

VI TELEFILTER**Filter specification****TFS 110 K2****1/5****Measurement Condition**

Ambient Temperature: 23 °C

Input Power Level: 0 dBm

Terminating impedances *:

Input: 700 Ω || -13,7 pF

Output: 700 Ω || -11,6 pF

Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the TFS 110 K2 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 given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached at the frequencies given below also if the centre frequency f_0 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_0 .

D a t a		typ. Value	Limit
Insertion Loss (Reference level)	$a_e = a_{min}$	-	max. 9 dB
Nominal Frequency	f_N		110,6 MHz
Relative Attenuation	a_{rel}		
$f_N - 65 \text{ kHz} \dots f_N + 65 \text{ kHz}$		-	max. 1 dB
$f_N \pm 65 \text{ kHz} \dots f_N \pm 82,5 \text{ kHz}$		-	max. 1,5 dB
$f_N \pm 400 \text{ kHz} \dots f_N \pm 800 \text{ kHz}$		-	min. 22 dB
$f_N \pm 800 \text{ kHz} \dots f_N \pm 1,6 \text{ MHz}$		-	min. 27 dB
$f_N \pm 1,6 \text{ MHz} \dots f_N \pm 10 \text{ MHz}$		-	min. 35 dB
$f_N \pm 10 \text{ MHz} \dots f_N \pm 25 \text{ MHz}$		-	min. 45 dB
Group delay Ripple $f_N \pm 80 \text{ kHz}$	GD	300 ns	max 500 ns
Input Power Level		-	max.+10 dBm
Operating Temperature Range			- 25 °C...+85 °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.

Generated:**Checked / approved:**

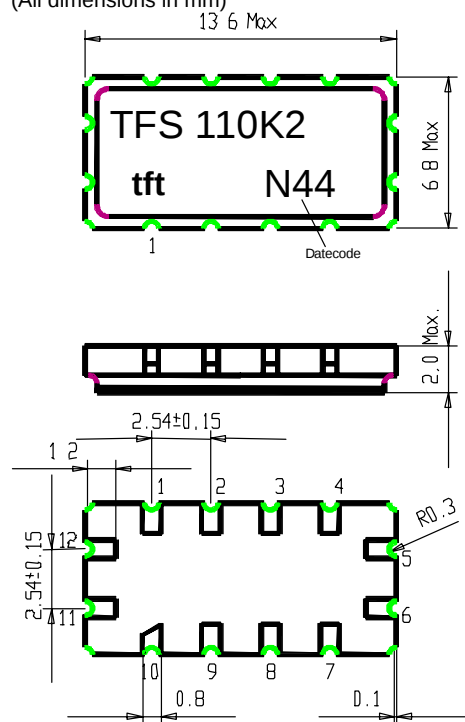
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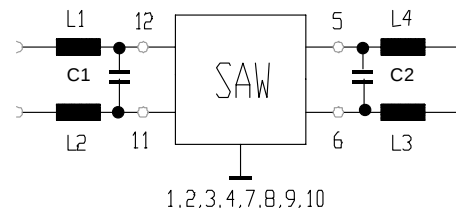
VI TELEFILTER**Filter specification****TFS 110 K2****2/5****Construction, pin connection and 50 Ω - matching network**

(All dimensions in mm)



Balanced

- | | | |
|-------------------------|------------------|------------------|
| 1 Not Connected Ground | 2 Package Ground | 3 Package Ground |
| 4 Not Connected Ground | 5 Sym. Output | 6 Sym. Output |
| 7 Not Connected Ground | 8 Package Ground | 9 Package Ground |
| 10 Not Connected Ground | 11 Sym. Input | 12 Sym. Input |



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VI TELEFILTER**Filter specification****TFS 110 K2****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 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Damp heat: 25 °C to 55°C / 95% r.H. / 10 cycles
(cycle) 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;
5. Density min. 1 E⁻⁴mbar*l/s

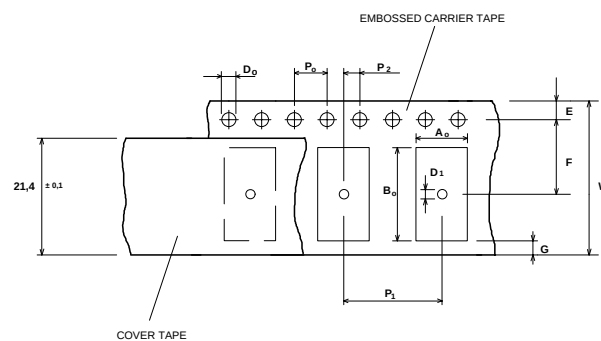
Packing

Tape & Reel: 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:
Reel of empty components at start:
Reel of empty components at start including leader:
Trailer

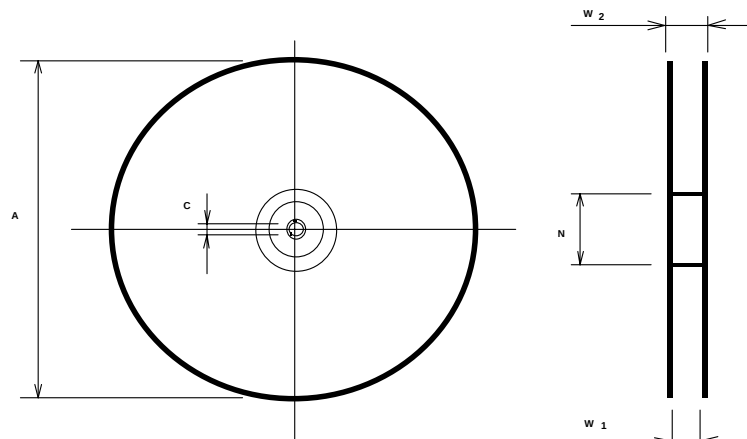
1700
min 300 mm
min 500 mm
min 300 mm

Tape (all dimensions in mm)

W	: 24 ± 0,3
Po	: 4 ± 0,1
Do	: 1,5 ± 0,1
D1	: 1,5 ± 0,1
E	: 1,75 ± 0,1
F	: 11,5 ± 0,1
G (min)	: 0,6
P2	: 2 ± 0,1
P1	: 12 ± 0,1
D1(min)	: 1,5
Ao	: 7,1 ± 0,2
Bo	: 13,9 ± 0,2

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

A	: 330
W1	: 24,4 +2
W2 (max)	: 30,4
N (min)	: >= 60
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 with the sprocket holes on the right side of the tap

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VI TELEFILTER**Filter specification****TFS 110 K2****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 ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

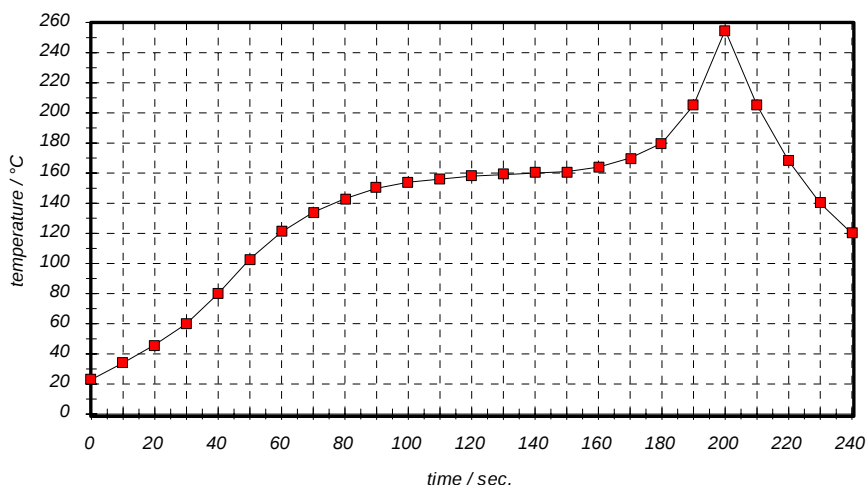
Chip-mount air reflow profile

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

VI TELEFILTER**Filter specification****TFS 110 K2****5/5****8. History**

Version	Reason of Changes	Name	Date
1.0	generate specification according to customer requirements	Pfeiffer	06.06.2001
1.1	density parameter added	Pfeiffer	26.10.2001
1.2	remove AC voltage specification	Steiner	21.11.2001

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