

**VI TELEFILTER**

**Resonator Specification**

**TFR 433H**

**1/5**

**Measurement condition**

Ambient temperature: 25 °C  
 Input power level: 0 dBm  
 Terminating impedance:  
     Input: 50 Ω || 0 pF  
     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 frequency shift of the resonator in the operating temperature range is not included in the production tolerance scheme.

<b>D a t a</b>		<b>typ. value</b>	<b>tolerance / limit</b>
<b>Insertion loss</b> (reference level)	$a_e = a_{min}$	1,0 dB	max. 1,8 dB
<b>Resonant frequency</b> at ambient temperature	$f_c$	-	433,42 ± 0,075 MHz
<b>Phase</b>	$\varphi$	-	± 20 °
<b>Quality factor</b> Unloaded	Q	11500	-
<b>Parallel capacitance</b>	$C_0$	2,3 pF	-
<b>Motional resistance *</b>	$R_m$	12,6 Ω	-
<b>Motional inductance *</b>	$L_m$	55,5 μH	-
<b>Motional capacitance *</b>	$C_m$	2,4 fF	-
<b>Operating temperature range</b>	OTR	-	-10 °C ... + 70 °C
<b>Storage temperature range</b>		-	-30 °C ... +85 °C
<b>Frequency change with temperature</b> between -10 °C...+ 70 °C		95 ppm	

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

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

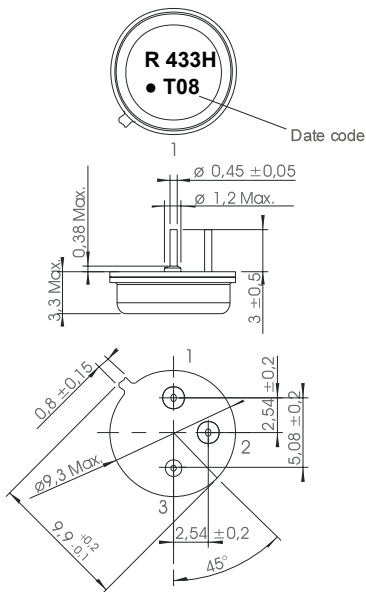
**Checked / Approved:** \_\_\_\_\_

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**Construction and pin connection**

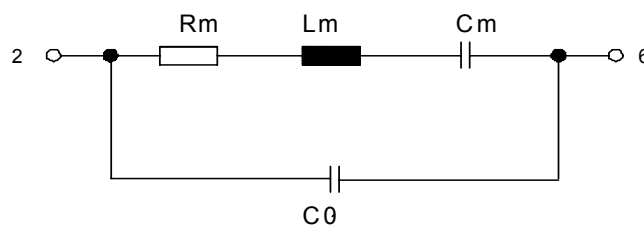
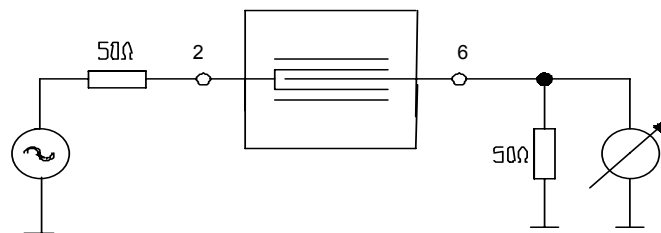
(All dimensions in mm)



- 1 Input
- 2 Output
- 3 Ground

Date code: Year + week  
 T 2005  
 U 2006  
 V 2007  
 ...

**50 Ω 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): max. 2 times reflow process;  
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

**Air reflow temperature conditions**

**Conditions**

Average ramp-up rate (30°C to 217°C)

> 100°C

> 150°C

> 217°C

Peak temperature

Time within 5°C of actual peak temperature

Cool-down rate (Peak to 50°C)

Time from 30°C to Peak temperature

**Exposure**

less than 3°C/second

between 300 and 600 seconds

between 240 and 500 seconds

between 30 and 150 seconds

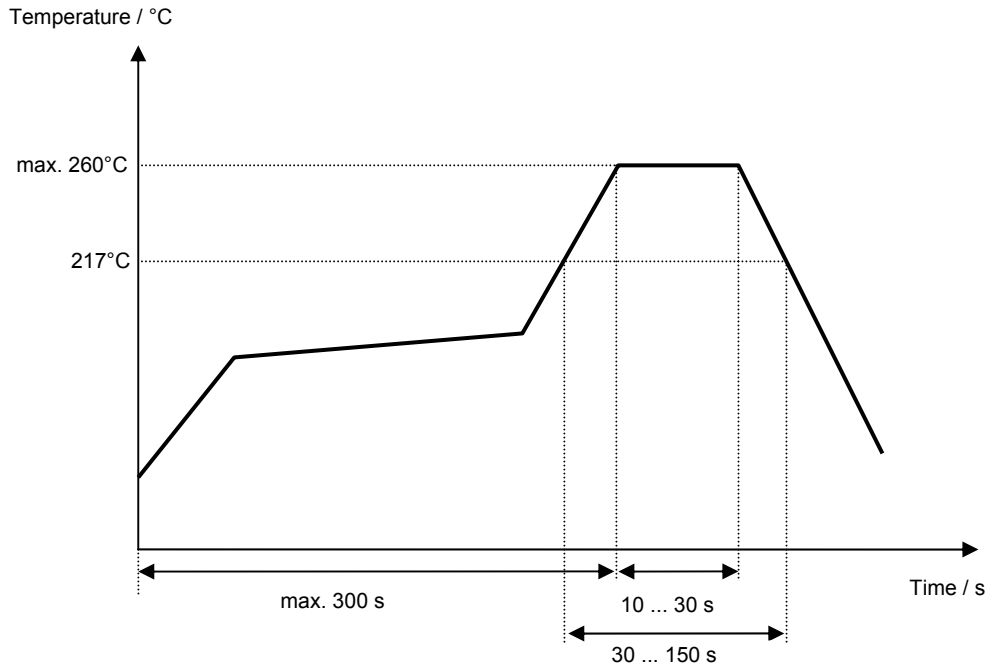
max. 260°C

between 10 and 30 seconds

less than 6°C/second

no greater than 300 seconds

**Chip-mount air reflow profile**



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**History**

<b>Version</b>	<b>Reason of changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of specification according to customer requirement	Pfeiffer	21.11.2001
1.1	- Generation of resonator specification; added typical values - Corrected stability characteristics - Corrected air reflow temperature conditions - Changed remark (TK, filter)	Martens	16.02.2005

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