

Vectron International**Filter specification****TFS 704A****1/5****Measurement condition**

Ambient temperature:	23	°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 704 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	
Insertion loss (reference level)	a_e	1,8 dB	max.	3,0 dB
Nominal frequency	f_N	-		704 MHz
Passband	PB	-	$f_N \pm$	12 MHz
Pass band variation		0,5 dB	max.	1,0 dB
Absolute attenuation	a_{abs}			
$f_N \pm 80$ MHz ... $f_N \pm 149$ MHz		45 dB	min.	33,5 dB
$f_N + 149$ MHz ... $f_N + 300$ MHz		46 dB	min.	42,0 dB
1 MHz ... 200 MHz		57 dB	min.	50,0 dB
200 MHz ... $f_N - 149$ MHz		60 dB	min.	55,0 dB
Group delay ripple within PB	p-p	14 ns	max.	0,2 μs
IIP3	*	-	min.	36 dB
Input power level		-	max.	0 dBm
Operating temperature range	OTR	-		- 10 °C ... + 75 °C
Storage temperature range		-		- 40 °C ... + 85 °C
Temperature coefficient of frequency	TC_f **	-76 ppm/K		-

*) $f_{in1} = f_C - 14$ MHz; $f_{in2} = f_C - 14,4$ MHz; $P_{in} = 0$ dBm; $f_{measurement1} = f_C - 13,6$ MHz; $f_{measurement2} = f_C - 14,8$ MHz. The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e .

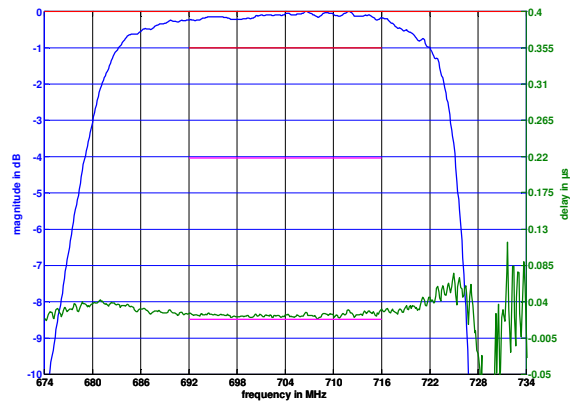
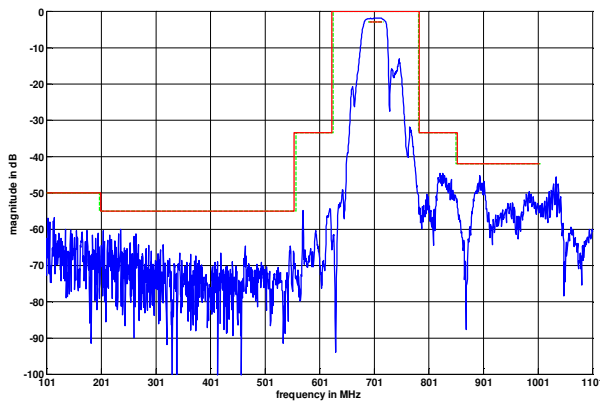
***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$

Generated:**Checked / Approved:**

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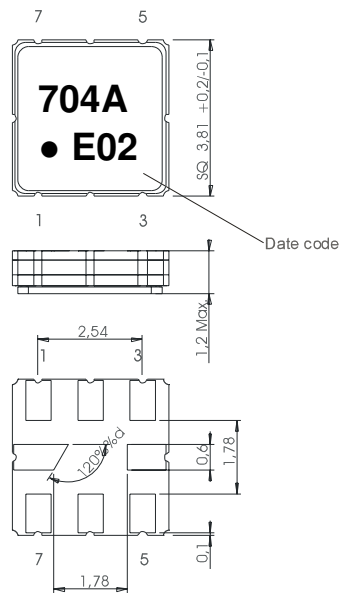
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Filter characteristic



Construction and pin connection

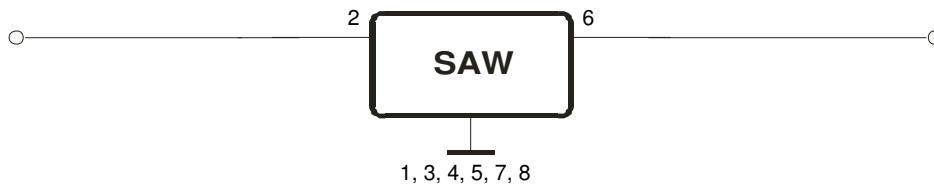
(All dimensions in mm)



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

Date code: Year + week
 E 2014
 F 2015
 G 2016
 ...

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 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, see page 4: "Air reflow temperature conditions"
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

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

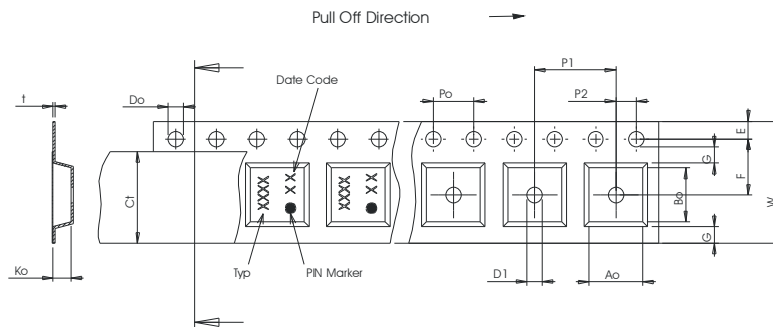
Packing

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

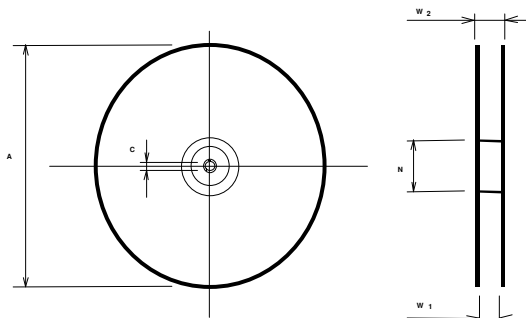
Tape (all dimensions in mm)

- W : 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 : 9,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 12,4 +2/-0
- W2(max) : 18,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

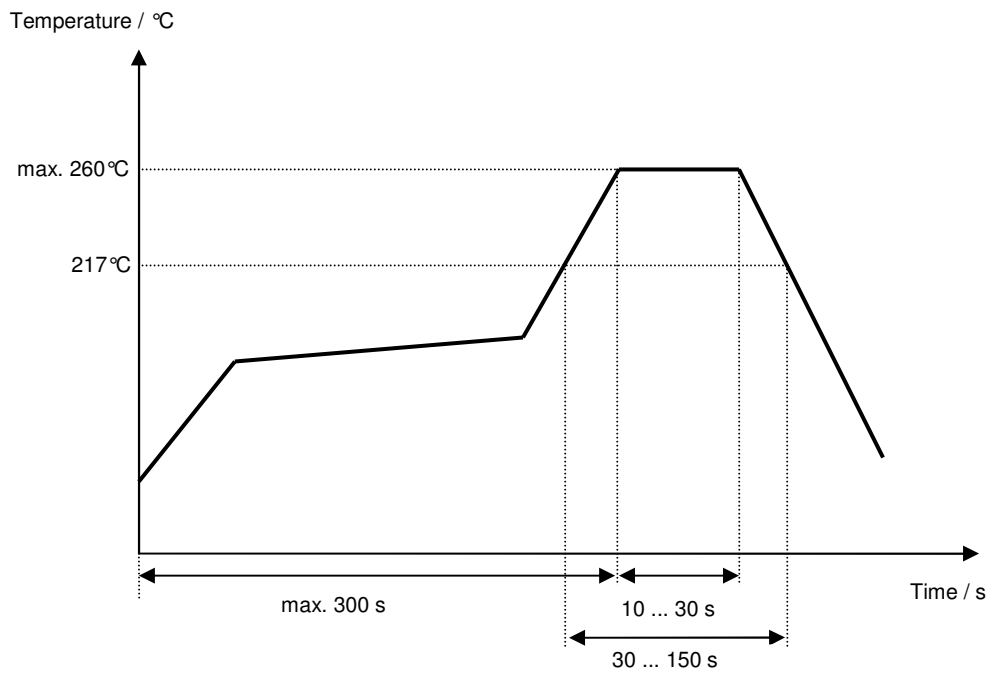
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Air reflow temperature conditions

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 development specification	Strehl	16.03.2008
2.0	- Change attenuation, add typical values and filter characteristic - Generation of filter specification	S. Channaa	27.08.2009
2.1	- maximum input power updated	Kortenbeutel	07.01.2014