

**Vectron International**

**Filter specification**

**TFS 350K**

**1/5**

**Measurement condition**

Ambient temperature $T_A$ :	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	125 $\Omega$	-5.5 pF
Output:	200 $\Omega$	-7 pF

**Characteristics**

Remark:

The reference level for the relative attenuation  $a_{rel}$  of the TFS350K 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 350.0 MHz without any tolerance. The values of relative attenuation  $a_{rel}$  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.

<b>D a t a</b>	<b>typ. value</b>		<b>tolerance / limit</b>	
<b>Insertion loss</b> (reference level)	$a_e$	13.4 dB	max.	14.5 dB
<b>Nominal frequency</b>	$f_N$		350.0	MHz
<b>Passband</b>	PB	80.4 MHz	$f_N \pm$	37.5 MHz
<b>Pass band ripple</b>		0.5 dB	max.	1.0 dB
<b>Bandwidth</b>				
<b>1 dB</b>		80.4 MHz	min.	75 MHz
<b>40 dB</b>		106 MHz	max.	125 MHz
<b>Relative attenuation</b>	$a_{rel}$			
$f_N - 37.5$ MHz ... $f_N + 37.5$ MHz		0.6 dB	max.	1.0 dB
$f_N - 100$ MHz ... $f_N - 62.5$ MHz		46 dB	min.	40 dB
$f_N - 62.5$ MHz ... $f_N - 51$ MHz		30 dB	min.	25 dB
$f_N + 51$ MHz ... $f_N + 62.5$ MHz		30 dB	min.	25 dB
$f_N + 62.5$ MHz ... $f_N + 100$ MHz		42 dB	min.	40 dB
$f_N + 100$ MHz ... $f_N + 2650$ MHz		55 dB	min.	50 dB
<b>Absolute group delay</b>		0.27 $\mu$ s	max.	0.5 $\mu$ s
<b>Group delay ripple within PB</b>		16 ns	max.	100 ns
<b>Return loss within PB</b>		10 dB	min.	7 dB
<b>IIP3</b>	**	41 dBm	min.	40 dBm
<b>Input power level</b>			max.	10 dBm
<b>Operating temperature range</b>	OTR		- 30 °C ... + 60°C	
<b>Operable temperature range</b>			- 40 °C ... + 85 °C	
<b>Storage temperature range</b>			- 55 °C ... + 125°C	
<b>Temperature coefficient of frequency</b>	$TC_f$ ***	-91 ppm/K		

\*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

\*\*)  $f_{in1} = 330$  MHz;  $f_{in2} = 340$  MHz;  $P_{in} = 0$  dBm  $f_{measurement} = 320$  MHz

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

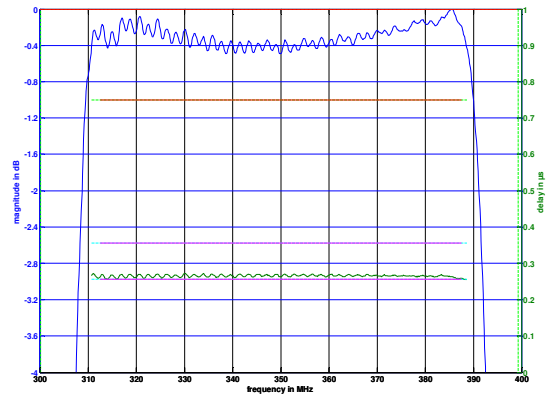
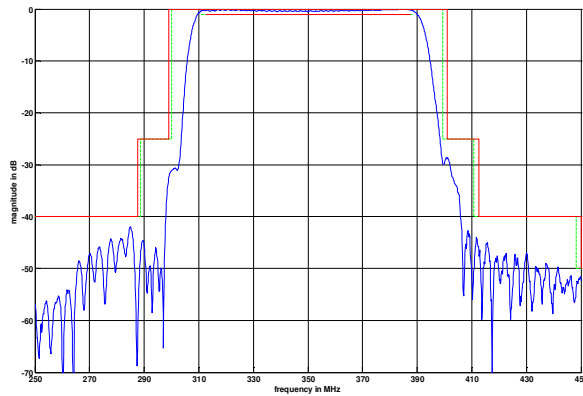
**Generated:**

**Checked / Approved:**

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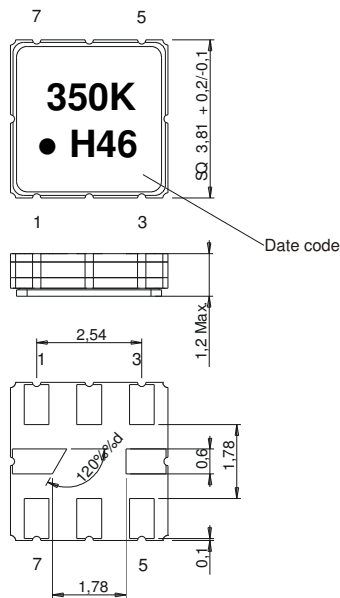
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**Filter characteristic**



**Construction and pin connection**

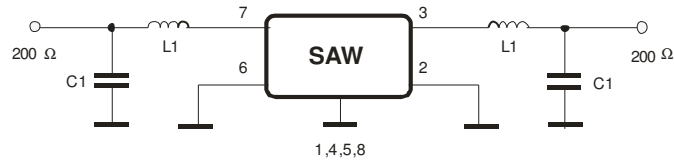
(All dimensions in mm)



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

Date code: Year + week  
 H 2016  
 J 2017  
 K 2018  
 ...

**Test circuit**



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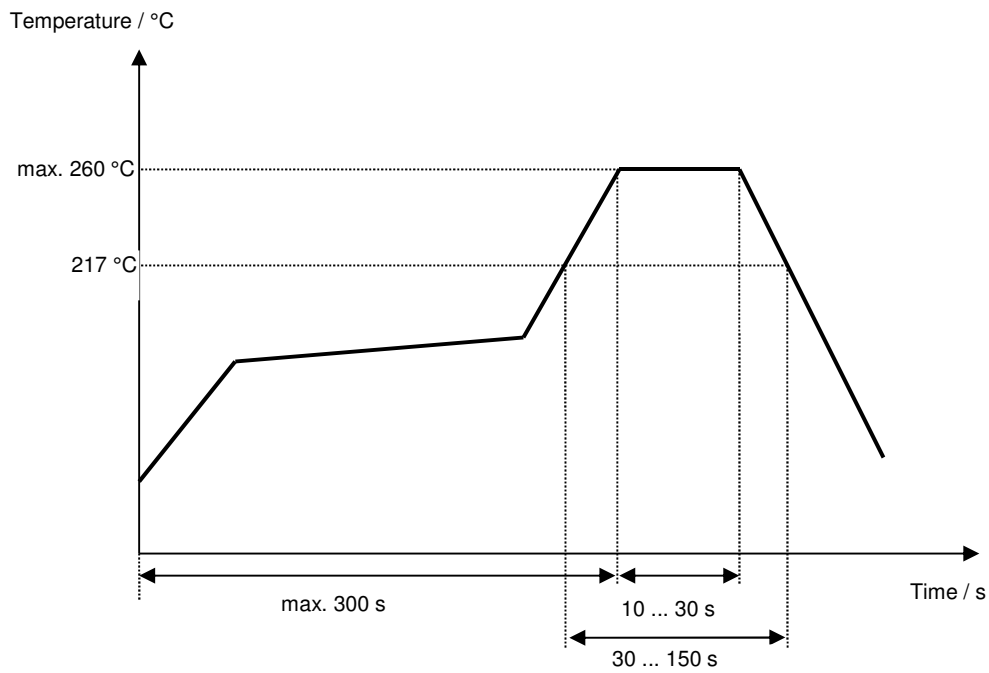
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**Air reflow temperature conditions**

<b>Conditions</b>	<b>Exposure</b>
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	Chilla	06.01.2011
2.0	- Created filter specification - Added terminating impedance - Added typical values - Added filter characteristic - Added test circuit - Changed packing - Attenuation updated	Chilla	14.10.2011
2.1	- IIP3 updated	Chilla	15.02.2012
2.2	- 1dB bandwidth corrected - Changed test circuit / pin connection	Chilla	18.03.2013
2.3	- Added operable temperature range - Corrected typos	Bonnen	08.11.2016

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