

**VI TELEFILTER**

**Filter specification**

**TFS 465A1**

**1/5**

**Measurement condition**

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

**Characteristics**

**Remark:**

The maximum attenuation in the pass band is defined as the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed at 465,0 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>Variation/ Limitation</b>
<b>Insertion loss</b>	$a_e = a_{max}$	3,8 dB	max. 4,8 dB
<b>Nominal frequency</b>	$f_N$	-	465,0 MHz
<b>Passband</b>	PB	-	$f_N \pm 2,5$ MHz
<b>Absolute attenuation in OTR</b>			
$f_N - 464,7$ MHz .....	$f_N - 12,5$ MHz	52 dB	min. 48 dB
$f_N - 12,5$ MHz .....	$f_N - 7,5$ MHz	45 dB	min. 37 dB
<b>Absolute attenuation (within temperature range: +15°C ... + 40°C)</b>			
$f_N - 12,5$ MHz .....	$f_N - 7,5$ MHz	52 dB	min. 40 dB
$f_N + 20,0$ MHz .....	$f_N + 735,0$ MHz	50 dB	min. 40 dB
$f_N + 735,0$ MHz .....	$f_N + 1235,0$ MHz	40 dB	min. 30 dB
$f_N + 1235,0$ MHz .....	$f_N + 1535,0$ MHz	35 dB	min. 15 dB
<b>VSWR</b>	within PB (at 23 °C)	1,95	max. 2,1
<b>Temperature coefficient of frequency</b>	$TC_f^*$	- 32 ppm/K	-
<b>Operating temperature range</b>	OTR	-	-10 °C ... + 85 °C
<b>Storage temperature range</b>		-	-30 °C ... + 85 °C

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

**Generated:**

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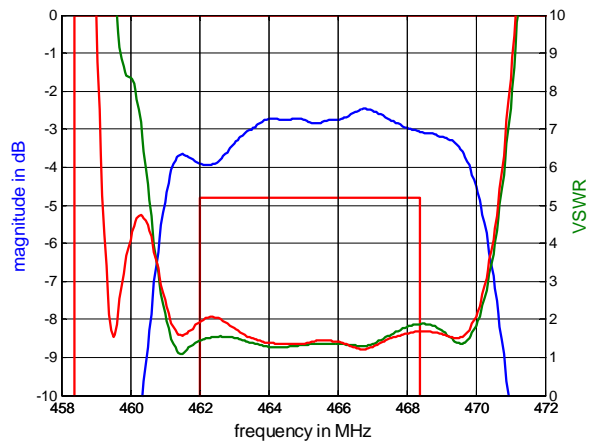
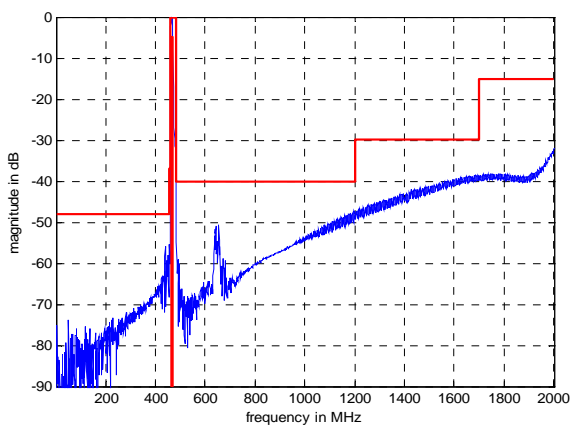
**Checked / Approved:**

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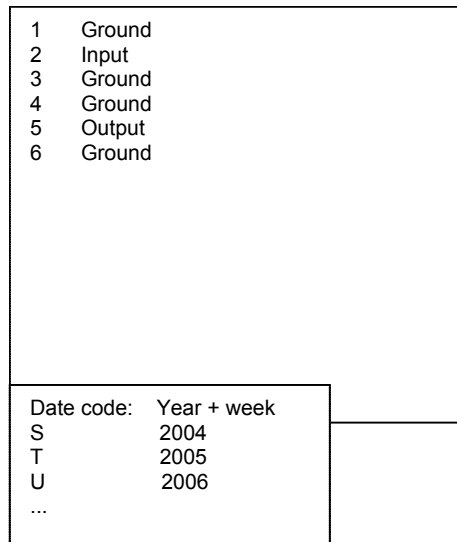
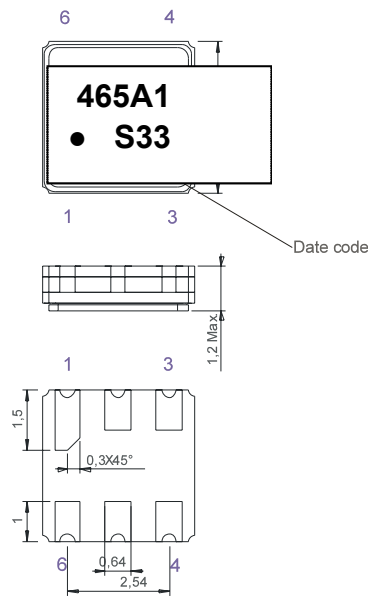
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**Filter characteristic**

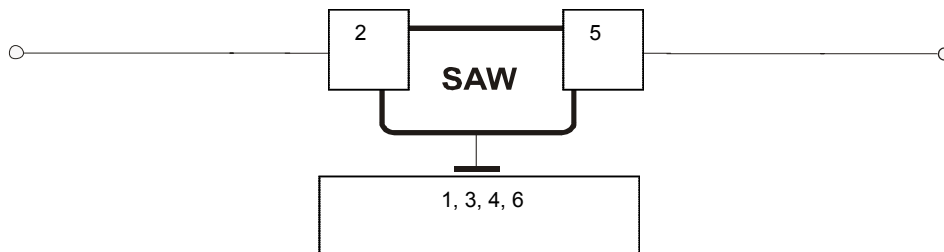


**Construction and pin connection**

(All dimensions in mm)



**50 Ω Test circuit**



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**Stability characteristics**

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 18 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;

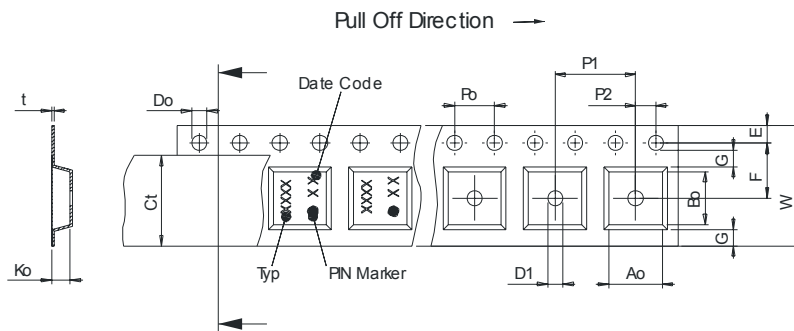
**Packing**

Tape & Reel: IEC 286 – 3, with exeption 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

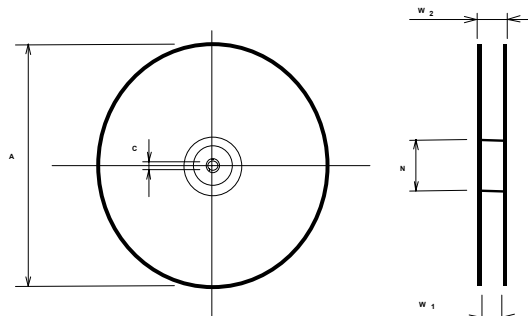
**Tape (all dimensions in mm)**

- W : 12,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 5,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 4,30 ± 0,1
- Bo : 4,30 ± 0,1
- Ct : 9,5 ± 0,1



**Reel (all dimensions in mm)**

- A : 330
- W1 : 12,4 +2/-0
- W2(max) : 18,4
- 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**

1st and 2nd air reflow profile

**Name:** pre-heating periods main-heating periods peak temperature  
**Temperature:** 150 °C - 170 °C over 200 °C 255 °C ± 5 °C  
**Time:** 60 sec. - 90 sec. 20 sec. - 25 sec.

**Chip-mount air reflow profile**

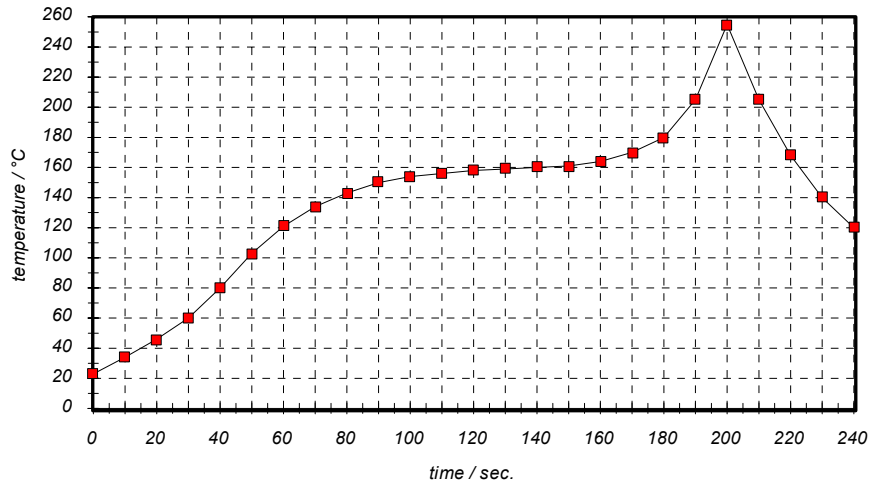


Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

time / sec.	temperature / °C	time / sec.	temperature / °C
0	23	140	160
10	34	150	161
20	46	160	164
30	60	170	170
40	80	180	180
50	103	190	205
60	121	195	230
70	134	200	255
80	143	205	230
90	150	210	205
100	154	215	180
110	156	220	165
120	158	230	140
130	159	240	120

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**VI TELEFILTER****Filter specification****TFS 465A1****5/5****1. History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of filter specification	Dr. Sabah	30.09.2003
1.1	- Correct typical value in passband - Correct pinning	Roizengaft	07.10.2003
1.2	- Change absolute attenuation ( $f_N + 12,5\text{MHz} \dots f_N + 7,5\text{MHz}$ ) - Add filter characteristic - Add test circuit - Change drawing of packing (tape and reel)	Noack	11.08.2004

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