

**VI TELEFILTER**

**Filter specification**

**TFS 644**

**1/5**

**Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	150 Ω    0 pF	
Output:	150 Ω    0 pF	

**Characteristics**

Remark:

The minimum attenuation in the pass band is defined as the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed at 644,5313 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.

<b>D a t a</b>		<b>typ. value</b>	<b>tolerance / limit</b>
<b>Insertion loss</b> (reference level)	$a_e$	2,3 dB	max. 4,5 dB
<b>Nominal frequency</b>	$f_N$	-	644,5313 MHz
<b>Centre frequency</b>	$f_C$	644,5313 MHz	-
<b>Bandwidth</b> 3 dB	BW	23,2 MHz	-
<b>Absolute attenuation</b>	$a_{abs}$		
$f_N$ - 4,5313 MHz		3,2 dB	max. 5,5 dB
$f_N$ - 80 MHz		61,5 dB	min. 52 dB
$f_N$ - 160 MHz		69 dB	min. 60 dB
$f_N$ - 161,13 MHz		68,6 dB	min. 60 dB
$f_N$ - 240 MHz		69 dB	min. 60 dB
$f_N$ - 320 MHz		70 dB	min. 60 dB
$f_N$ - 322,27 MHz		69 dB	min. 60 dB
$f_N$ - 400 MHz		70 dB	min. 60 dB
$f_N$ - 480 MHz		70 dB	min. 60 dB
$f_N$ - 483,40 MHz		69 dB	min. 60 dB
$f_N$ - 560 MHz		59 dB	min. 55 dB
$f_N$ + 80 MHz		59 dB	min. 52 dB
$f_N$ + 160 MHz		73 dB	min. 60 dB
$f_N$ + 161,13 MHz		78 dB	min. 60 dB
$f_N$ + 240 MHz		71 dB	min. 60 dB
$f_N$ + 320 MHz		68 dB	min. 55 dB
$f_N$ + 322,27 MHz		66 dB	min. 55 dB
$f_N$ + 400 MHz		66 dB	min. 55 dB
$f_N$ + 480 MHz		66 dB	min. 55 dB
$f_N$ + 483,40 MHz		66 dB	min. 55 dB
<b>Input power level</b>		-	max. 10 dBm
<b>Operating temperature range</b>	OTR	-	- 40 °C ... + 85 °C
<b>Storage temperature range</b>		-	- 55 °C ... + 125 °C
<b>Temperature coefficient of frequency</b>	$TC_f$ **	- 73 ppm/K	-

\*) 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.

\*\*\*)  $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$ .

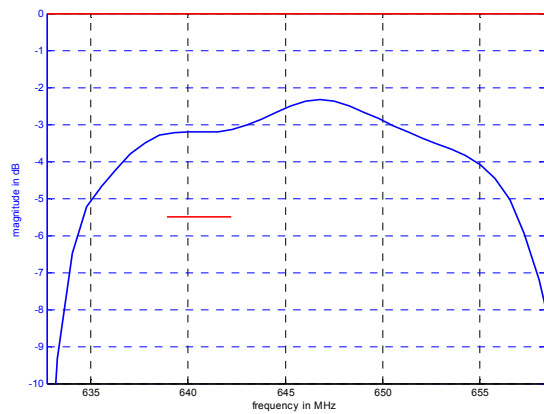
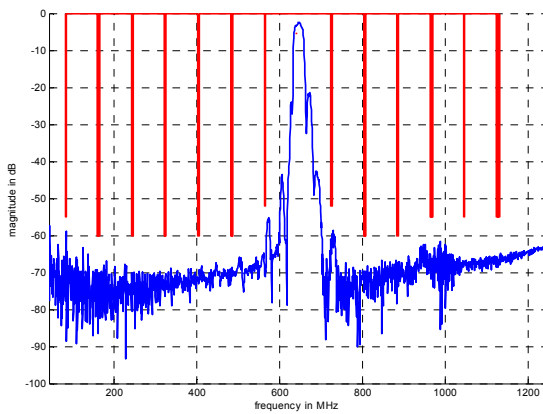
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**Checked / Approved:**

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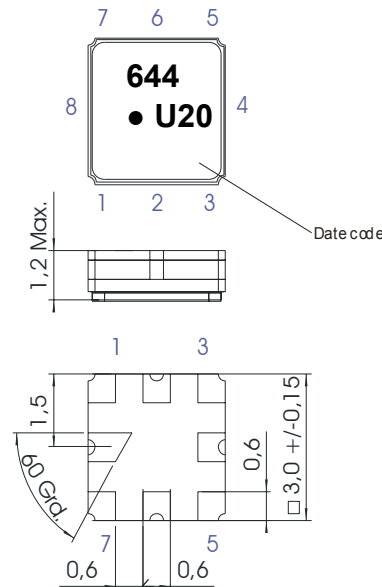
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**Filter characteristic**



**Construction and pin connection**

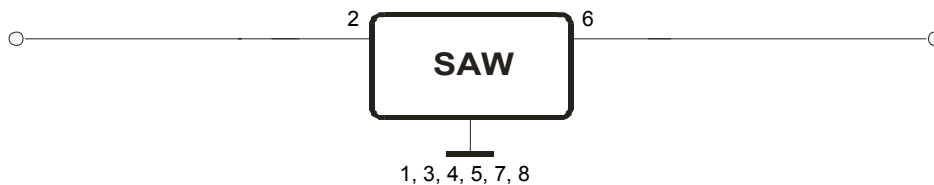
(All dimensions in mm)



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

Date code: Year + week  
 U 2006  
 V 2007  
 W 2008  
 ...

**150 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: twice 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)

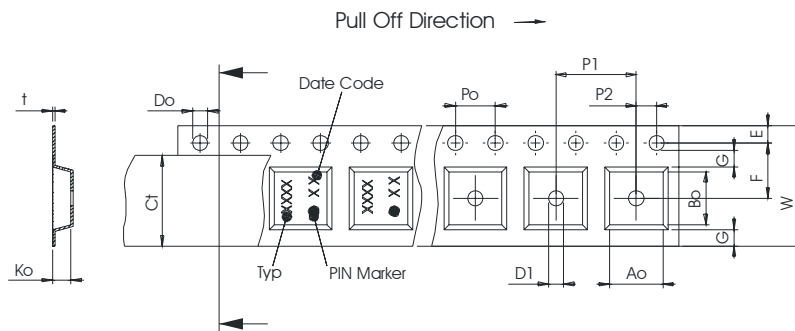
**Packing**

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:	9000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

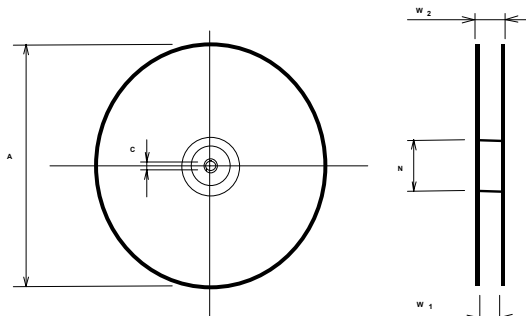
**Tape (all dimensions in mm)**

- W : 8,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- 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) : 1,50
- Ao : 3,25 ± 0,1
- Bo : 3,25 ± 0,1
- Ct : 5,5 ± 0,1



**Reel (all dimensions in mm)**

- A : 330
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

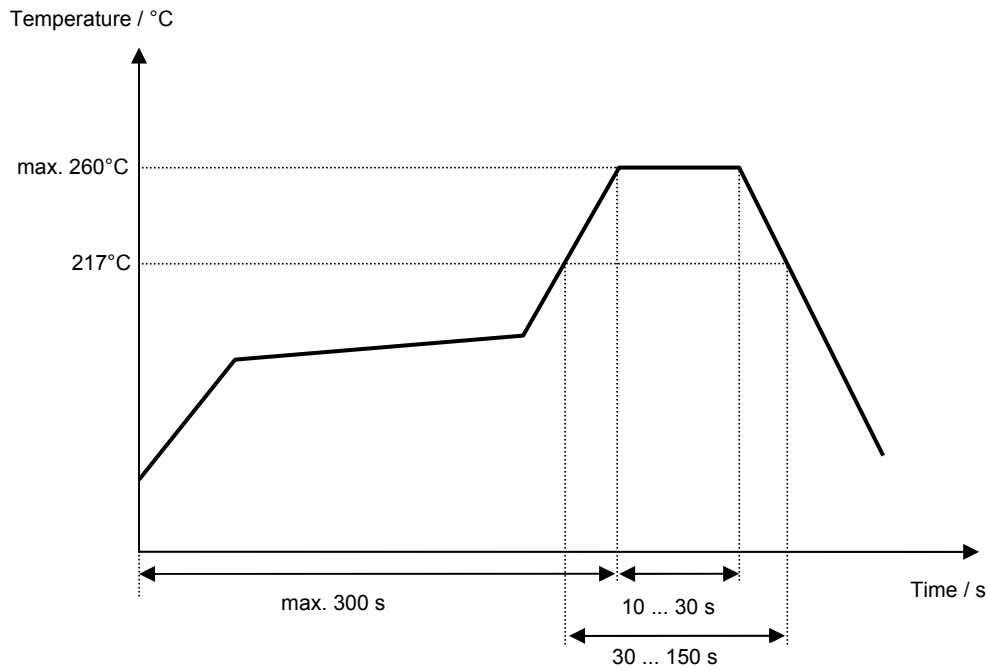
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**Air reflow temperature conditions**

<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 644****5/5****History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Strehl	18.10.2005
1.1	- Add typical values, add filter characteristic - Generate filter specification from development specification	Channaa	30.01.2006
1.2	- Increase operating temperature range - Add additional frequencies for absolute attenuation	Channaa	19.05.2006

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