

**VI TELEFILTER****Filter specification****TFS 44M****1/5****Measurement condition**

Ambient temperature: 23 °C  
 Input power level: 0 dBm  
 Terminating impedances at  $f_C$  \* ) :  
 Input: 205  $\Omega$  || 0,85 pF  
 Output: 2000  $\Omega$  || 3 pF and matching network

**Characteristics****Remark:**

Reference level for the relative attenuation  $a_{rel}$  of the TFS 44M is the insertion loss. The insertion loss  $a_e$  is defined as the insertion loss at the nominal frequency  $f_N$ . The centre frequency  $f_C$  is the arithmetic mean value of the upper and lower frequencies at the 1 dB filter attenuation level relative to the insertion loss  $a_e$ . The temperature coefficient of frequency  $TC_f$  is valid for both the reference frequency  $f_C$  and the frequency response of the filter in operating temperature.

<b>D a t a</b>		<b>typ. value</b>		<b>tolerance / limit</b>		
<b>Insertion loss</b>	$a_e$	14,4	dB	max.	25	dB
<b>Nominal frequency</b>	$f_N$	-			44	MHz
<b>Centre frequency</b>	$f_C$	44	MHz		-	
<b>Passband</b>	PB	-		$f_C$	$\pm$ 7	MHz
<b>Pass band ripple (within 80% of PB)</b>		0,4	dB	max.	0,7	dB
<b>1 dB Bandwidth</b>	$BW_{1dB}$	14,34	MHz	min.	14	MHz
<b>40 dB Bandwidth</b>	$BW_{40dB}$	20,02	MHz	max.	24	MHz
<b>Relative attenuation</b>	$a_{rel}$					
	$f_N \pm 12$ MHz ... $f_N \pm 33$ MHz	43	dB	min.	40	dB
<b>Group delay ripple within PB</b>		45	ns	max.	60	ns
<b>Operating temperature range</b>	OTR	-		- 33 °C ... + 55		°C
<b>Storage temperature range</b>		-		- 40 °C ... + 85		°C
<b>Temperature coefficient of frequency</b>	$TC_f$ **	-72	ppm/K		-	

\*) The terminating impedances depend on parasites 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.

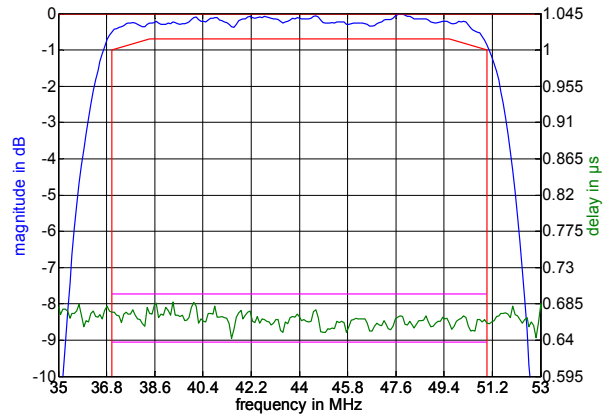
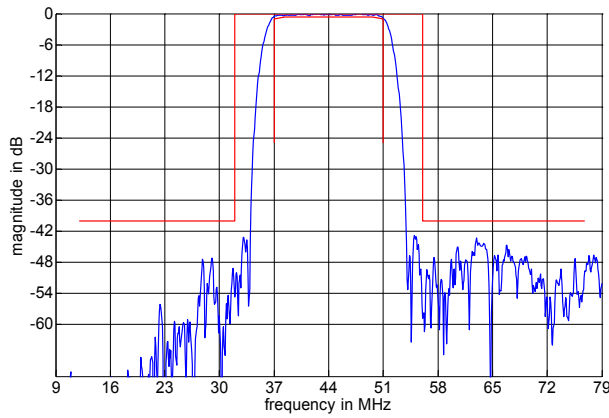
\*\*)  $\Delta f_C(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_{CTA}(\text{MHz})$

**Generated:****Checked / Approved:**

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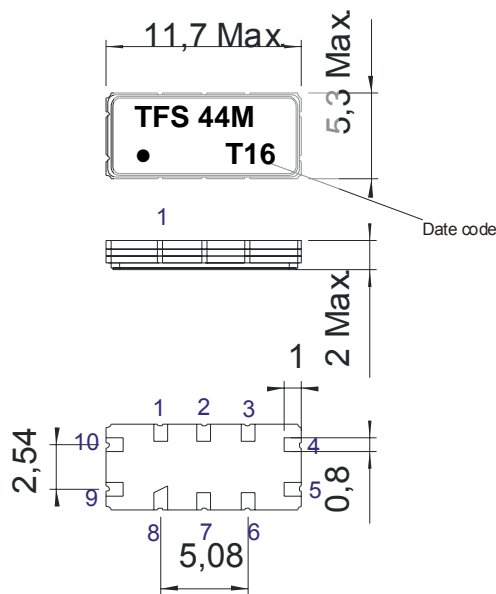
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**Filter characteristic**



**Construction and pin connection**

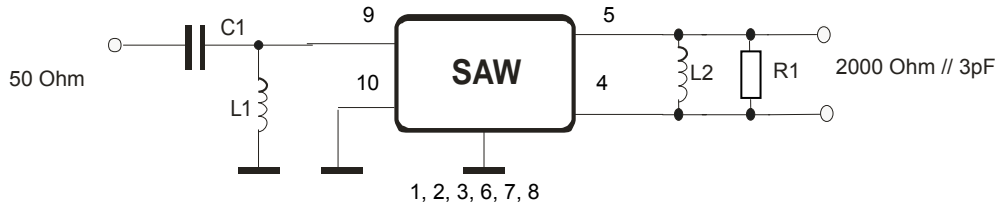
(All dimensions in mm)



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

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

**Test circuit**



L1 = 409 nH  
 C1 = 39 pF

L2 = 1,3 µH  
 R1 = 2,4 kΩ

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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;

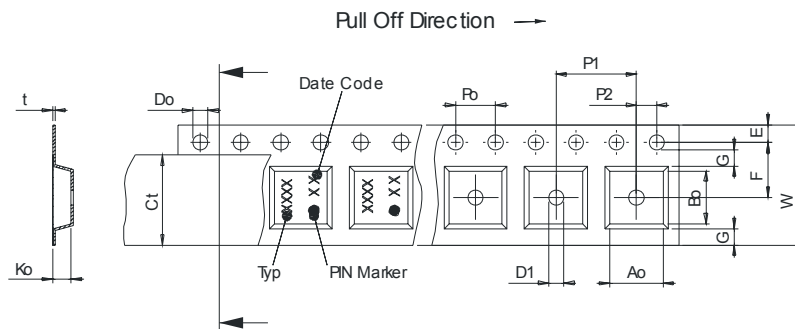
**Packing**

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

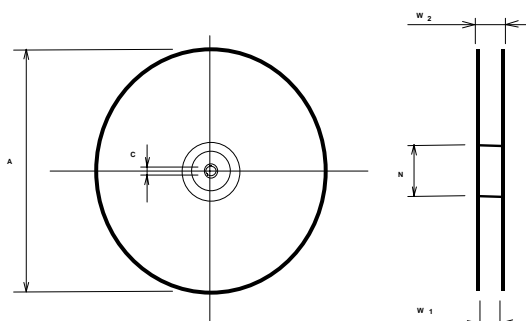
**Tape (all dimensions in mm)**

- W : 24,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 11,50 ± 0,1
- G(min) : 0,60
- P2 : 2,00 ± 0,1
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 5,60 ± 0,1
- Bo : 11,80 ± 0,1
- Ct : 21,5 ± 0,1



**Reel (all dimensions in mm)**

- A : 330
- W1 : 24,4 +2/-0
- W2(max) : 30,4
- N(min) : 60
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

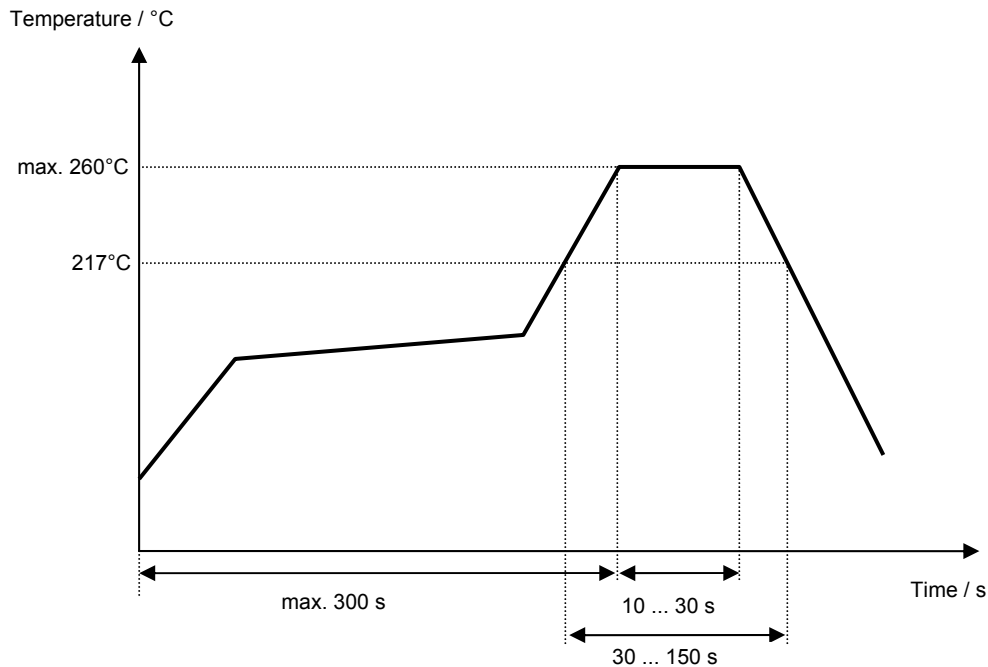
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**Air reflow temperature conditions**

<b>Conditions</b>	<b>Exposure</b>
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 44M****5/5****History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Martens	1.12.2004
1.1	- changed input pinning to single ended	Martens	2.12.2004
1.2	- terminating impedance and matching configuration changed - typical values and filter characteristic added	Pfeiffer	19.04.2005

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