

Vectron International**Filter specification****TFS 312****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	200	Ω
Output:	200	Ω

Characteristics

Remark:

The nominal frequency f_N is fixed at 312.5 MHz. The insertion loss a_e is defined as loss value determined at f_N . Reference level for the relative attenuation a_{rel} of the TFS 312 is the insertion loss a_e . All specified data are met within the operating temperature range.

D a t a**typ. value****tolerance / limit**

Insertion loss (reference level)	a_e	2.2	dB	max.	4.5	dB
Nominal frequency	f_N	-			312.5	MHz
Pass band	PB	-		$f_N \pm$	1.5	MHz
Bandwidth 3 dB	BW	7.36	MHz		-	
Absolute attenuation	a_{abs}					
$f_N - 300$ MHz ... $f_N - 270$ MHz		58	dB	min.	40	dB
$f_N - 270$ MHz ... $f_N - 233$ MHz		58	dB	min.	52	dB
$f_N - 233$ MHz ... $f_N - 77$ MHz		54	dB	min.	50	dB
$f_N - 77$ MHz ... $f_N - 38$ MHz		53	dB	min.	48	dB
$f_N + 50$ MHz ... $f_N + 97$ MHz		52	dB	min.	48	dB
$f_N + 97$ MHz ... $f_N + 155$ MHz		48	dB	min.	40	dB
$f_N + 155$ MHz ... $f_N + 233$ MHz		52	dB	min.	48	dB
$f_N + 233$ MHz ... $f_N + 273$ MHz		54	dB	min.	50	dB
$f_N + 273$ MHz ... $f_N + 687.5$ MHz		54	dB	min.	52	dB
Input power level				max.	7	dBm
Operating temperature range	OTR	-		- 40 °C ... + 85 °C		
Storage temperature range		-		- 45 °C ... + 95 °C		
Temperature coefficient of frequency	TC_f *	-32	ppm/K			

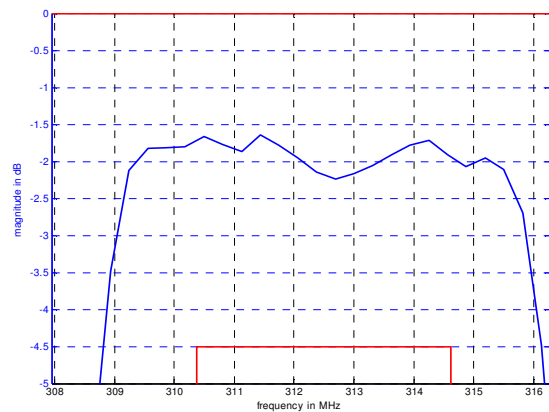
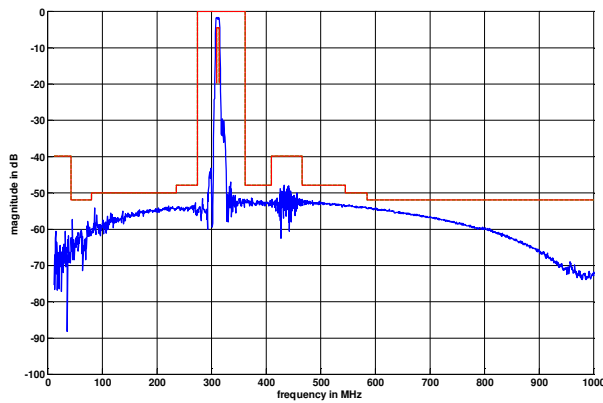
*) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$.

Generated:**Checked / Approved:**

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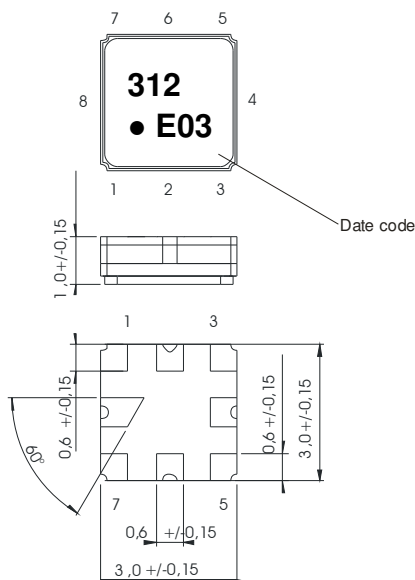
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Filter characteristic



Construction and pin connection

(All dimensions in mm)



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

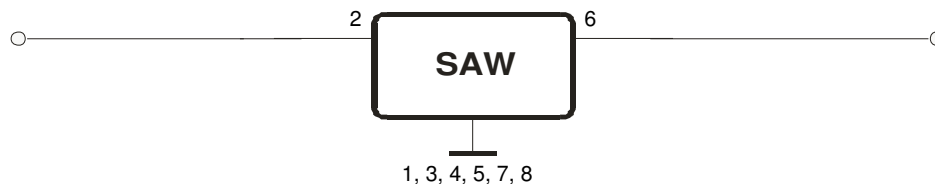
Date code: Year + week

E 2014

F 2015

G 2016

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200 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)

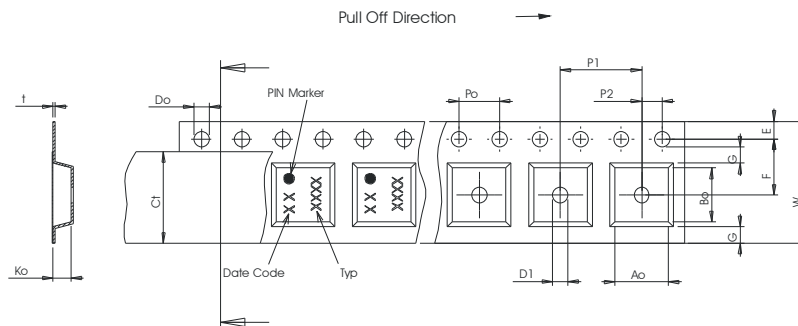
Packing

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;

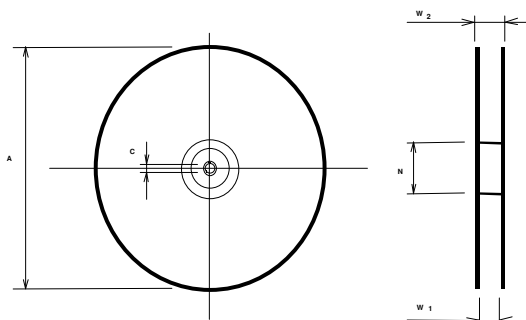
max. pieces of filters per reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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	: 5,3 ± 0,1

**Reel (all dimensions in mm)**

A	: 180
W1	: 8,4 +1,5/-0
W2(max)	: 14,4
N(min)	: 60
C	: 13,0 ± 0,2



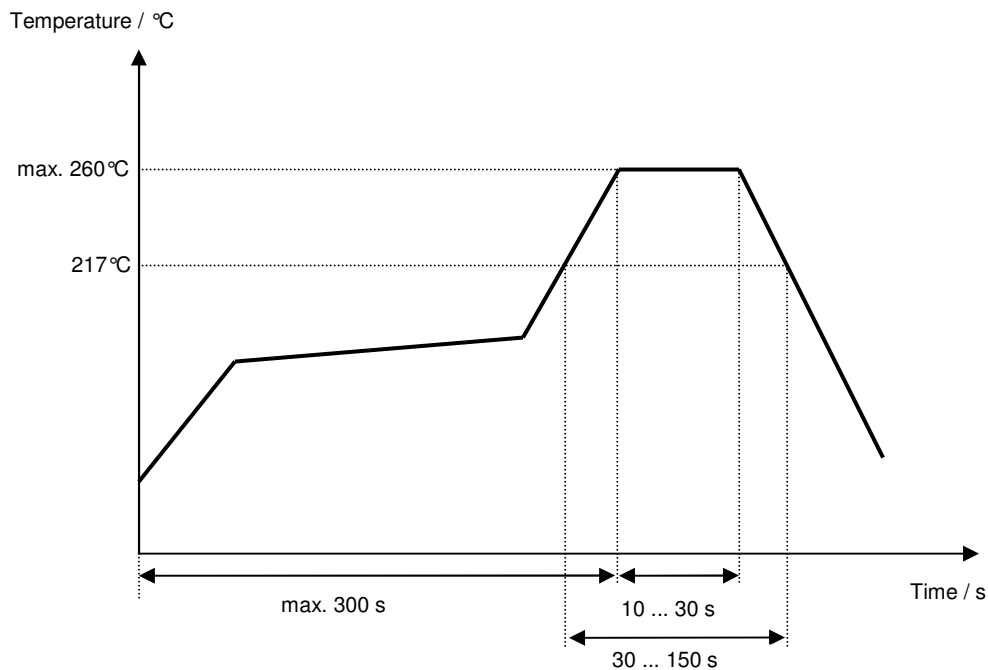
The minimum bending radius is 45 mm.

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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

Vectron International**Filter specification****TFS 312****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of development specification	Strehl	13.06.2006
1.1	Add data a_{abs}	Strehl	04.07.2006
1.2	Add pass band, change insertion loss Change attenuation, add typical values Add filter characteristic, generation of filter specification	Channaa	25.08.2006
1.3	Change characteristics	Strehl	24.09.2007
2.0	Change data table and limit lines in characteristics	Schönbein	28.06.2012
3.0	Change pull off direction from reel	Schönbein	09.08.2012
3.1	maximum input power updated	Kortenbeutel	16.01.2014