

Vectron International**Filter specification****TFS 935****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics**Remark:**

The maximum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 935 MHz without any tolerance or limit. The values of absolute attenuation a_{abs} are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a				typ. value		tolerance / limit		
Insertion loss				a_e	1,6	dB	max.	2,5 dB
Nominal frequency				f_N	-		935	MHz
Passband					-		$f_N \pm$	6 MHz
Absolute attenuation				a_{abs}				
929	MHz	...	941 MHz		1,6	dB	max.	2,5 dB
0,3	MHz	...	874 MHz		45	dB	min.	40 dB
874	MHz	...	902 MHz		35	dB	min.	30 dB
974	MHz	...	1019 MHz		53	dB	min.	40 dB
1019	MHz	...	1031 MHz		52	dB	min.	50 dB
1031	MHz	...	1500 MHz		42	dB	min.	40 dB
Input power level					-		max.	12 dBm
Operating temperature range				OTR	-		- 30 °C ... + 70 °C	
Storage temperature range					-		- 40 °C ... + 100 °C	
Temperature coefficient of frequency				TC_f *	-46	ppm/K	-	

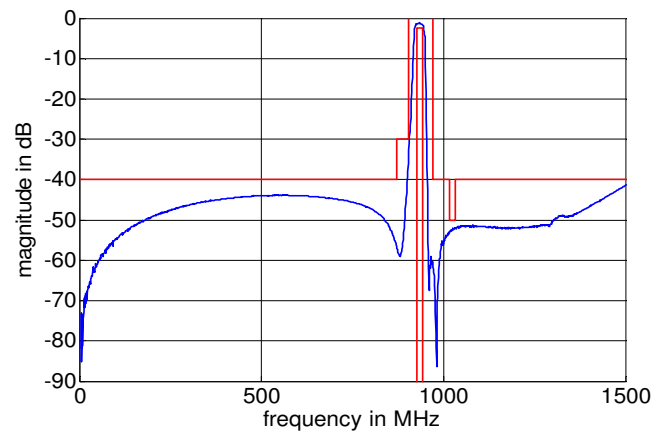
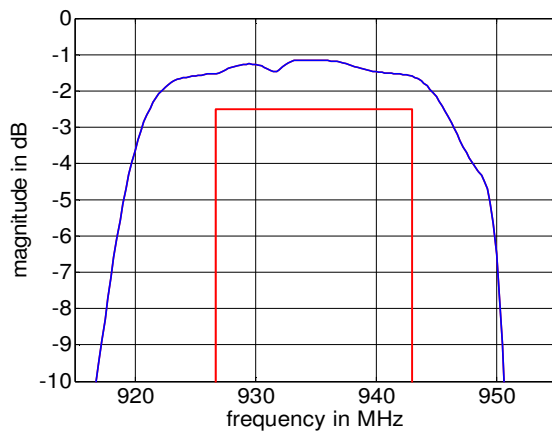
*) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$

Generated:**Checked / Approved:**

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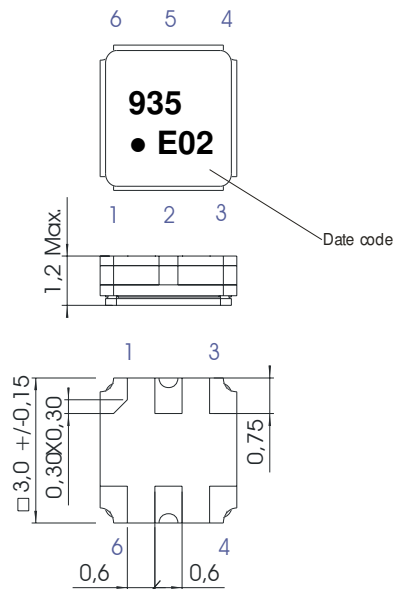
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Filter characteristic



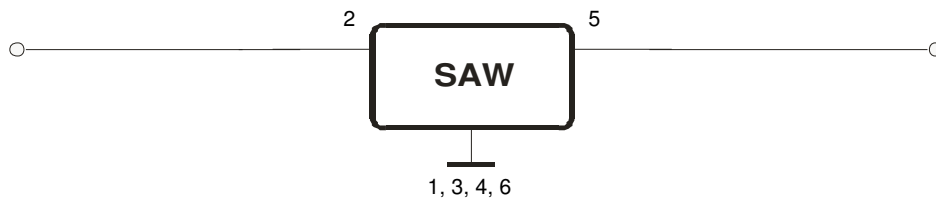
Construction and pin connection

(All dimensions in mm)



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

Date code:	Year + week
E	2014
F	2015
G	2016
...	

50 Ω Test 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 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions, see page 4: "Air reflow temperature conditions"

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

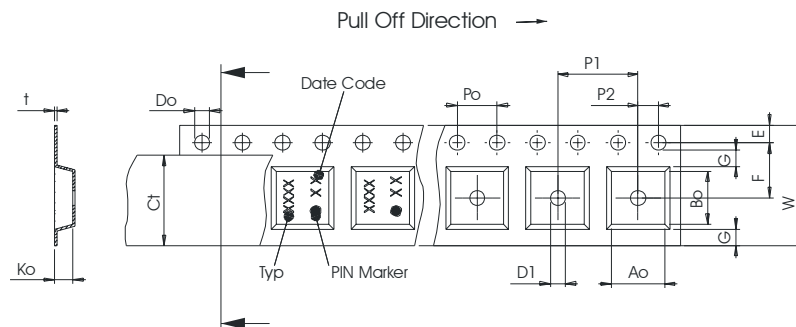
Packing

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;

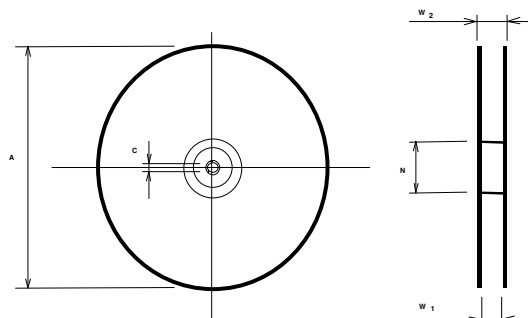
max. pieces of filters per reel:	9000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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



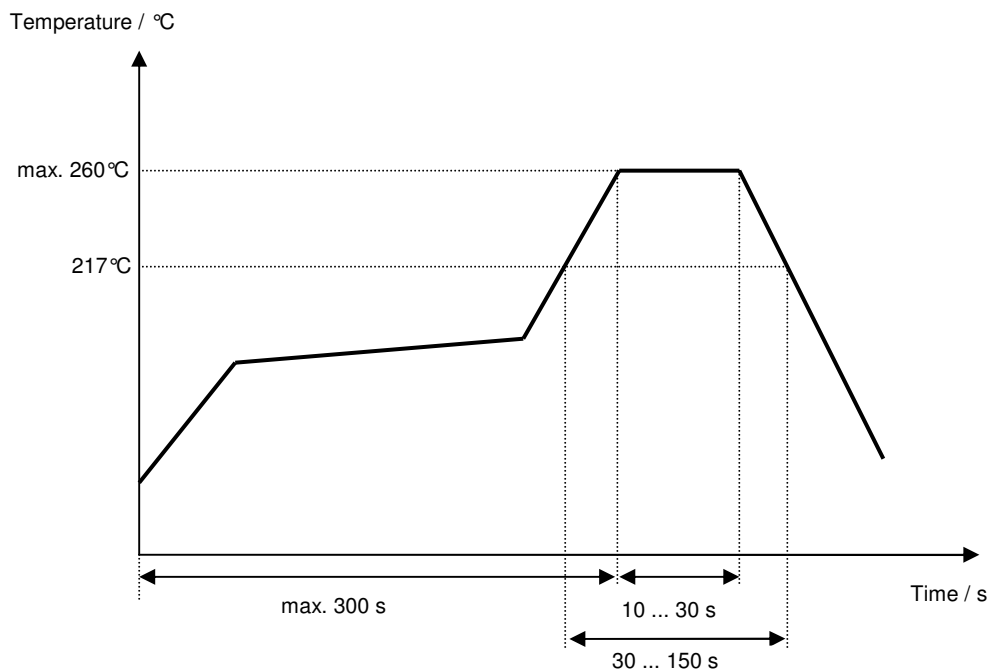
The minimum bending radius is 45 mm.

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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

Vectron International**Filter specification****TFS 935****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Martens	22.11.2004
1.1	- Change attenuation within 1019 – 1031	Noack	16.03.2005
1.2	- Change attenuation according to customer requirement	Noack	22.03.2005
1.3	- Generation of filter specification	Strehl	25.05.2005
1.4	- maximum input power updated	Kortenbeutel	07.01.2014

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