

**Vectron International**

**Filter specification**

**TFS 1220N**

**1/5**

**Measurement condition**

Ambient temperature:	22	°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 1220.0 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				
<b>Insertion loss</b>			$a_e$	3.8	dB	max.	8.0	dB	
<b>Nominal frequency</b>			$f_N$				1220.0	MHz	
<b>Passband</b>						$f_N \pm$	100	kHz	
<b>Passband ripple</b>				0.2	dB	max.	1.5	dB	
<b>Absolute attenuation</b>			$a_{abs}$						
0.3	MHz	...	1180	MHz	53	dB	min.	45	dB
1180	MHz	...	1200	MHz	45	dB	min.	30	dB
1200	MHz	...	1207	MHz	43	dB	min.	16	dB
1207	MHz	...	1209	MHz	40	dB	min.	9	dB
1231	MHz	...	1233	MHz	24	dB	min.	9	dB
1233	MHz	...	1242	MHz	32	dB	min.	16	dB
1242	MHz	...	1400	MHz	50	dB	min.	45	dB
1400	MHz	...	1700	MHz	46	dB	min.	40	dB
1700	MHz	...	2000	MHz	41	dB	min.	35	dB
<b>Group delay ripple within PB</b>				10	ns	max.	100	ns	
<b>Operating temperature range</b>			OTR				-55 °C ... +100 °C		
<b>Storage temperature range</b>							-55 °C ... +100 °C		
<b>Temperature coefficient of frequency</b>			$TC_f^*$	-36	ppm/K		-		
<b>Input power level</b>				-		max.	10	dBm	

\*)  $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_{cat}(\text{MHz})$

**Generated:**

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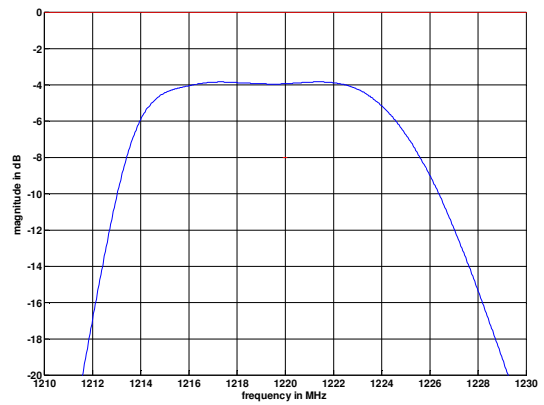
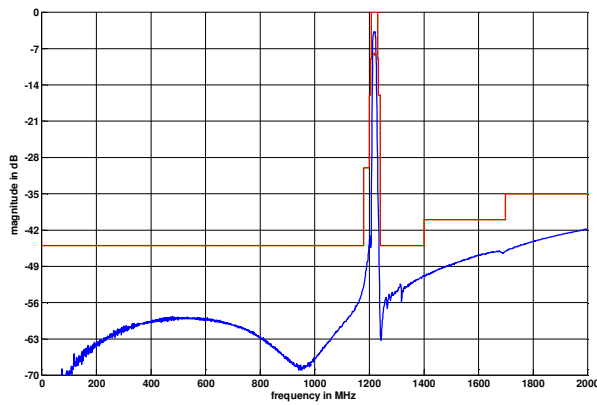
**Checked / Approved:**

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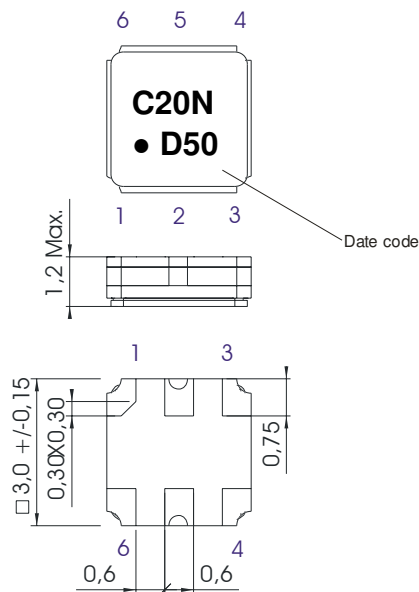
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**Filter Characteristic**



**Construction and pin connection**

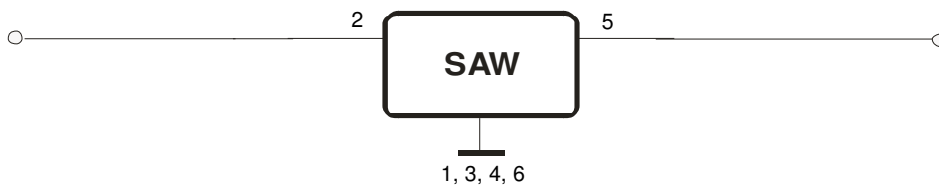
(All dimensions in mm)



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

Date code: Year + week  
 D 2013  
 E 2014  
 F 2015  
 ...

**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 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 / 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 refer to the attached "Air reflow temperature conditions" on page 4;

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

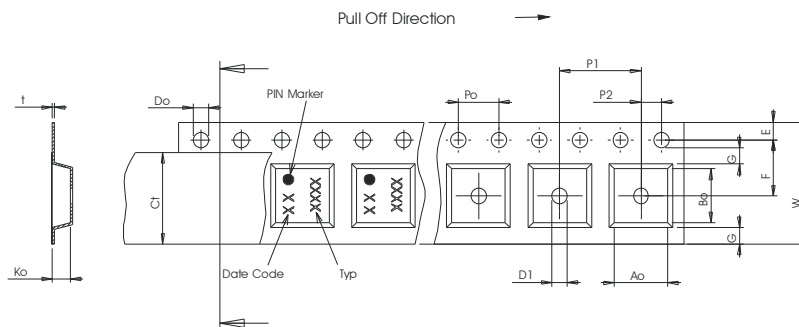
**Packing**

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

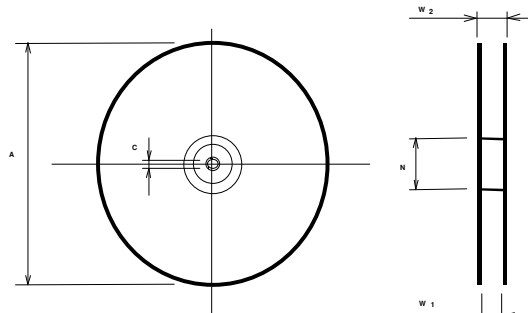
**Tape (all dimensions in mm)**

- 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.

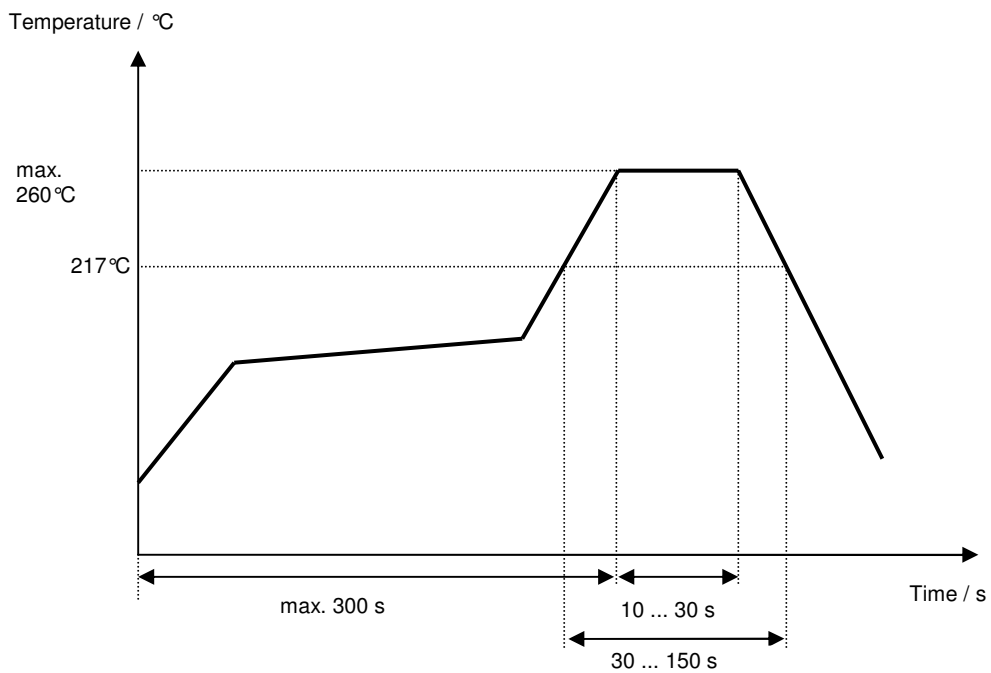
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**Air reflow temperature conditions**

<b>Conditions</b>	<b>Exposure</b>
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**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	Generation of filter specification.	Schönbein	18.01.2013
2.0	OTR and storage temperature range extended to -55°C ... +100°C. Pass band width reduced from +/-1MHz to +/-100kHz. Reliability section updated.	Schönbein	11.06.2013
2.1	Generation of filter specification.	Schönbein	16.12.2013