

**Vectron International****Filter specification****TFS1638****1/5****Measurement condition**

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

## Remark:

The reference level for the relative attenuation  $a_{rel}$  of the TFS1638 is the maximum attenuation in the pass band. The maximum attenuation in the pass band is defined as the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed at 1638.0 MHz without any tolerance or limit. 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.

<b>Data</b>	<b>typ. value</b>		<b>tolerance / limit</b>	
<b>Insertion loss</b>	$a_e$	2.0 dB	max.	3.5 dB
<b>Nominal frequency</b>	$f_N$	-		1638.0 MHz
<b>Passband</b>	PB	-	$f_N \pm$	12.0 MHz
<b>Passband variation</b>	PBV	1.0 dB	max.	2.5 dB
<b>Relative attenuation</b>	$a_{rel}$			
1000 MHz ... 1518 MHz		35 dB	min.	23 dB
1518 MHz ... 1580 MHz		40 dB	min.	30 dB
1580 MHz ... 1605 MHz		35 dB	min.	22 dB
1605 MHz ... 1610 MHz		20 dB	min.	12 dB
1678 MHz ... 1705 MHz		42 dB	min.	20 dB
1705 MHz ... 1800 MHz		40 dB	min.	25 dB
1800 MHz ... 3400 MHz		37 dB	min.	25 dB
<b>Return loss within PB</b>		12 dB	min.	8 dB
<b>Input power level</b>		-	max.	16 dBm
<b>Operating temperature range</b>	OTR	-		-40 °C ... +85 °C
<b>Storage temperature range</b>		-		-55 °C ... +125 °C
<b>Temperature coefficient of frequency</b>	$TC_f$ *)	-42 ppm/K		

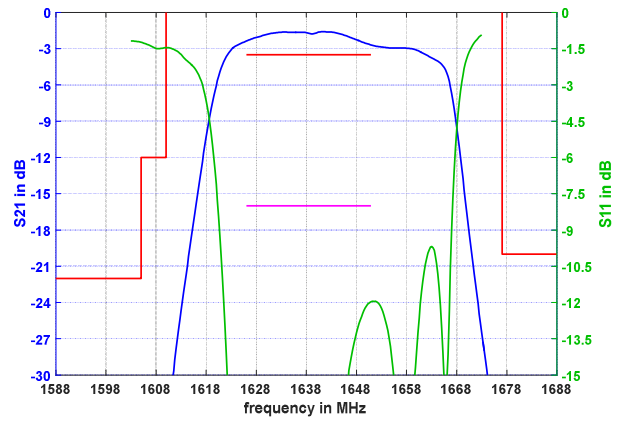
$$*) \Delta f = TC_f (T - T_A) f_N$$

**Generated:****Checked / Approved:**

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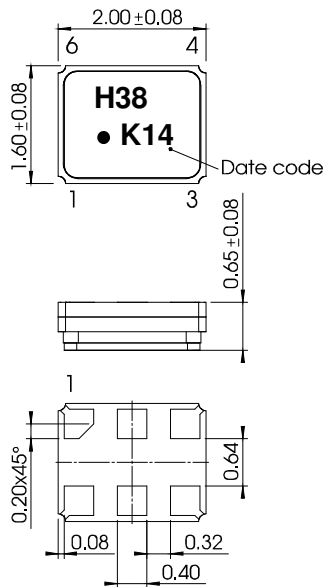
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**Filter characteristic**



**Construction and pin connection**

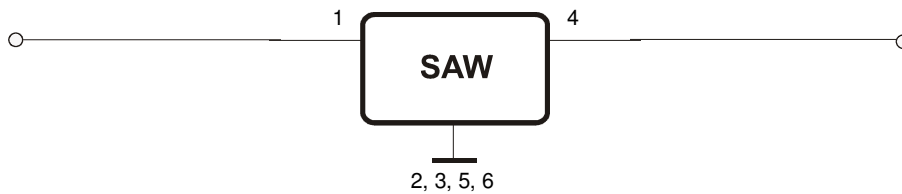
(All dimensions in mm)



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

Date code: Year + week  
 K 2018  
 L 2019  
 M 2020  
 ...

**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)

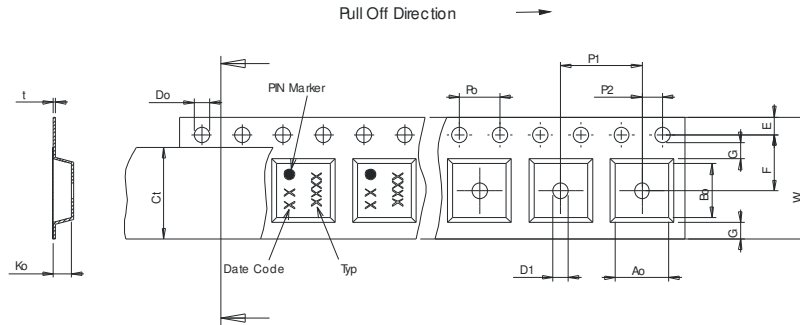
**Packing**

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

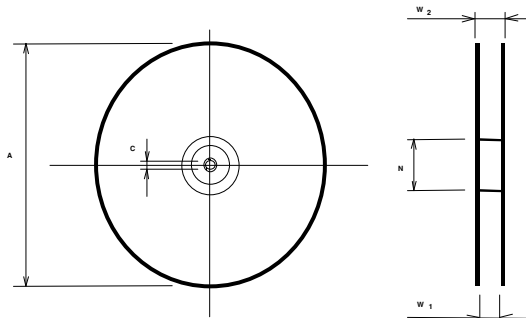
**Tape (all dimensions in mm)**

- W : 8.00 +0.3/-0.1
- Po : 4.00 ±0.1
- Do : 1.55 ±0.05
- 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) : 1.00
- Ao : 1.80 ±0.05
- Bo : 2.25 ±0.05
- Ct : 5.30 ±0.1
- Ko : 0.90 ±0.05
- t : 0.30 ±0.05



**Reel (all dimensions in mm)**

- A : 330 or 180
- W1 : 8.40 +1.5/-0
- W2(max) : 14.40
- N(min) : 60.00
- C : 13.0 ±0.2



The minimum bending radius is 45 mm.

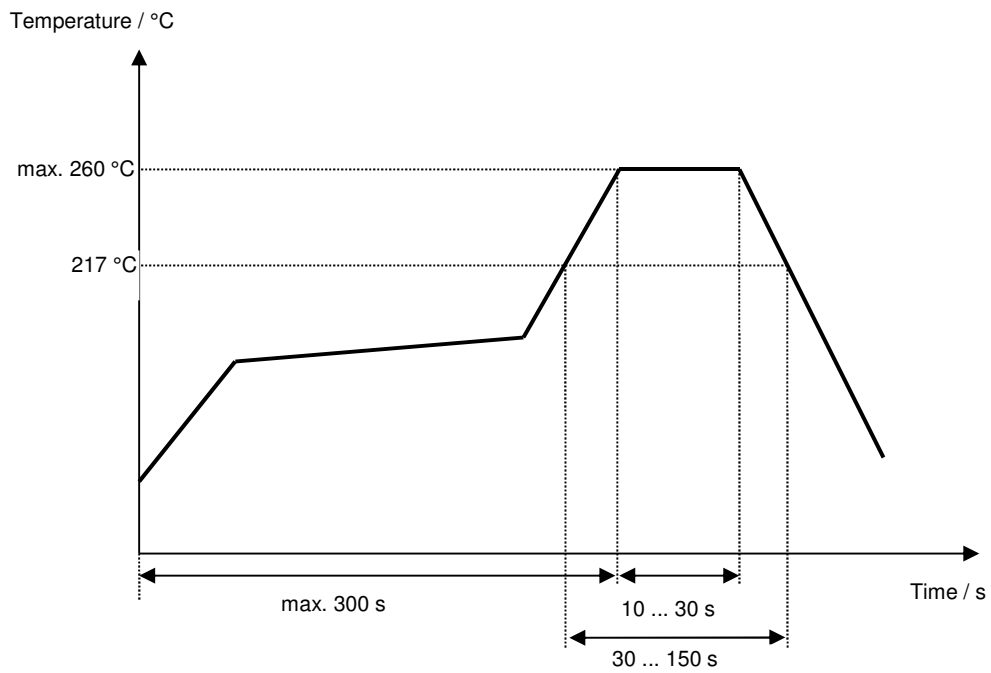
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**Air reflow temperature conditions**

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**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	C. Noack	08.05.2017
1.1	- Change data table (relative attenuation and input power level )	C. Noack	30.05.2017
1.2	- Generation of filter specification	Bonnen	24.07.2017
2.0	- Change data table - Generation of development specification	C. Noack	05.03.2018
2.1	- Generation of filter specification	P. Jaster	28.03.2018
3.1	- change package back to 2x1.6BV86 (correct typo)	P. Jaster	04.04.2018