

Vectron International**Filter specification****TFS 400C1****1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedances
 for input: 500 Ω // -1 pF
 for output: 500 Ω // -1 pF

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of the TFS400C1 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 400 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.

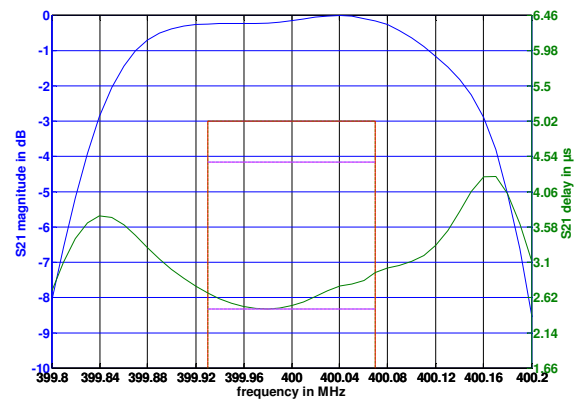
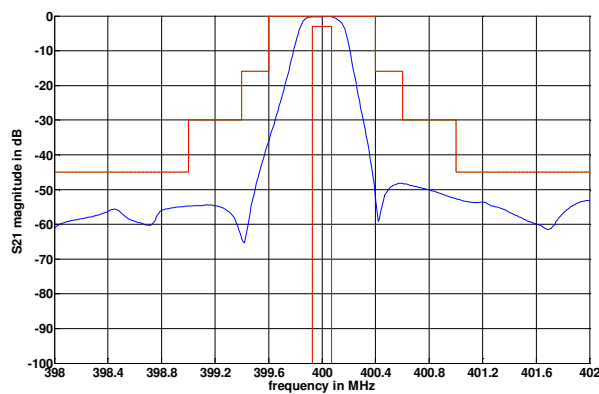
D a t a		typ. value	tolerance / limit		
Insertion loss (reference level)	$a_e = a_{min}$	4.3 dB	max.	6.5	dB
Nominal frequency	f_N	-		400.0	MHz
Guaranteed 3 dB signal band width	BW	-	min.	140	kHz
Relative attenuation	a_{rel}				
$f_N \pm 70$ kHz		0.4 dB	max.	3	dB
$f_N \pm 400$ kHz ... $f_N \pm 600$ kHz		24 dB	min.	16	dB
$f_N \pm 600$ kHz ... $f_N \pm 1$ MHz		52 dB	min.	30	dB
$f_N \pm 1$ MHz ... $f_N \pm 3$ MHz		54 dB	min.	45	dB
Group delay ripple	GD	-			
$f_N \pm 70$ kHz		0,5	max.	2	µs
Operating temperature range	OTR	-	- 20 °C ... + 70 °C		
Frequency inversion temperature		20 °C			
Temperature coefficient of frequency	TCf	- 0.036 ppm/K ²			

Generated:**Checked / Approved:**

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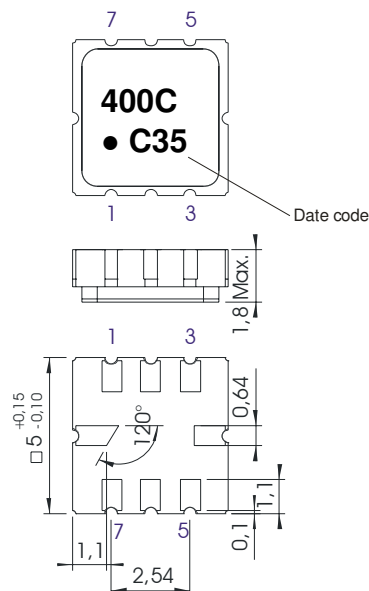
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Filter characteristic



Construction and pin connection

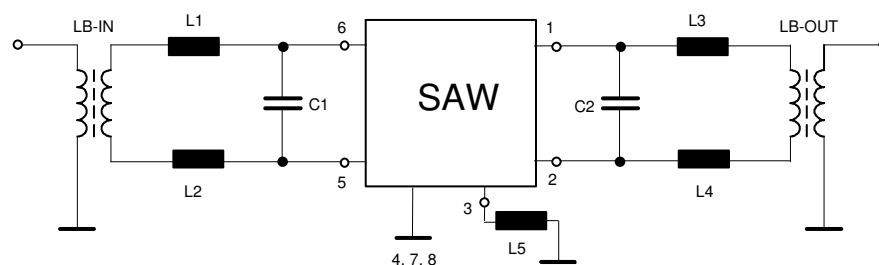
(All dimensions in mm)



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

Date code: Year + week
 C 2012
 D 2013
 E 2014
 ...

50 Ohm 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 plan, 3 plans;
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;

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

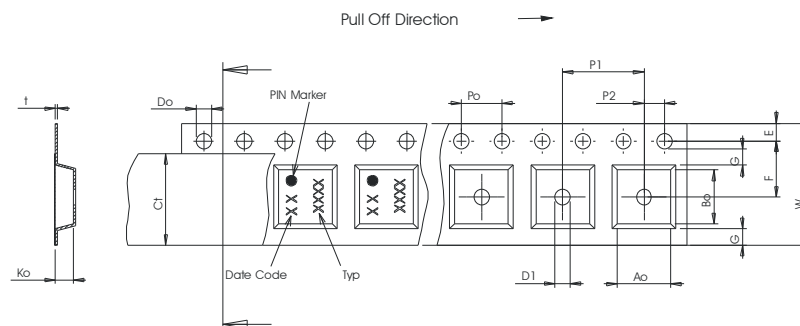
Packing

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;

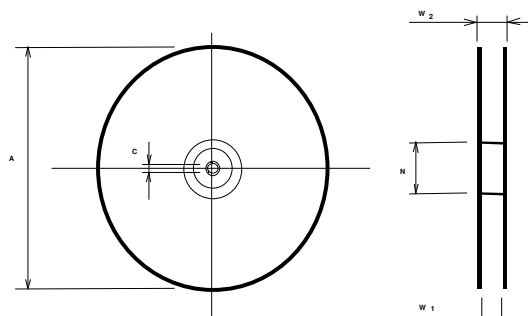
max. pieces of filters per reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 12,00 ± 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	: 5,30 ± 0,1
Bo	: 5,30 ± 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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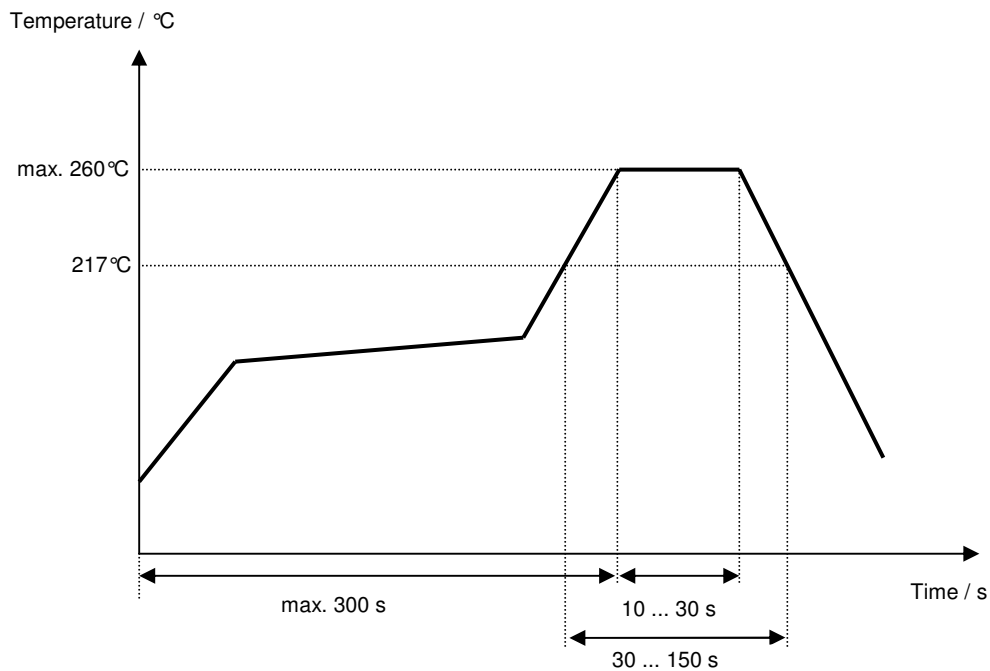
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Air reflow temperature conditions

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 400C1****5/5****History**

Version	Reason of changes	Name	Date
2.0	- Changed remark in characteristics - Added filter characteristic - Removed 50 Ohm test circuit 2 - Changed construction and pin connection image - Changed stability characteristics, reliability - Changed air reflow temperature conditions - Added history	Raura	27.08.2012