

Vectron International**Filter specification****TFS 1191****1/5****Measurement condition**

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

Characteristics

The maximum attenuation in the passband is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 1191MHz 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 in PB	a_e	3,4 dB	max.	4,0 dB
Nominal frequency	f_N	-		1191,0 MHz
Passband	PB	-	$f_N \pm$	27,0 MHz
Passband ripple	p-p	1,0 dB	max.	2,0 dB
Absolute attenuation	a_{abs}			
0,3 MHz ... 1000 MHz		37 dB	min.	30 dB
1000 MHz ... 1130 MHz		19 dB	min.	10 dB
1260 MHz ... 1360 MHz		17 dB	min.	10 dB
1360 MHz ... 2500 MHz		36 dB	min.	30 dB
2500 MHz ... 4000 MHz		28 dB	min.	24 dB
4000 MHz ... 6000 MHz		12 dB	min.	8 dB
Group delay ripple				
1164 MHz ... 1189 MHz		5 ns	max.	11 ns
1166 MHz ... 1218 MHz		5 ns	max.	11 ns
1164 MHz ... 1218 MHz		5 ns	max.	11 ns
VSWR within PB		1,6 : 1	max.	2,3 : 1
Input power level in PB		-	max.	15 dBm
Operating temperature range	OTR	-		- 40 °C ... + 85 °C
Storage temperature range		-		- 45 °C ... + 85 °C
Temperature coefficient of frequency	TC_f^*	-76 ppm/K		

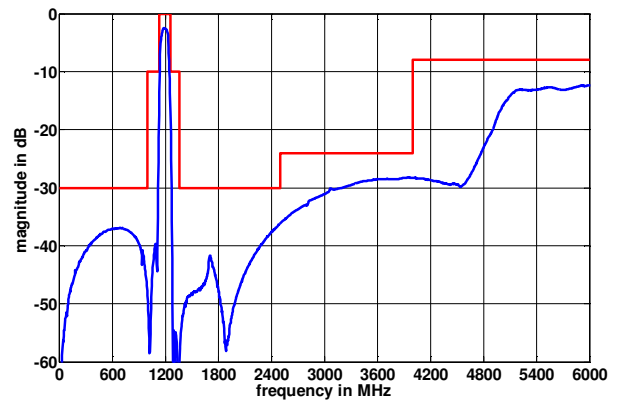
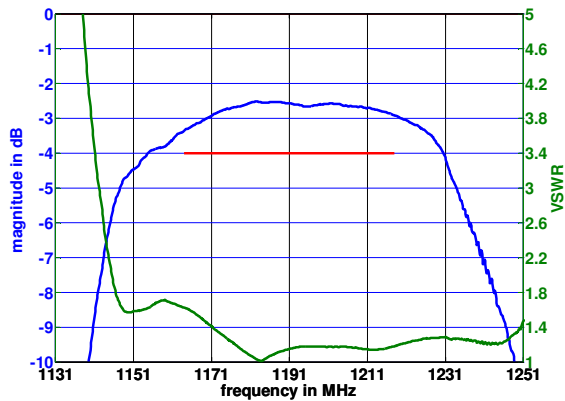
*) $\Delta f_C(\text{Hz}) = TC_f (\text{ppm/K}) \times (T - T_0) \times f_{CAT} (\text{MHz})$

Generated:**Checked / Approved:**

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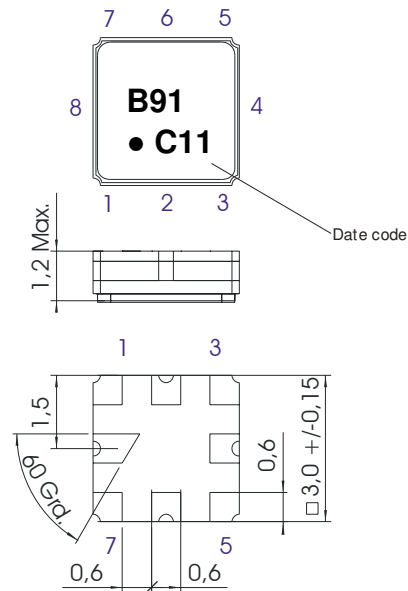
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Filter characteristic



Construction and pin connection

(All dimensions in mm)

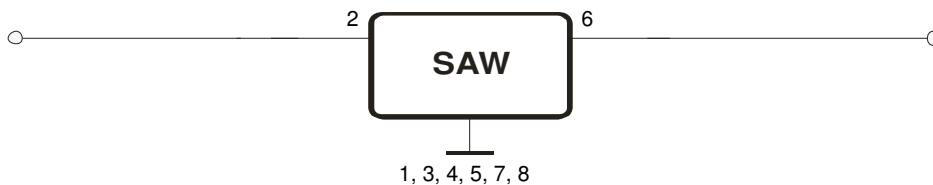


1	Ground
2	Input
3	Ground
4	Ground
5	Ground
6	Output
7	Ground
8	Ground

Date code: Year + week

C	2012
D	2013
E	2014
...	

50 Ohm 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 5 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 / 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, see page 4: "Air reflow temperature conditions"
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

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

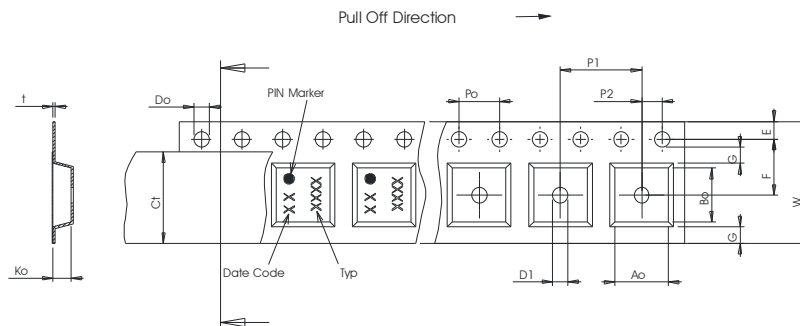
Packing

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: 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

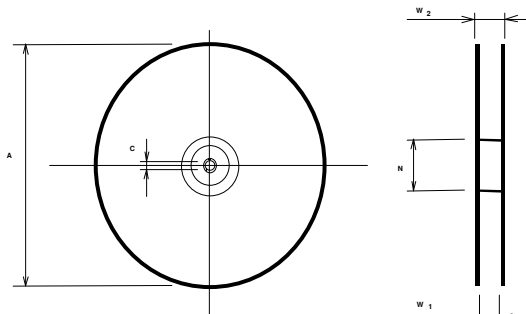
Tape (all dimensions in mm)

- 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.

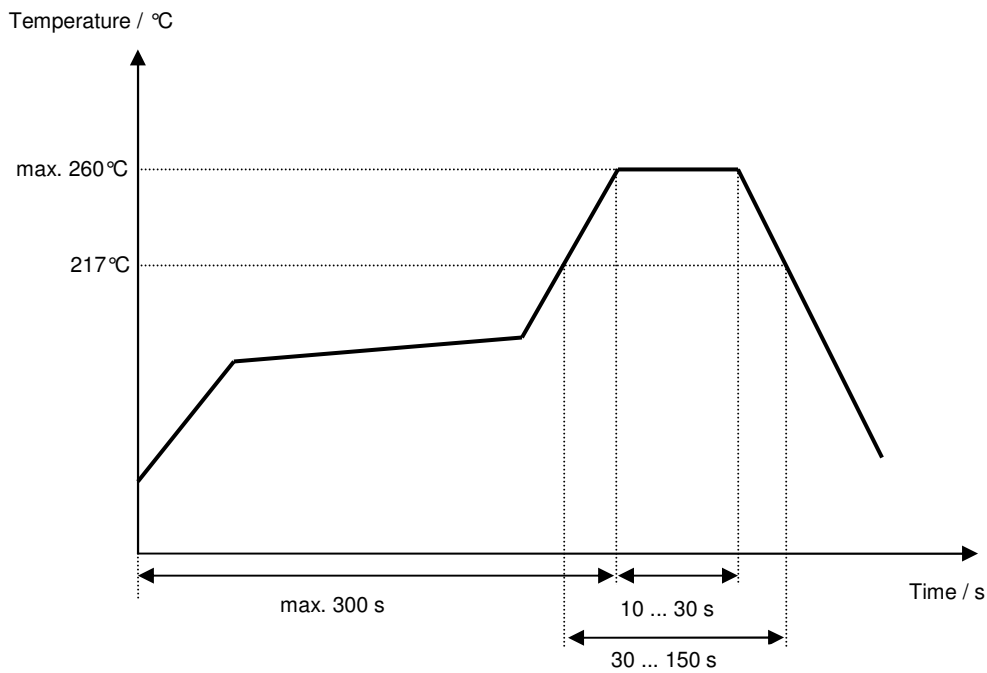
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Air reflow temperature conditions

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



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History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	S.Springfeldt	20.09.2011
2.0	- Absolute attenuation updated (2500 – 6000 MHz)	A. Molke	25.11.2011
2.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	16.03.2012