

Vectron International**Resonator specification****TFR1701****1/5****Measurement condition**

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:

The minimum of the attenuation a_{\min} is defined as the insertion loss a_e . The centre frequency f_R is the frequency of the serial resonance of the resonator. The frequency shift of the resonator in the operating temperature range is not included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit
Insertion loss (reference level)	$a_e = a_{\min}$	1,1	dB	max. 2,5 dB
Centre frequency	f_R	1701,963	MHz	± 60 ppm
Quality factor Unloaded	Q	3400		min. 3000
Parallel capacitance	C_0	1,7	pF	-
Motional resistance	R_m	18,3	Ω	-
Motional inductance	L_m	5,8	μH	-
Motional capacitance	C_m	1,5	fF	-
Capacitance ratio	C_0 / C_m	1110		max. 1500
Operating temperature range	OTR	-		- 40 °C ... + 85 °C
Storage temperature range		-		- 55 °C ... + 90 °C
Turnover temperature	T_0	57	°C	-
Temperature coefficient of frequency	TC_f^*	-0,03	ppm/K ²	-

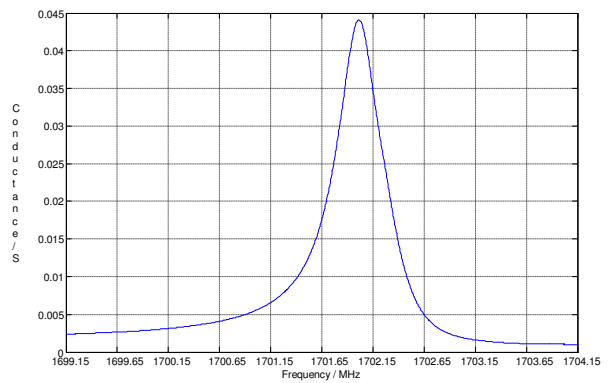
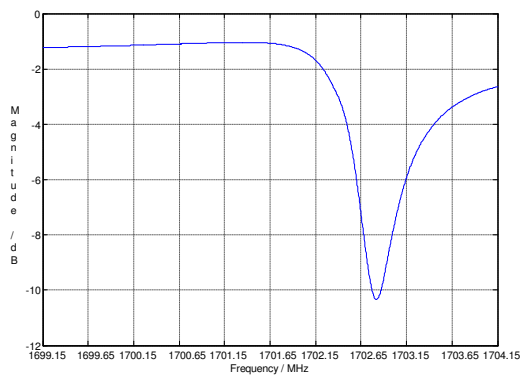
$$*) \quad \Delta f_0(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T - T_0)^2 \times f_{\text{CAT}}(\text{MHz})$$

Generated:**Checked / Approved:**

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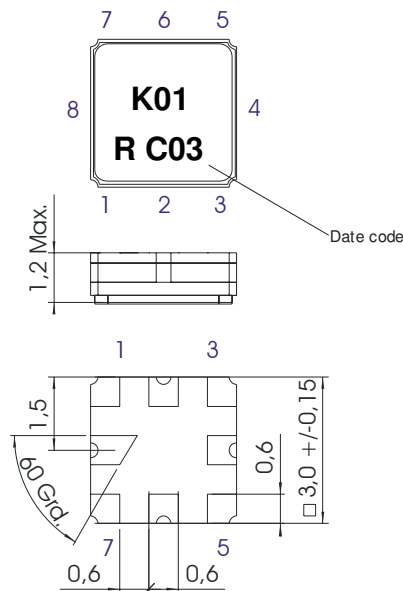
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Filter characteristic



Construction and pin connection

(All dimensions in mm)

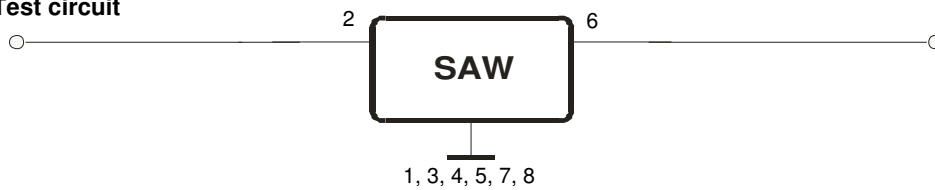


1	Ground
2	Input
3	Ground
4	Ground
5	Ground
6	Output
7	Ground
8	Ground

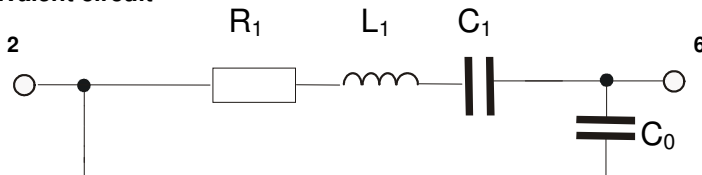
Date code: Year + week

C	2012
D	2013
E	2013
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50 Ω Test circuit



Equivalent circuit



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Stability characteristics, reliability

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

- 1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
- 2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5 g 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: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
- 5. ESD MIL-STD-883E using coupling network of ISO 10605 and EN 6100-4-2
HBM:250V; CDM:V;

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

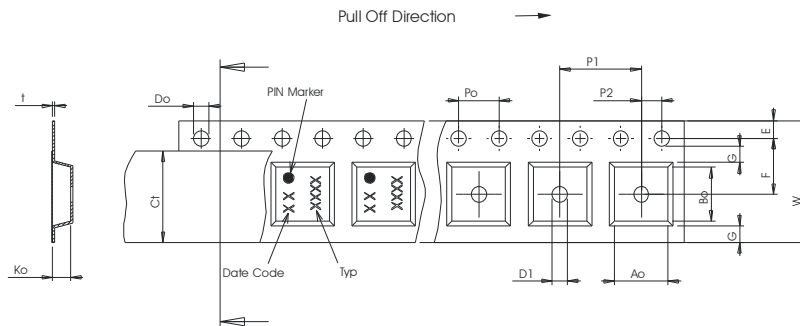
Packing

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:	9000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

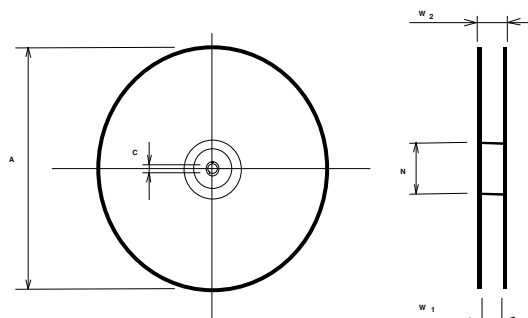
Tape (all dimensions in mm)

- W : 8,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 3,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 4,00 ± 0,1
- D1(min) : 1,50
- Ao : 3,25 ± 0,1
- Bo : 3,25 ± 0,1
- Ct : 5,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

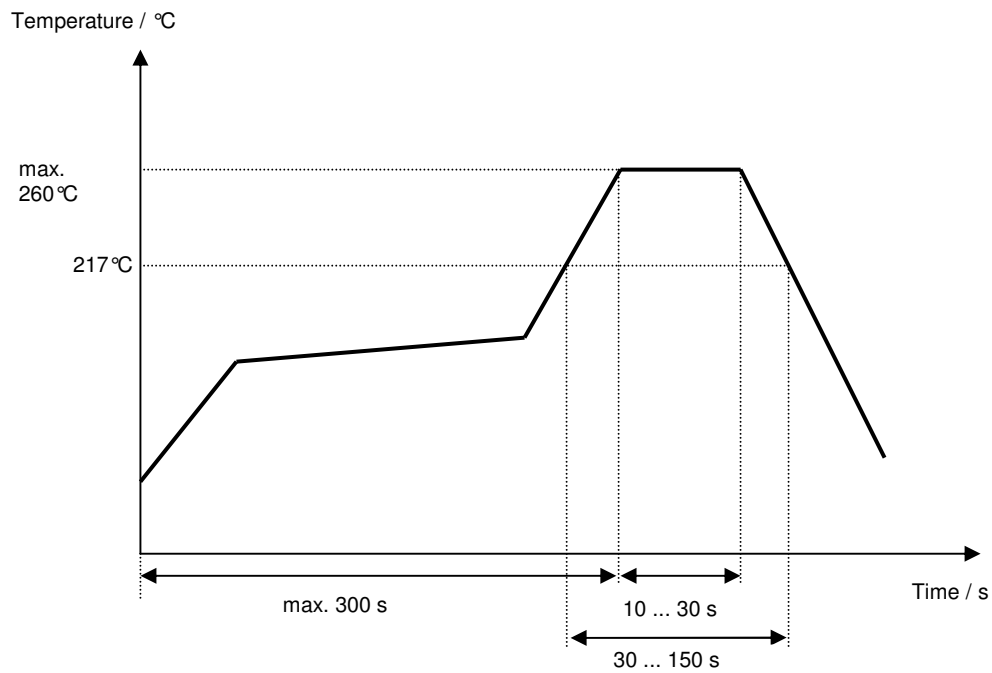
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Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



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History

Version	Reason of changes	Name	Date
1.0	- Generation of development specification	Raura	30.09.2010
2.0	- Change of center frequency	Martens	03.12.2010
3.0	- Generation of resonator specification	Martens	24.01.2011
4.0	- Changed tape and reel alignment - Updated typical value for turnover temperature	Martens	18.01.2012

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