

**VI TELEFILTER**

**Filter specification**

**TFS120A**

**1/5**

**Measurement condition**

Ambient temperature: 23 °C  
 Input power level: 0 dBm  
 Terminating impedance: \*  
     Input: 1180 Ω || -7,1 pF  
     Output: 1110 Ω || -7,9 pF

**2. Characteristics**

**Remark:**

Reference level for the relative attenuation  $a_{rel}$  of the TFS 120A 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 3 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 on the operating temperature.

<b>D a t a</b>		<b>typ. value</b>		<b>tolerance / limit</b>		
<b>Insertion loss</b> (reference level)	$a_e$	5,6	dB	max.	10,5	dB
		-			-	
<b>Nominal frequency</b>	$f_N$	-			120	MHz
<b>Centre frequency</b>	$f_C$	120	MHz		-	
<b>Passband</b>		-		$f_N$	± 100	kHz
<b>Pass band ripple</b>		0,6	dB		1	dB
<b>Relative attenuation</b>	$a_{rel}$					
$f_N$ ... $f_N$ ± 100 kHz		0,6	dB	max.	1	dB
$f_N$ ± 0,6 MHz ... $f_N$ ± 1,0 MHz		35	dB	min.	32,5	dB
$f_N$ ± 1,0 MHz ... $f_N$ ± 25,0 MHz		50	dB	min.	37,5	dB
<b>Group delay</b>	at $f_N$	1,8	µs	max.	3,5	µs
<b>Group delay ripple within PB</b>		60	ns	max.	300	ns
<b>Operating temperature range</b>	OTR	-			- 20 °C ... + 85 °C	
<b>Storage temperature range</b>		-			- 20 °C ... + 85 °C	
<b>Frequency inversion temperature</b>		35	°C		-	
<b>Temperature coefficient of frequency</b>	$TC_f$ **	-0,04	ppm/K <sup>2</sup>		-	

\*) 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.

\*\*)  $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$ .

**Generated:**

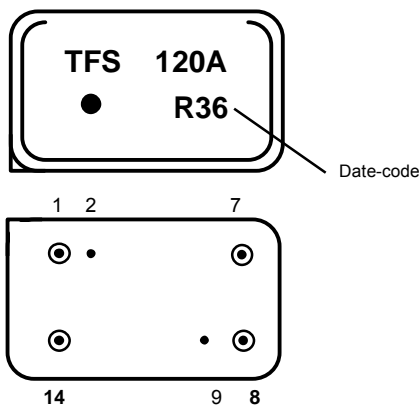
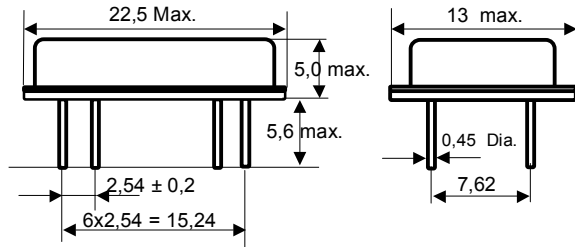
**Checked / Approved:**

**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](mailto:tft@telefilter.com)

VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

**3. Construction and pin connection :**

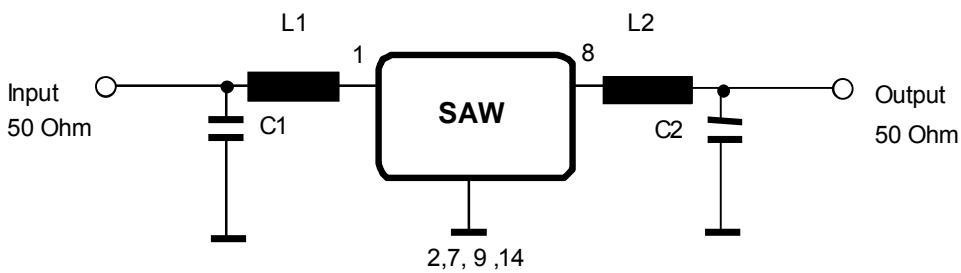
(all dimensions in mm)



Date-code:	Year+week
N	2001
P	2002
R	2003
...	

Pin 1	<b>Input</b>
Pin 14	Input RF Return
Pin 8	<b>Output</b>
Pin 7	Output RF Return
Pin 2, 9	Package Ground

**4. 50 Ω matching network :**



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](mailto:tft@telefilter.com)

VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

### 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 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;  
DIN IEC 68 T2 - 6
3. Change of temperature: 25 °C to 55°C / 95% r.H. / 10 cycles  
DIN IEC 68 - 2 – 30 Db
4. Resistance to solder heat (reflow): max. 2 times reflow process;  
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

**6. 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.	

**Air reflow profile**

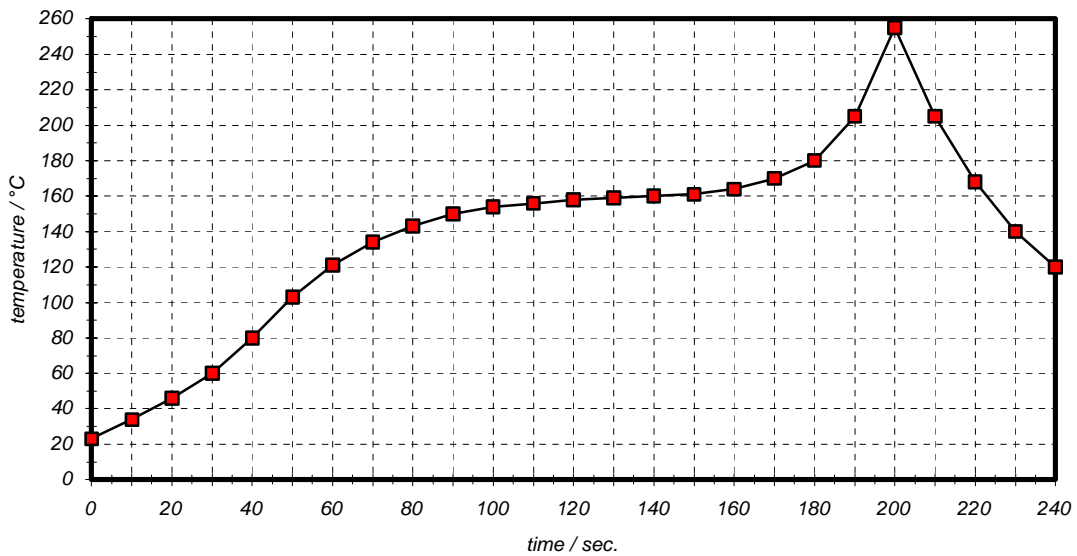


Table for temperature vs. time during the air reflow process

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

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](mailto:tft@telefilter.com)

VI TELEFILTER reserves the right to make changes to the product(s) and/or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

**7. History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	generate specification according to customer requirements	Pfeiffer	08.06.2001
1.1	change specification to actual format change package dimension	Braun	24.04.2003
1.2	typical values and terminating impedance added auto format correction of first page	Pfeiffer	04.09.2003