

**VI TELEFILTER****Preliminary Resonator Specification****TFR 433 N 1/5****Measurement condition**

Ambient temperature: 23 °C  
 Input power level: 0 dBm  
 Terminating impedances  
     for input: 50 Ω || 0 pF  
     for output: 50 Ω || 0 pF

**Characteristics****Remark:**

The minimum of the attenuation  $a_{\min}$  is defined as the insertion loss  $a_e$ . The centre frequency  $f_c$  is the measured frequency at the minimum insertion loss point. The tolerance for the centre frequency also includes a centre frequency shift due to the temperature coefficient of frequency  $TC_f$  in the operating temperature range and a production tolerance.

<b>D a t a</b>		<b>typ. value</b>	<b>tolerance/limit</b>
<b>Insertion loss</b> (Reference level)	$a_e = a_{\min}$	1,35 dB	max. 2,0 dB
<b>Resonant frequency</b>	$f_c$	433,920 MHz	± 75,0 kHz
<b>Unload quality factor</b>	$Q_U$	-	min. 4000,0
<b>Parallel capacitance</b>	$C_0$	2,07 pF	
<b>Motional components*)</b>			
<b>Resistance</b>	$R_m$	22 Ω	
<b>Inductance</b>	$L_m$	38 nH	
<b>Capacitance</b>	$C_m$	3,5 fF	
<b>Operating temperature range</b>			- 10..... + 70,0 °C
<b>Storage temperature range</b>			- 30..... + 85,0 °C
<b>Temperature Coefficient of frequency <math>TC_f^{**}</math></b>		ca. (- 0,041 ppm / K <sup>2</sup> )	-
<b>Turnover Temperature</b>		0 °C	-

\*) The equivalent circuit model is for reference only.

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

**Generated:** \_\_\_\_\_

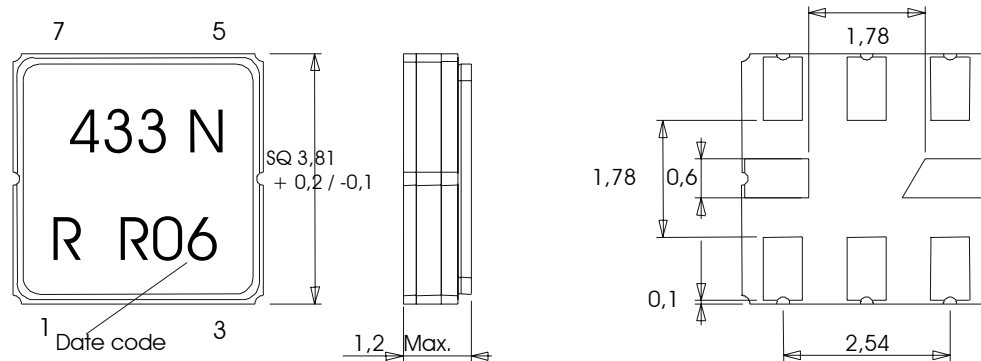
**Checked / approved:** \_\_\_\_\_

**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](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.

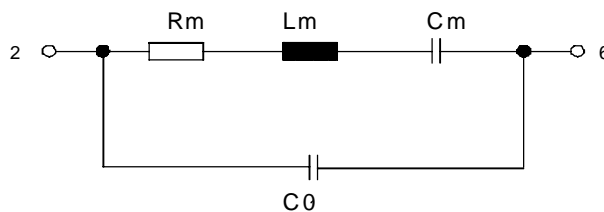
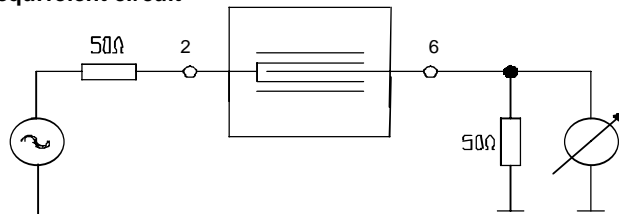
**Construction, pin configuration and 50 Ω - matching network**

(All dimensions in mm)



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

pin 1    ground  
 pin 2    input/Output  
 pin 3    ground  
 pin 4    ground  
 pin 5    ground  
 pin 6    input/output  
 pin 7    ground  
 pin 8    ground

**50 Ohm test circuit and equivalent circuit****Stability characteristics**

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](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.

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

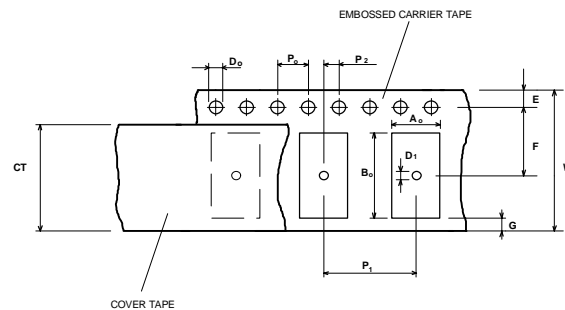
1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;  
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;  
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles  
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: twice max.;  
for temperature conditions, please refer to the attached "Air reflow temperature conditions" on page 4;

### 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:	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

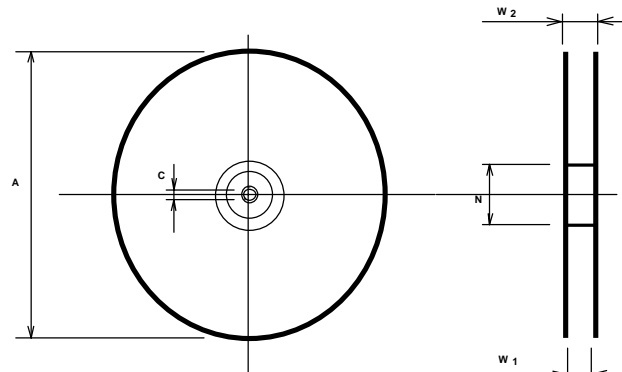
### Tape (all dimensions in mm)

W	: 12 ± 0,3
Po	: 4 ± 0,1
Do	: 1,5 + 0,1
E	: 1,75 ± 0,1
F	: 5,5 ± 0,05
G (min)	: 0,75
P2	: 2 ± 0,05
P1	: 8 ± 0,1
D1(min)	: 1,5
Ao	: 4,3 ± 0,1
Bo	: 4,3 ± 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 +0,5/-0,2



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. Markings on the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on its right.

**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](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.

**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.	

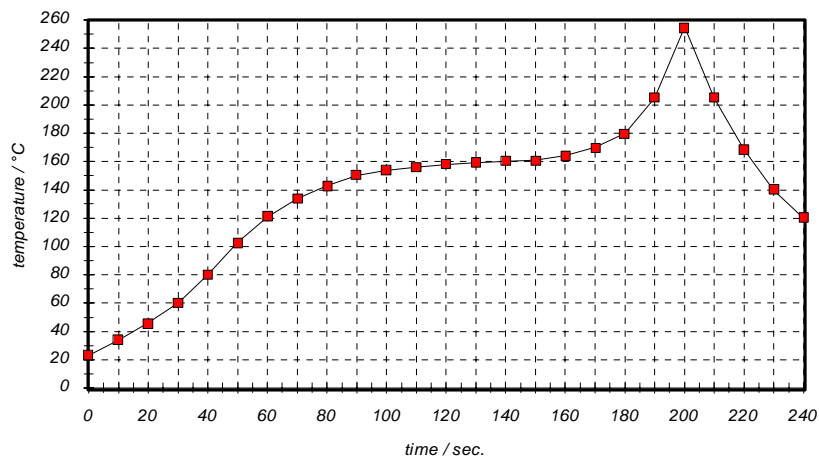
**Chip-mount air reflow profile**

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

**History**

<b>version</b>	<b>reason of changes</b>	<b>name</b>	<b>date</b>
1.0	generate of specification according to customer requirement	Dr. Sabah	11.02.2003