

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_e . 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	-	

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

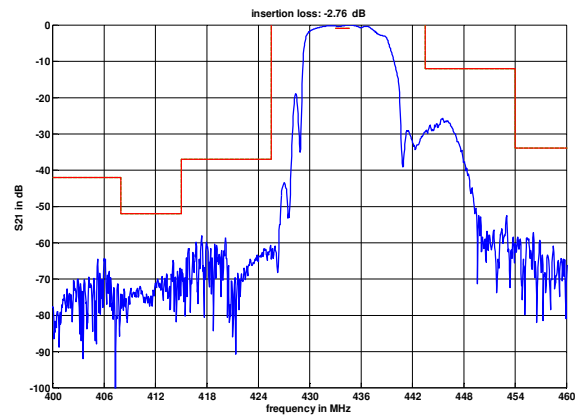
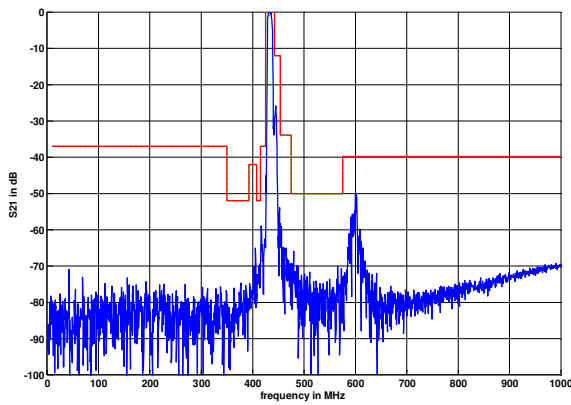
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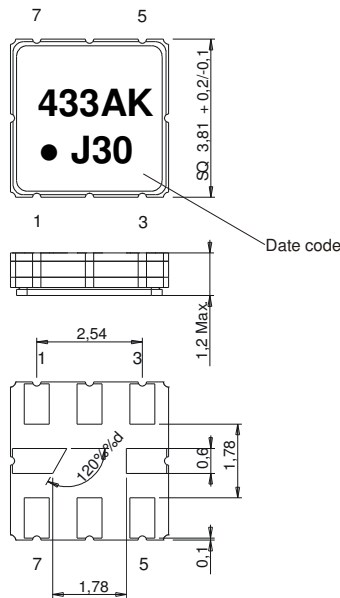
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Filter characteristic



Construction and pin connection

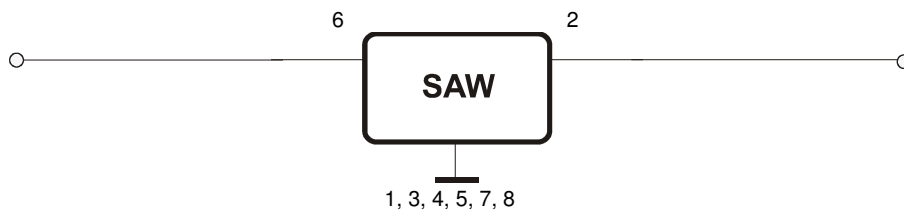
(All dimensions in mm)



- 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)

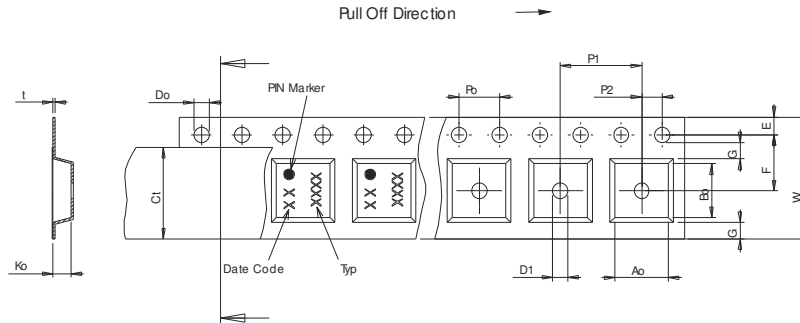
Packing

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

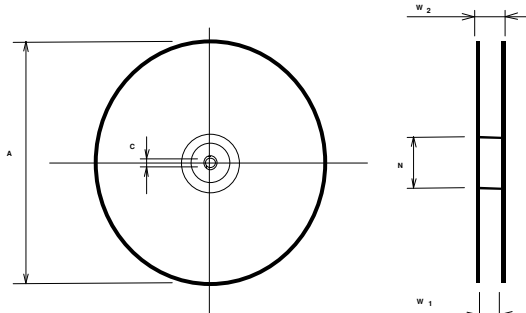
Tape (all dimensions in mm)

- 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.

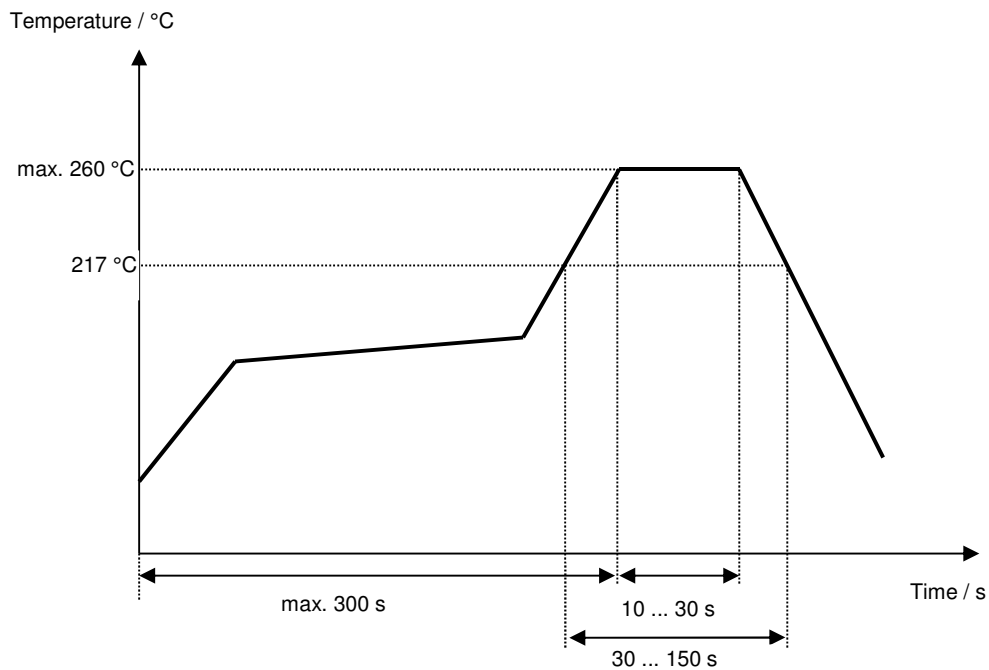
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Air reflow temperature conditions

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



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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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