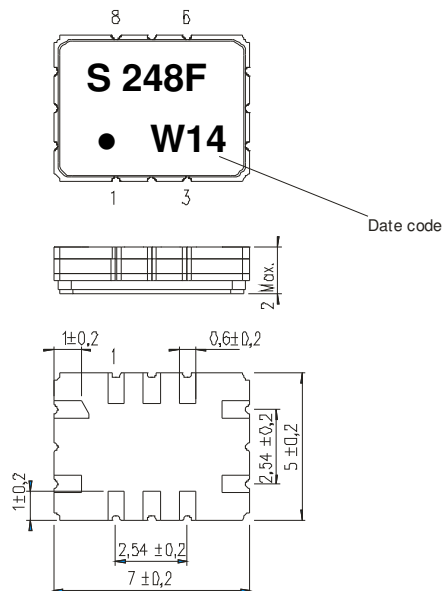
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Filter characteristic



Construction and pin connection

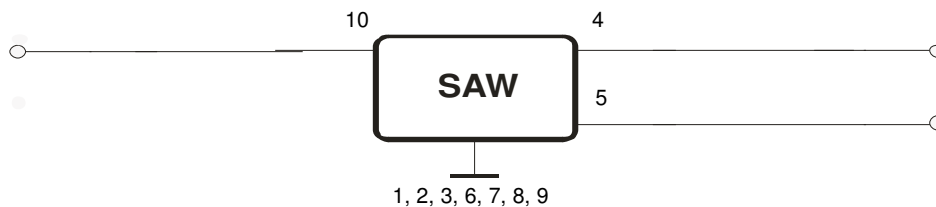
(All dimensions in mm)



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

Date code: Year + week
 W 2008
 X 2009
 A 2010
 ...

50 / 200 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 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: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

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

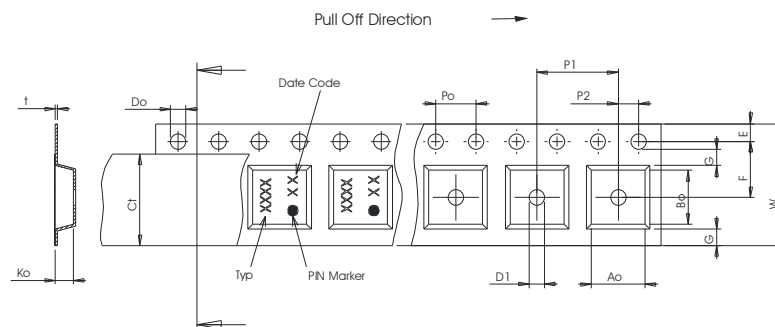
Packing

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: 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

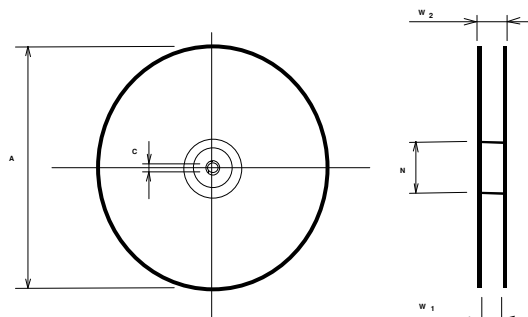
Tape (all dimensions in mm)

- 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 : 13,5 ± 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.

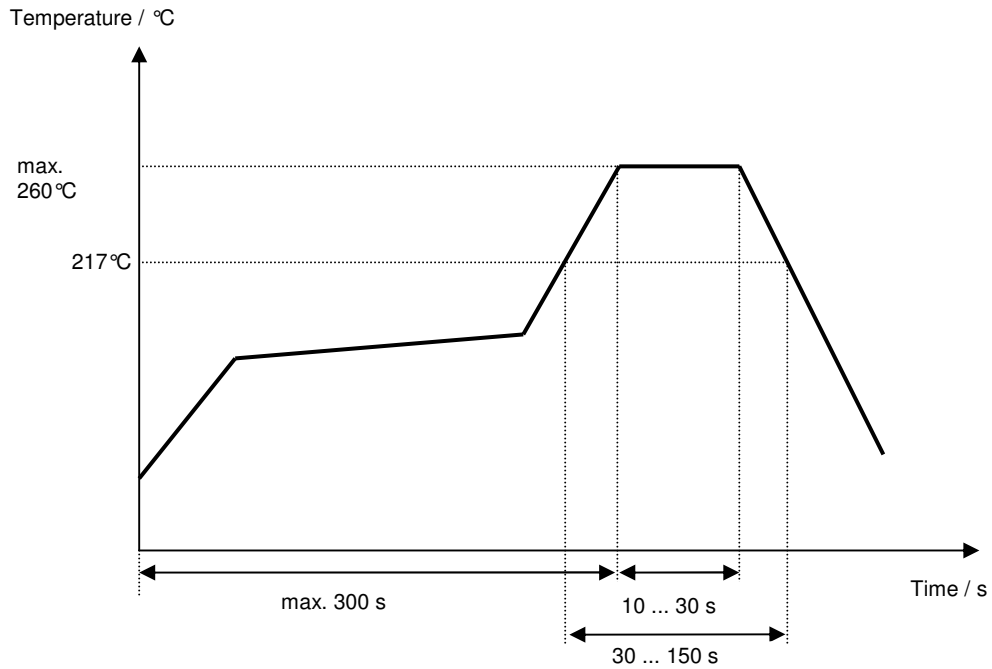
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Air reflow temperature conditions

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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VI TELEFILTER**Filter specification****TFS 248F****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- generate according to customer specification	Dr. Sabah	25.09.01
2.0	- change of package and stop band rejection	Dr. Sabah	13.09.02
3.0	- Filter Specification; add of terminating impedance and typ. values	Dr. Sabah	15.11.02
3.1	- change PB and stability characteristic - add filter characteristic	Strehl	01.04.2008

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