

Vectron International**Filter specification****TFS433AK****1/5****Measurement condition**

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

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of the TFS433AK is the minimum of the pass band attenuation. This value is defined as the insertion loss a_0 . The nominal frequency f_N is fixed at 433.92 MHz without any tolerance. The values of relative attenuation a_{rel} are guaranteed over the whole operating temperature range. The frequency shift of the filter within the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value		tolerance / limit	
Insertion loss	a_e	2.75	dB	3.80	dB
(reference level)		-		-	
Nominal frequency	f_N	-		433.92	MHz
Centre frequency	f_C	433.96	MHz	-	
Passband	PB				
1 dB		6.4	MHz	min.	1.71 MHz
Relative attenuation	a_{rel}				
$f_N - 0.92$ MHz ... $f_N + 0.79$ MHz		0.4	dB	max.	1 dB
$f_N - 8.42$ MHz ... $f_N - 18.92$ MHz		58	dB	min.	37 dB
$f_N - 18.92$ MHz ... $f_N - 25.92$ MHz		63	dB	min.	52 dB
$f_N - 25.92$ MHz ... $f_N - 40.92$ MHz		65	dB	min.	42 dB
$f_N - 40.92$ MHz ... $f_N - 83.92$ MHz		74	dB	min.	52 dB
$f_N - 83.92$ MHz ... $f_N - 423.92$ MHz		71	dB	min.	37 dB
$f_N + 9.58$ MHz ... $f_N + 20.08$ MHz		26	dB	min.	12 dB
$f_N + 20.08$ MHz ... $f_N + 41.08$ MHz		55	dB	min.	34 dB
$f_N + 41.08$ MHz ... $f_N + 141.08$ MHz		68	dB	min.	50 dB
$f_N + 141.08$ MHz ... $f_N + 566.08$ MHz		50	dB	min.	40 dB
Input power level		-		max.	5 dBm
Operating temperature range	OTR	-		- 40 °C ... + 85 °C	
Storage temperature range		-		- 55 °C ... + 125 °C	
Temperature coefficient of frequency	TC_f *)	-35	ppm/K	-	

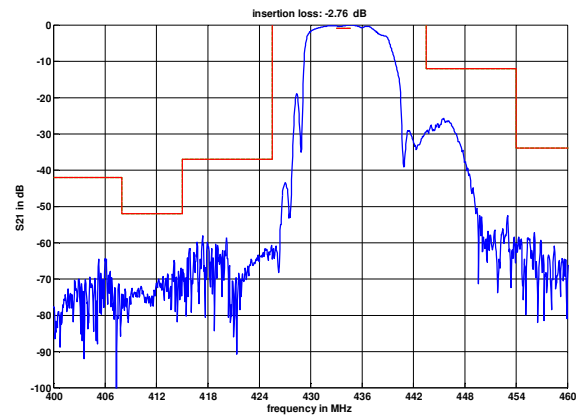
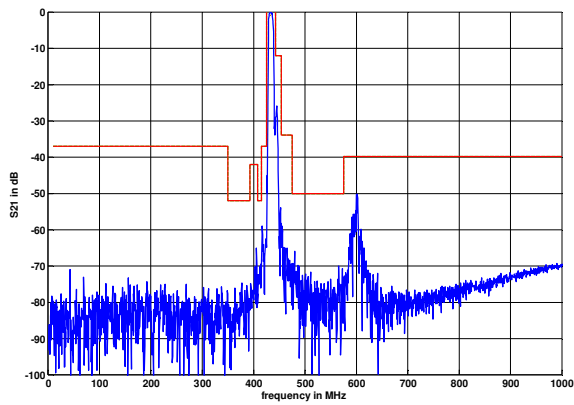
*) $\Delta f = TC_f(T - T_A)f_N$

Generated:**Checked / Approved:**

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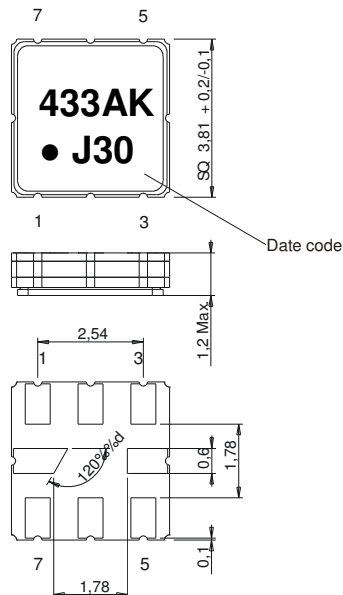
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Filter characteristic



Construction and pin connection

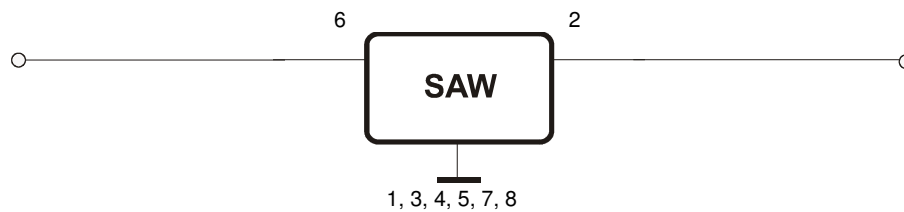
(All dimensions in mm)



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

Date code: Year + week
 J 2017
 K 2018
 L 2019
 ...

50 Ohm Test circuit



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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 60068 T2 - 27
2. Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 60068 T2 - 6
3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
DIN IEC 60068 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. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

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;

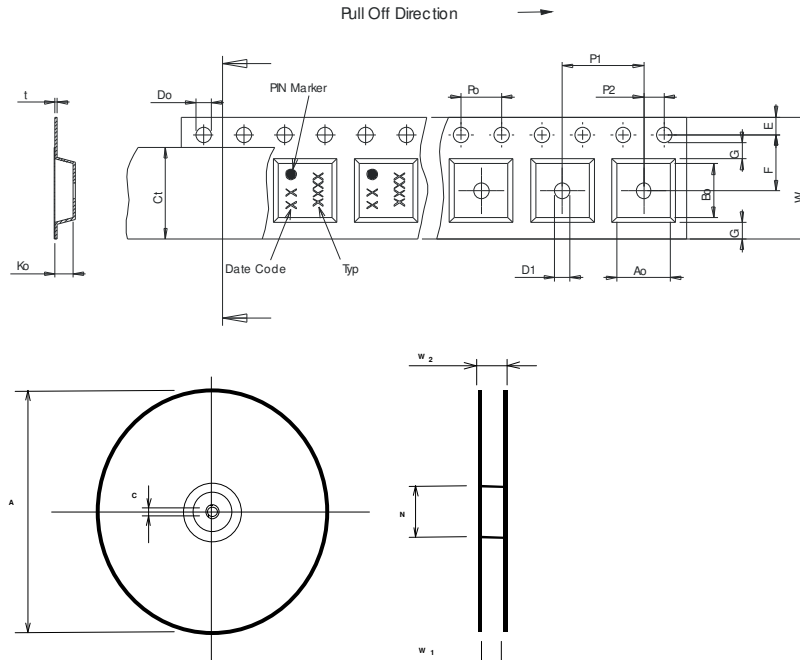
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 12.00 ±0.3
Po	: 4.00 ±0.1
Do	: 1.50 +0.1/-0
E	: 1.75 ±0.1
F	: 5.50 ±0.05
G(min)	: 0.75
P2	: 2.00 ±0.05
P1	: 8.00 ±0.1
D1(min)	: 1.50
Ao	: 4.30 ±0.1
Bo	: 4.30 ±0.1
Ct	: 9.2 ±0.1
Ko	: 1.80 ±0.1
t	: 0.30 ±0.05

Reel (all dimensions in mm)

A	: 330 or 180
W1	: 12.4 +2/-0
W2(max)	: 18.40
N(min)	: 50.00
C	: 13.0 +0.5/-0.2



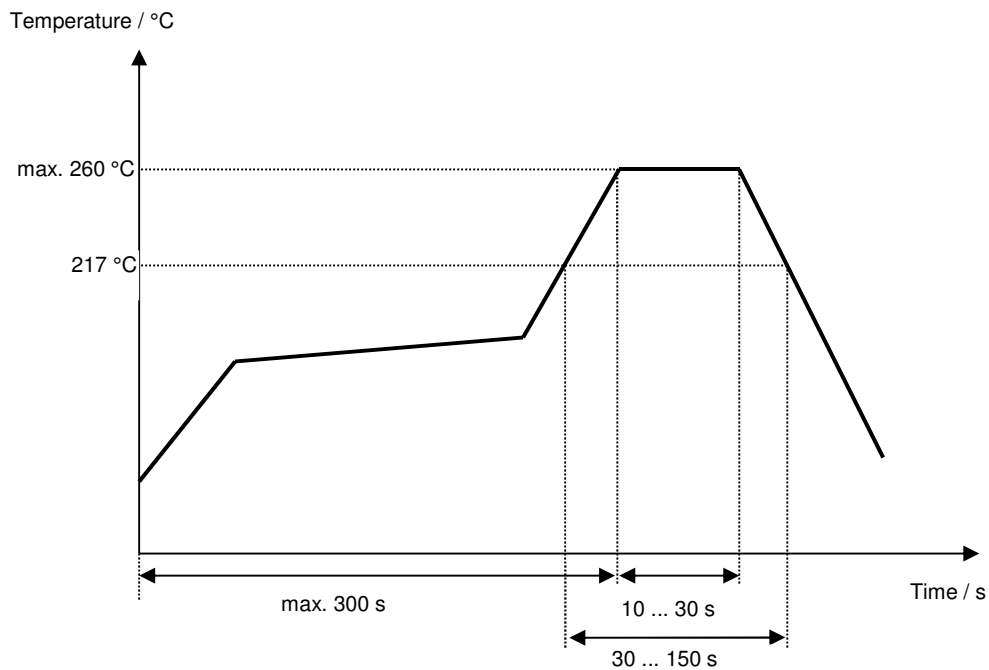
The minimum bending radius is 45 mm.

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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****TFS433AK****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of filter specification.	Abutaimah	09.03.2017
1.1	Update storage temperature range Update construction and pin connection Update 50 Ω test circuit Update tape & reel Update typos	P. Jaster	27.07.2017

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