

**SAW-Resonatorfilter****Specification****TFS 160 B - 1/4****Measurement condition**

Ambient temperature: 23 °C  
 Input power level: 0 dBm  
 Terminating impedance:  $660 \Omega \parallel -1.6 \text{ pF}$

**Construction and pin connection**

see sheet 2

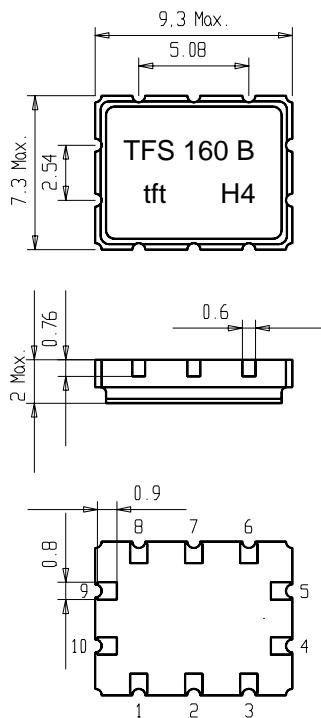
**Characteristics****Remark:**

The maximum of the pass band attenuation  $a_{\max}$  within the usable signal band width is defined as the insertion loss  $a_e$ . The insertion loss  $a_e$  is the reference value for relative attenuation . The nominal frequency  $f_N$  is fixed on 160.62 MHz.

<b>D a t a</b>		<b>typ. value</b>	<b>Variation/ Limitation</b>
<b>Insertion loss</b> (Reference level)	$a_e = a_{\min}$	3 dB	max. 5 dB
<b>Nominal frequency</b>	$f_N$	-	160,62 MHz
<b>3 dB - bandwidth</b>	BW	100 kHz	-
<b>Usable signal bandwidth</b>		-	min. $f_N \pm 10 \text{ kHz}$
<b>Relative attenuation</b> $f_N + 910 \text{ kHz}$	$a_{\text{rel}}$	65 dB	min. 60 dB
<b>Temperature coefficient of frequency</b>	$TC_f$	-0,036 ppm/K <sup>2</sup>	-
<b>Frequency inversion temperature</b>		+ 25 °C	
<b>Operating temperature range</b>			- 20°C ... + 70°C

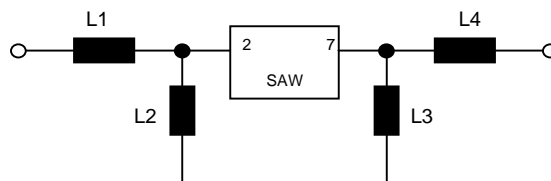
### Construction und pin configuration

(All dimensions in mm)



Pin 2                      Input  
Pin 7                      Output  
Pin 1,3,4,5,6,8,9,10    Ground

### 50 $\Omega$ - matching network



### Stability characteristics

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

1. Shock: 30g, 18 ms, half sine wave, 3 shocks each plane;  
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 150 Hz, 0.35 mm amplitude, 5g; 2 hours for 3 planes;  
DIN IEC 68 T2 - 6
3. Damp heat: 90 % to 95 % rel. humidity, 40 °C, 10 days;  
IEC Pub. 68 - 2 - 3
4. Resistance to solder heat (Reflow): 260 °C for 10 sec;

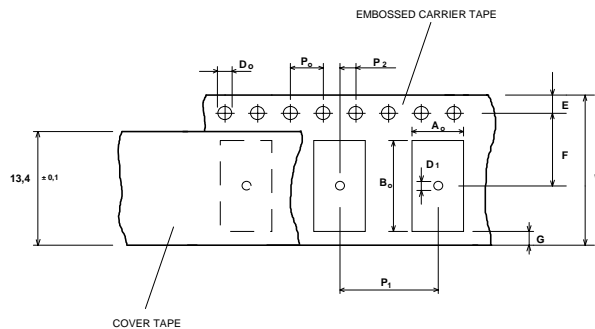
### Packing

Tape & Reel: DIN 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: 2300

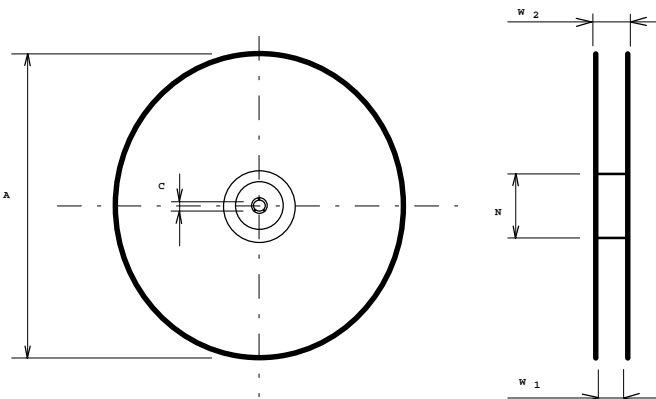
#### Tape (all dimensions in mm)

W	:	16 ± 0,3
Po	:	4 ± 0,1
Do	:	1,5 + 0,5
D1	:	1,5 + 0,5
E	:	1,75 ± 0,1
F	:	7,5 ± 0,1
G (min)	:	0,75
P2	:	2 ± 0,1
P1	:	12 ± 0,1
D1(min)	:	1,5
Ao	:	7,6 ± 0,1
Bo	:	9,6 ± 0,1



#### Reel (all dimensions in mm):

A	:	330
W1	:	16,4 +2
W2 (max)	:	22,4
N (min)	:	>= 90
C	:	13 ± 0,25



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. The marking of the filters is able to read if the view is directed on the upper side of the carrier tape with the sprocket holes on the right side of the tape.

**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**

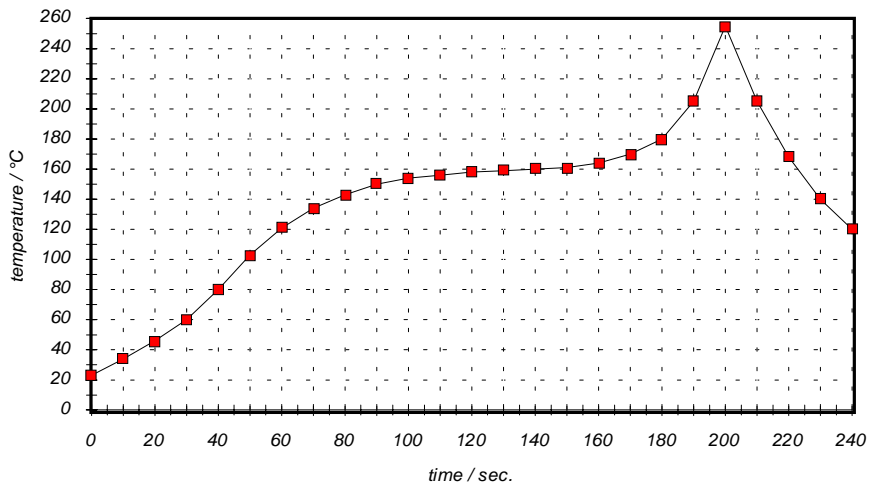


Table for temperature vs. time during the air reflow process

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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**TELE FILTER tft GmbH / Potsdamer Straße 18 / D 14 513 TELTOW**  
**telephone: (+33 28) 47 84 52 / telefax: (+33 28) 47 84 30 / e-mail: tft@tft.telco-tech.de**