

VI TELEFILTER**Resonator Specification****TFR 433 K 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 includes a centre frequency shift due to the temperature coefficient of frequency TC_f in the operating temperature range and a production tolerance.

D a t a		typ. value	tolerance/limit
Insertion loss (Reference level)	$a_e = a_{\min}$	1,45 dB	max. 2,0 dB
Resonant frequency	f_c	433,420 MHz	± 75,0 kHz
Unloaded quality factor	Q_U	5483,0	min. 4000,0
Parallel capacitance	C_0	3,6 pF	-
Motional components*)			
Resistance	R_m	19 Ω	-
Inductance	L_m	38 nH	-
Capacitance	C_m	3,5 fF	-
Operating temperature range			- 10..... + 70,0 °C
Storage temperature range			- 30..... + 85,0 °C
Temperature coefficient of frequency TC_f^{**}		ca. (- 0,045 ppm / K ²)	-
Turnover temperature		21,0 °C	-

*) The equivalent circuit model is for reference only.

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

Generated: _____

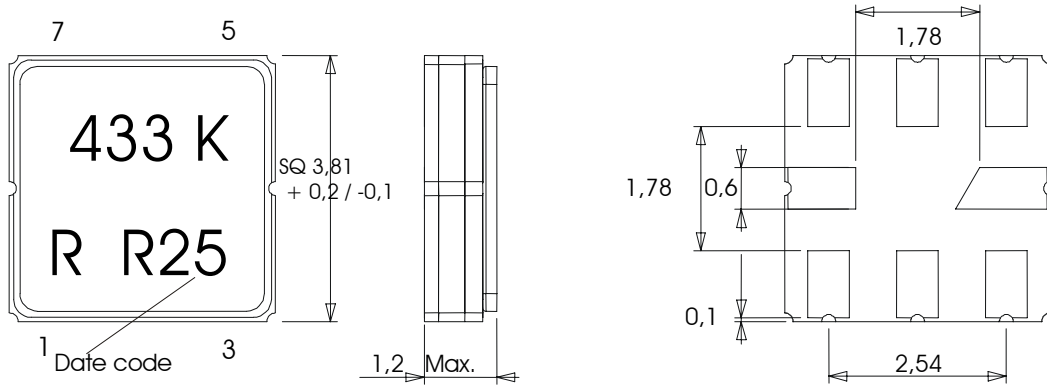
Checked / approved: _____

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Construction, pin configuration and 50 Ω - matching network

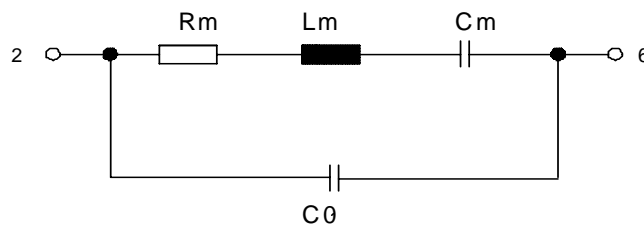
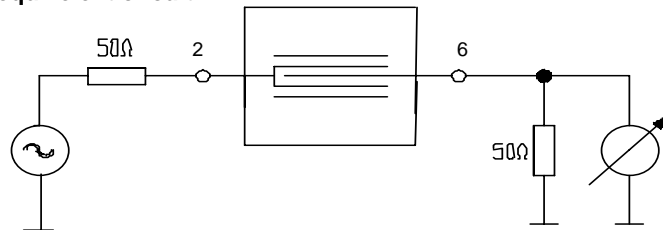
(All dimensions in mm)



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 output/input
- pin 7 ground
- pin 8 ground

50 Ohm test circuit and equivalent circuit



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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, please refer to the attached "Air reflow temperature conditions" on page 4;

Packing

Tape & Reel:

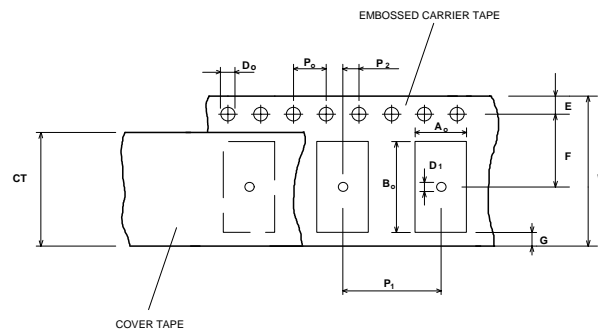
IEC 286 - 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel:
reel of empty components at start:
reel of empty components at start including leader:
trailer

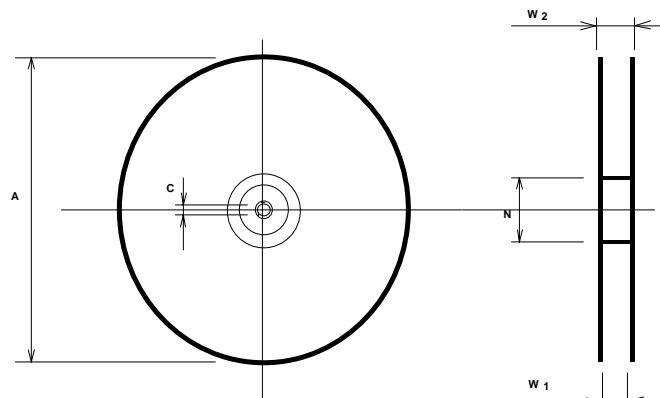
3000
min 300 mm
min 500 mm
min 300 mm

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.

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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.	

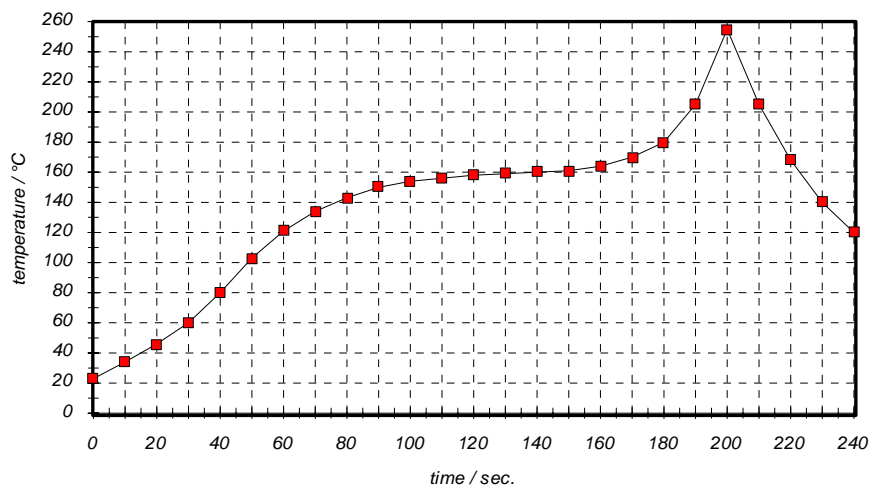
Chip-mount air reflow profile

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

History

version	reason of changes	name	date
1.0	generate of specification according to customer requirement	Dr. Sabah	11.02.2003
1.1	add of temperature coefficient, turnover temperature and motional components	Dr. Sabah	18.06.2003