Vectron International Resonator specification TFR915X 1/5

Measurement condition

Ambient temperature T_A:	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_N is the measured frequency at the minimum insertion loss point. The frequency shift of the filter 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)	$a_e = a_{min}$	5.5	dB	max.	8.2	dB
Centre frequency at T_A	f_N	915	MHz		± 250	kHz
Phase at f_R		30	°		-	
Ageing of centre frequency		-		max.	± 50	ppm
Quality factor	Unloaded Q	8300		min.	4400	
	Loaded Q	3000		min.	2500	
Parallel capacitance	C_0	1.76	pF		-	
Motional resistance	R_1	9.5	Ω		-	
Motional inductance	L_1	57	µH		-	
Motional capacitance	C_1	0.53	fF		-	
Input power level				max.	0	dBm
Operating temperature range		-		-40 °C ... + 125 °C		
Storage temperature range		-		-55 °C ... + 125 °C		
Turnover temperature	T_0	21	°C			
Temperature coefficient of frequency	TC_f *	-0.037	ppm/K^2		-	

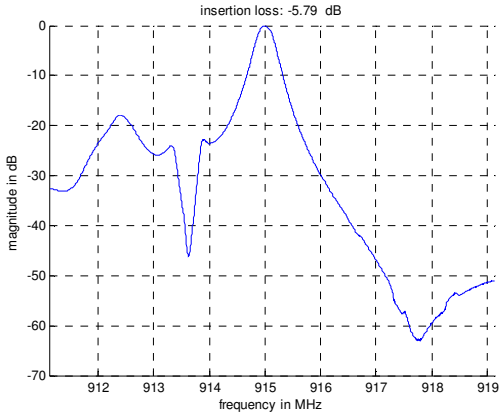
*) $\Delta f = TC_f(T - T_0)^2 f_N$

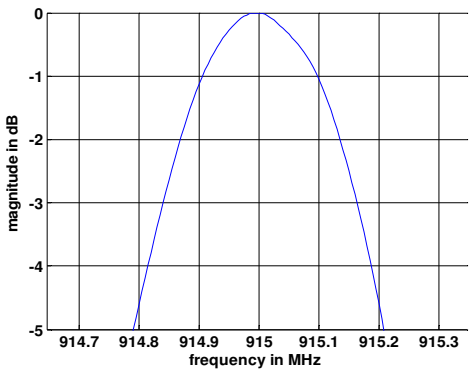
Generated:

Checked / Approved:

Vectron International GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30
E-Mail: tft@vectron.com

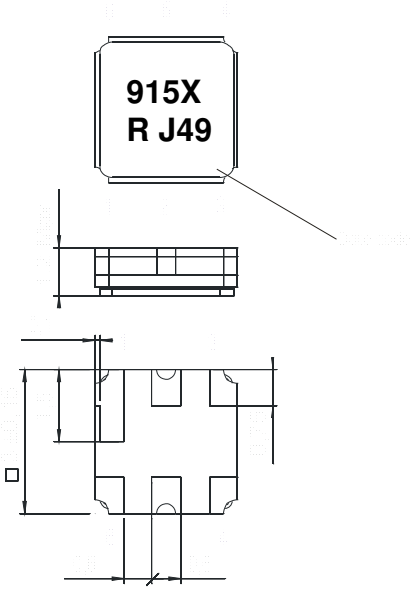
Filter characteristic





Construction and pin connection

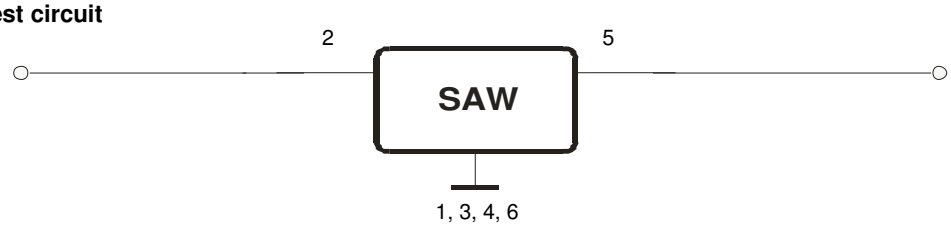
(All dimensions in mm)



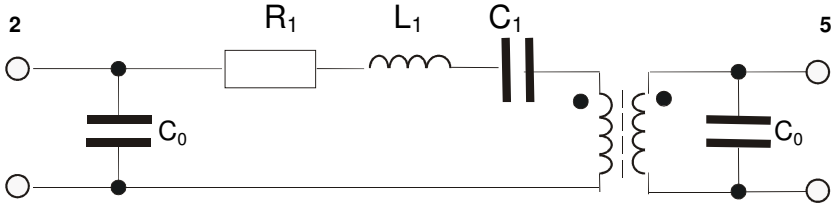
1	Ground
2	Input
3	Ground
4	Ground
5	Output
6	Ground

Date code:	Year + week
J	2017
K	2018
L	2019
...	

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: 500 g, 1 ms, half sine wave, 3 shocks each plane;
   DIN IEC 60068 T2 - 27

2. Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 60068 T2 - 6

3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
   DIN IEC 60068 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. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

This filter is RoHS compliant (2011/65/EU)

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;

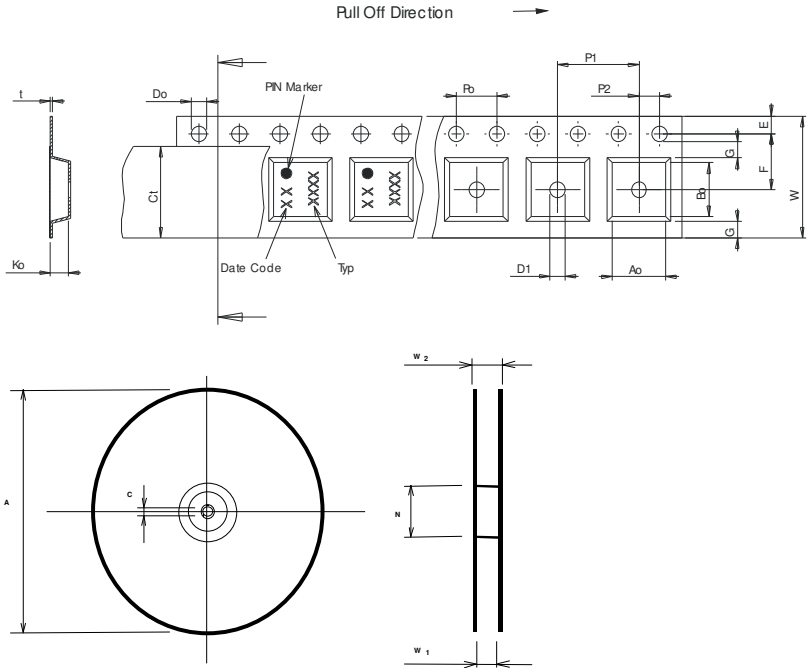
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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	: 5.30	±0.1
Ko	: 1.50	±0.1
t	: 0.25	±0.05

Reel (all dimensions in mm)

A	:330	or 180
W1	: 8.40	+1.5/-0
W2(max)	: 14.40	
N(min)	: 60.00	
C	: 13.0	±0.2



The minimum bending radius is 45 mm.

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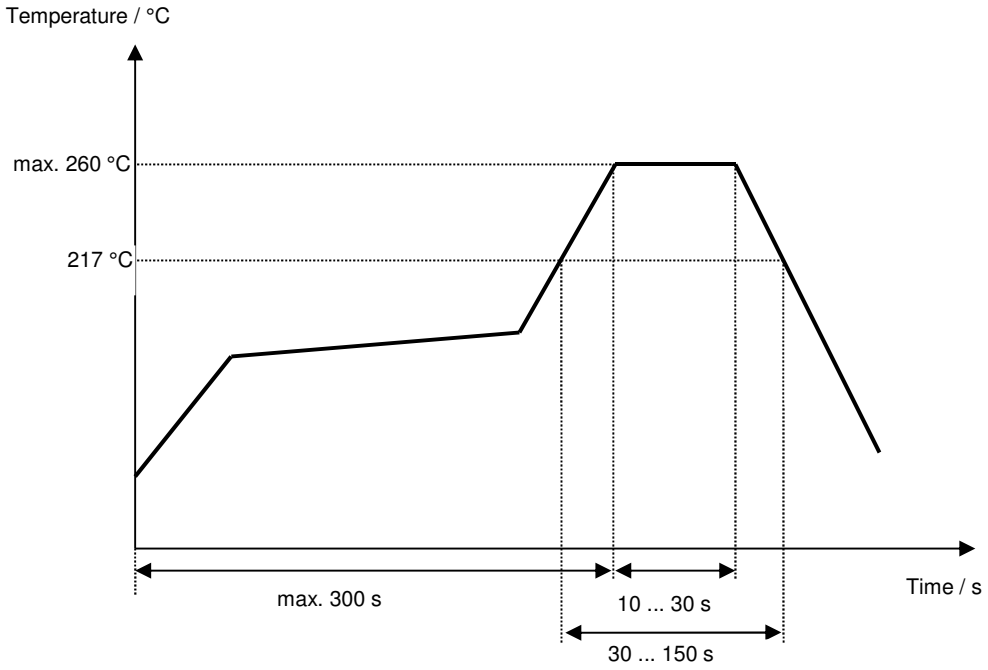
Air reflow temperature conditions

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 resonator specification	Abutaimah	23.03.2017
1.1	Update storage temperature range Update formula for Δf Correct typos Update Tape & Reel	P. Jaster	11.08.2017
1.2	Update Δf formula below the data table Changed specification description at the header	Raura	07.12.2017

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