

VI TELEFILTER**Filter Specification****TFS 70 Z****1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedances at f_C *: input: 1,85 k Ω // -14,5 pF
 output: 1,49 k Ω // -14,1 pF

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the TFS 70Z is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 2 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 70 MHz without tolerance. The given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached at the frequencies given below even if the centre frequency f_C is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_C .

D a t a		typ. Value	Limit
Insertion loss (reference level)	a_e	5,2 dB	max. 8 dB
Nominal frequency	f_N	-	70 MHz
Pass band	PB	-	$f_N \pm 0,15$ MHz
Amplitude ripple in PB	p-p	-	max. 2 dB
Relative attenuation	a_{rel}		
f_N	$f_N \pm 0,15$ MHz	1 dB	max. 2 dB
$f_N \pm 0,5$ MHz	$f_N \pm 1$ MHz	40 dB	min. 35 dB
$f_N \pm 1$ MHz	$f_N \pm 2$ MHz	43 dB	min. 40 dB
Group delay ripple in PB	p-p	0,45 μ s	max. 2 μ s
Temperature coefficient of frequency TC_f		-0,036 ppm/K ²	-
Operating temperature range		-	- 25 °C.. + 80 °C
Storage temperature range		-	- 40 °C.. + 85 °C
Turnover temperature T_o		25 °C	-

*) 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.

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

generated: _____

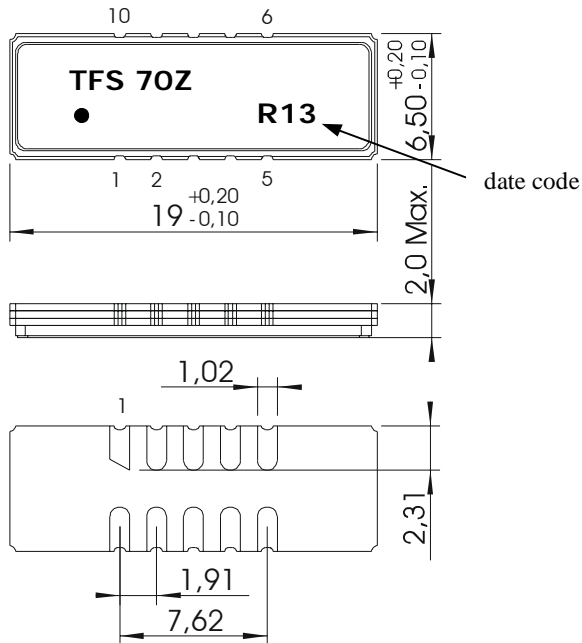
checked / approved: _____

TELEFILTER 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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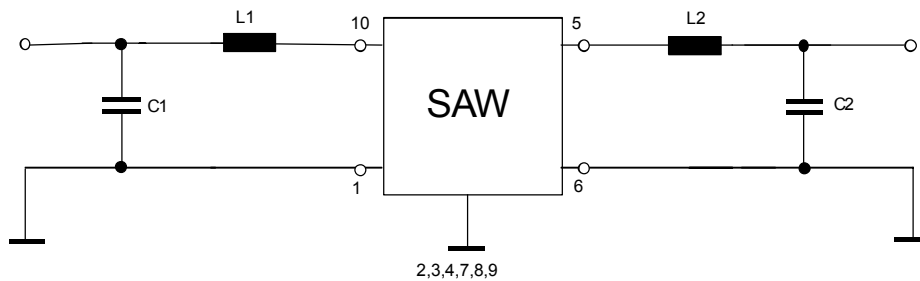
VI TELEFILTER**Filter Specification****TFS 70 Z****2/5****Package**

(all dimensions in mm)



date code: year + week
 N 2001
 P 2002
 R 2003

Pin 10 Input
 Pin 1 Input RF Return
 Pin 5 Output
 Pin 6 Output RF Return
 Pin 2 - 4, 7 - 9 Package Ground

50 Ω matching network

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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 5g 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;

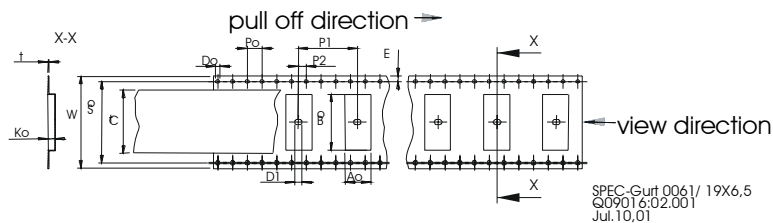
Packing

Tape & Reel: 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;

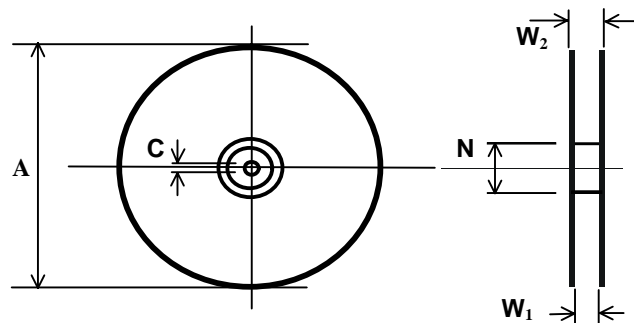
max. pieces of filters per reel:	2000
reel of empty components at start:	min 300 mm
reel of empty components at start including leader:	min 500 mm
Trailer	min 300 mm

Tape (all dimensions in mm)

W	: 32 ± 0,3
Po	: 4 ± 0,1
Do	: 1,5 ± 0,1
E	: 1,75 ± 0,1
So	: 28,4 ± 0,1
F	: 14,2 ± 0,1
G (min)	: 0,6
P2	: 2 ± 0,1
P1	: 12 ± 0,1
D1(min)	: 2,0
Ao	: 7,1 ± 0,1
Bo	: 19,6 ± 0,1
Ko	: 2,0 ± 0,1
t	: 0,35 ± 0,35
Ct	: 25,5 ± 0,1

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

A	: 330
W1	: 32,4 + 2
W2(max)	: 38,4
N(min)	: 100
C	: 13 ± 0,5 / - 0,2



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 in the above shown direction.

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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.	

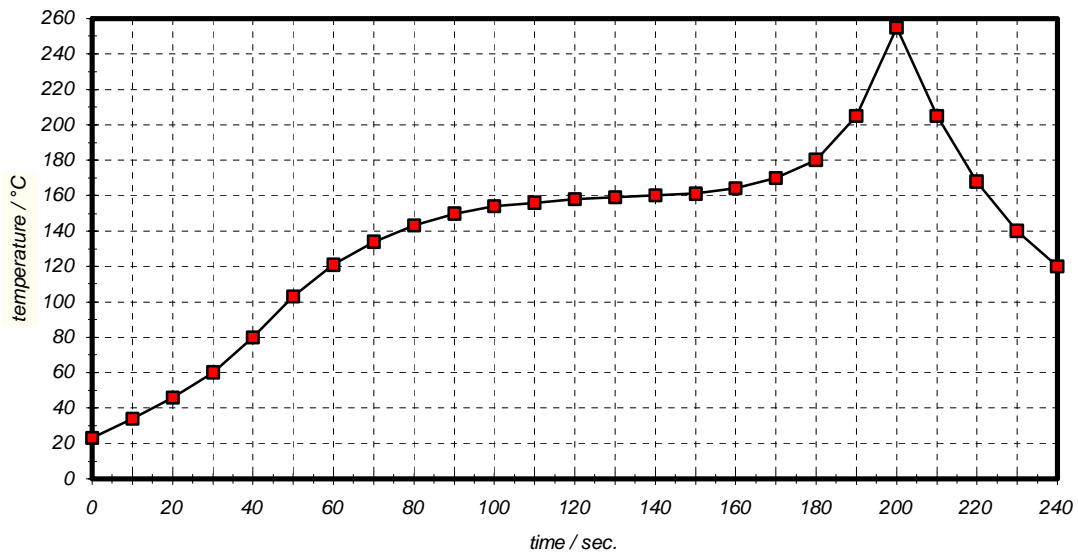
Chip-mount air reflow profile

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 70 Z****5/5****History**

Version	Reason of Changes	Name	Date
1.0	generation of specification	Pfeiffer	11.09.2002
1.1	remove mean value of group delay add maximum group delay ripple in PB	Pfeiffer	16.09.2002
1.2	typical values and terminating impedance added	Pfeiffer	19.02.2003
1.3	terminating impedance fixed	Pfeiffer	27.03.2003

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