

Vectron International**Filter specification****TFS 175K****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	251 Ω	-12.7 pF
Output:	203 Ω	-16.6 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS175K is the minimum of the pass band attenuation. This value is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 175 MHz without any tolerance. The values of relative attenuation a_{rel} 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 (reference level)	a_e	14,8	dB	max.	16	dB
Nominal frequency	f_N				175	MHz
Passband	PB			f_N ±	18,5	MHz
Pass band ripple		0,4	dB	max.	2	dB
Bandwidth						
3 dB		41,6	MHz	min.	37	MHz
Relative attenuation	a_{rel}					
f_N - 18,5 MHz ... f_N + 18,5 MHz		1,6	dB	max.	3	dB
f_N - 60 MHz ... f_N - 50 MHz		55	dB	min.	35	dB
f_N - 50 MHz ... f_N - 31 MHz		46	dB	min.	30	dB
f_N - 31 MHz ... f_N - 24 MHz		9	dB	min.	5	dB
f_N + 24 MHz ... f_N + 31 MHz		6	dB	min.	5	dB
f_N + 31 MHz ... f_N + 50 MHz		37	dB	min.	30	dB
f_N + 50 MHz ... f_N + 60 MHz		39	dB	min.	35	dB
Group delay ripple in PB *)	GDR	7	ns	max.	±9	ns
Group delay variation (unit to unit) *, **)				max.	±2,5	ns
Return loss within PB		7.5	dB	min.	6	dB
Input power level				max.	15	dBm
Operating temperature range	OTR				- 40 °C ... + 85 °C	
Storage temperature range					- 45 °C ... + 85 °C	
Temperature coefficient of frequency	TC_f ****)	-99	ppm/K			

*) time gating window 0 ... 0.5 μ s

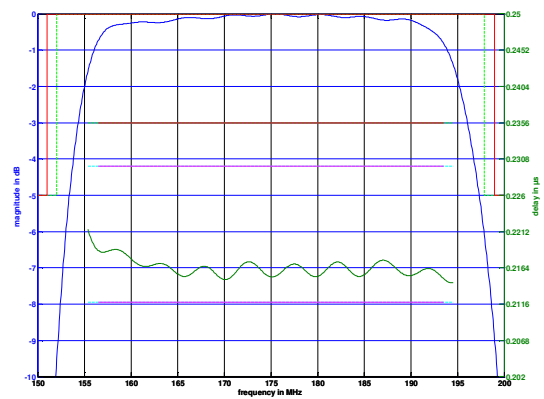
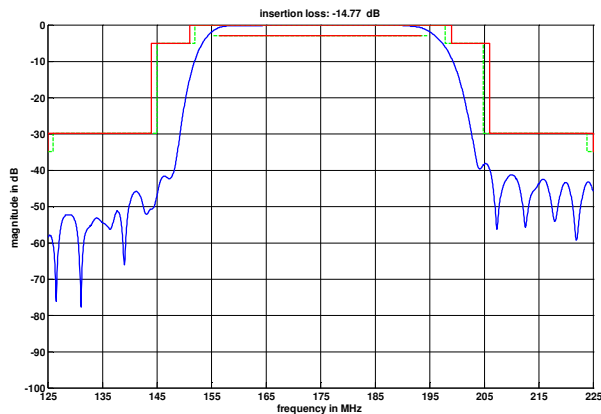
**) Measured at centre frequency, and averaged value to account for unit to unit variation and different bandwidth variants

) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_o) \times f_{CAT}(\text{MHz})$.**Generated:*Checked / Approved:**

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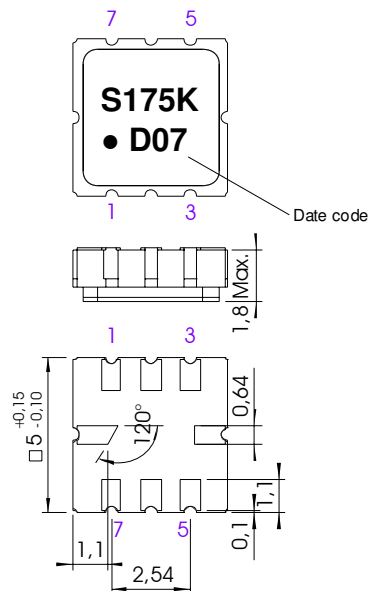
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Filter characteristic



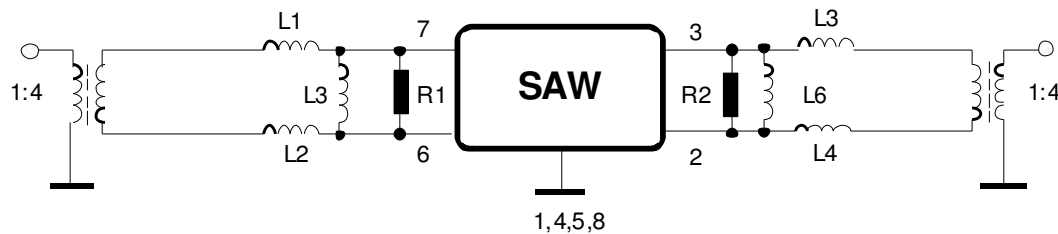
Construction and pin connection

(All dimensions in mm)



1	Ground
2	Output 2
3	Output 1
4	Ground
5	Ground
6	Input 2
7	Input 1
8	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 / 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 refer to the attached "Air reflow temperature conditions" on page 4;
5. ESD MIL-STD-883E using coupling network of ISO 10605 and EN 6100-4-2
HBM:250V;

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

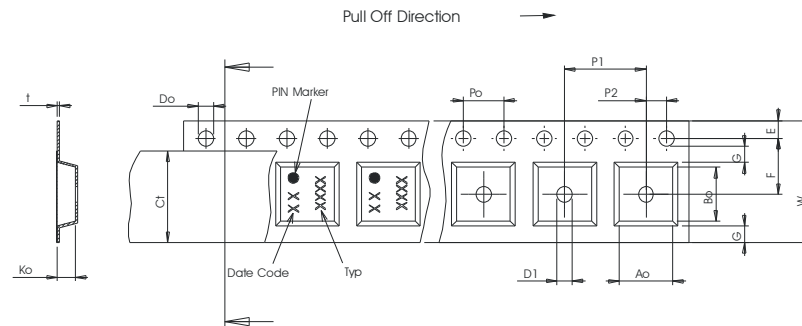
Packing

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;

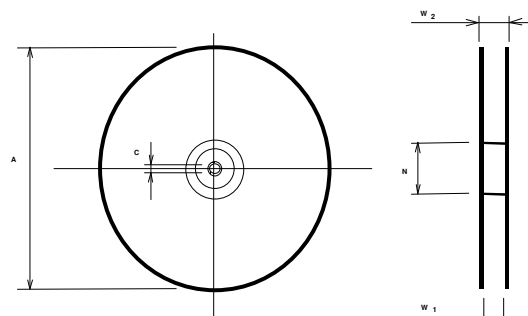
max. pieces of filters per reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 12,00
Po	: 4,00
Do	: 1,50
E	: 1,75
F	: 5,50
G(min)	: 0,75
P2	: 2,00
P1	: 8,00
D1(min)	: 1,50
Ao	: 5,30
Bo	: 5,30
Ct	: 9,2 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 12,4 +2/-0
W2(max)	: 18,4
N(min)	: 50
C	: 13,0



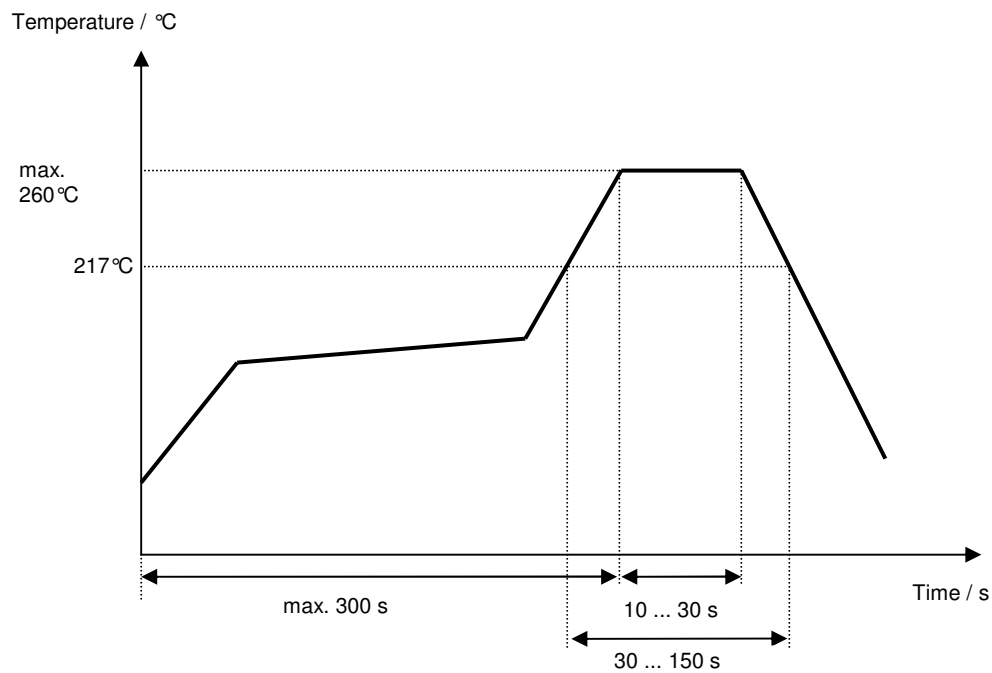
The minimum bending radius is 45 mm.

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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 175K****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Chilla	09.07.2011
2.0	- Added time gating window - Removed triple transit level and triple transit delay	Chilla	02.11.2012
3.0	- Created filter specification - Added terminating impedance - Added typical values - Added filter characteristic - Added test circuit - Changed packing	Chilla	13.02.2013

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