

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.

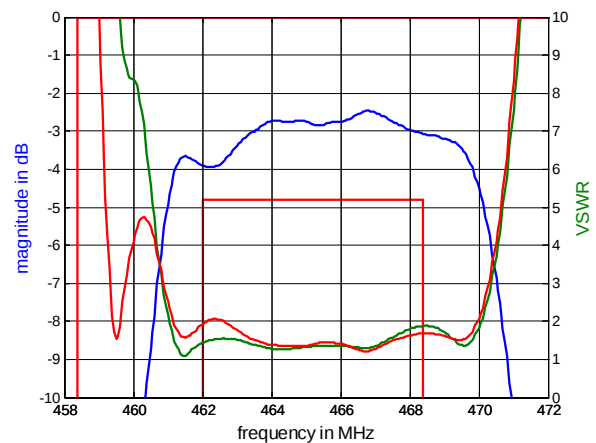
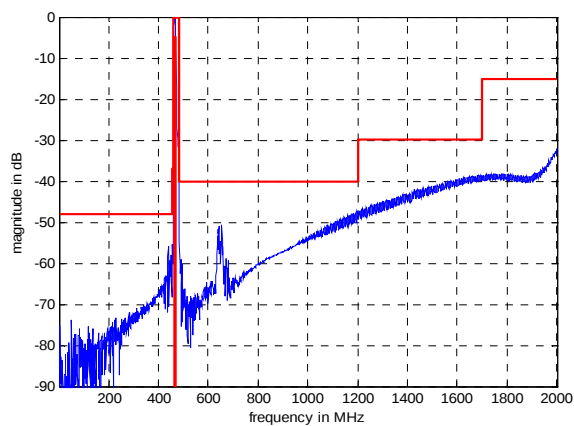
D a t a		typ. value	Variation/ Limitation
Insertion loss	$a_e = a_{max}$	3,8 dB	max. 4,8 dB
Nominal frequency	f_N	-	465,0 MHz
Passband	PB	-	$f_N \pm 2,5$ MHz
Absolute attenuation in OTR			
$f_N - 464,7$ MHz	$f_N - 12,5$ MHz	52 dB	min. 48 dB
$f_N - 12,5$ MHz	$f_N - 7,5$ MHz	45 dB	min. 37 dB
Absolute attenuation (within temperature range: +15°C ... + 40°C)			
$f_N - 12,5$ 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
VSWR within PB (at 23 °C)		1,95	max. 2,1
Temperature coefficient of frequency	TC_f^*	- 32 ppm/K	-
Operating temperature range	OTR	-	-10 °C ... + 85 °C
Storage temperature range		-	-30 °C ... + 85 °C

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

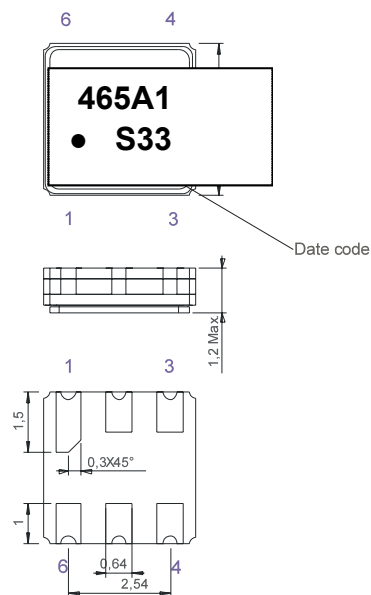
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Tele Filter GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
E-Mail: tft@telefilter.com

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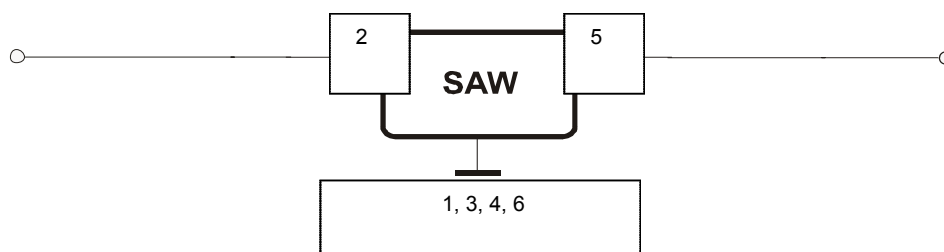
VI TELEFILTER**Filter specification****TFS 465A1****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



- | | |
|---|--------|
| 1 | Ground |
| 2 | Input |
| 3 | Ground |
| 4 | Ground |
| 5 | Output |
| 6 | Ground |

Date code: Year + week
 S 2004
 T 2005
 U 2006
 ...

50 Ω Test circuit

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VI TELEFILTER**Filter specification****TFS 465A1****3/5****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;

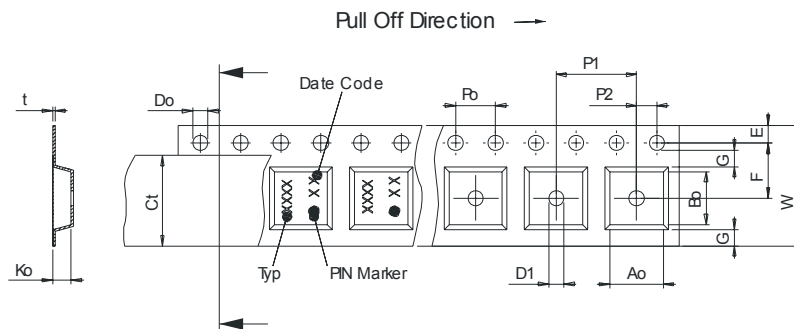
Packing

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;

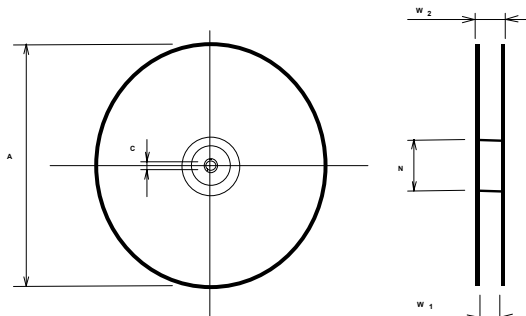
max. pieces of filters peer reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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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VI TELEFILTER**Filter specification****TFS 465A1****4/5****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 $\pm$ 5 °C
Time: 60 sec. - 90 sec. 20 sec. - 25 sec.

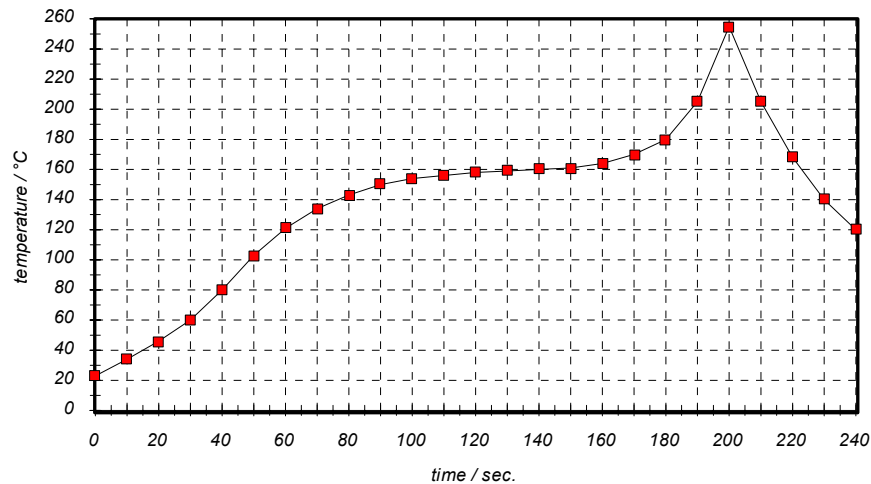
Chip-mount air reflow profile

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: $\pm$ 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**

Version	Reason of Changes	Name	Date
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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