

**Vectron International**

**Filter specification**

**TFS 70BG**

**1/5**

**Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	80 Ω    -7.2 pF	
Output:	105 Ω    -9,6 pF	

**Characteristics**

**Remark:**

The reference level for the relative attenuation  $a_{rel}$  of the TFS 70BG 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 70,0 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)	$a_e$	19,7	dB	max.	21,0	dB
<b>Nominal frequency</b>	$f_N$	-			70,0	MHz
<b>Passband</b>	PB	-		$f_N \pm$	4,0	MHz
<b>Pass band ripple</b>	p-p	0,5	dB	max.	1,0	dB
<b>Bandwidth</b>						
1 dB		8,9	MHz	min.	8,0	MHz
45 dB		11,2	MHz	max.	12,0	MHz
<b>Relative attenuation</b>						
$f_N$	$a_{rel}$	4,0	MHz	0,5	dB	max. 1 dB
10 MHz ...	$f_N \pm$	64	MHz	50	dB	min. 45 dB
76 MHz ...		105	MHz	50	dB	min. 45 dB
105 MHz ...		210	MHz	65	dB	min. 30 dB
<b>Phase ripple within PB</b>	p-p	4,4	°	max.	6	°p-p
<b>VSWR in PB</b>		1,7:1	dB	max.	2 : 1	
<b>Operating temperature range</b>	OTR	-		0 °C ...	+ 70 °C	
<b>Storage temperature range</b>		-		- 55 °C ...	+105 °C	
<b>Temperature coefficient of frequency</b>	$TC_f$ **	-84	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.

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

**Generated:**

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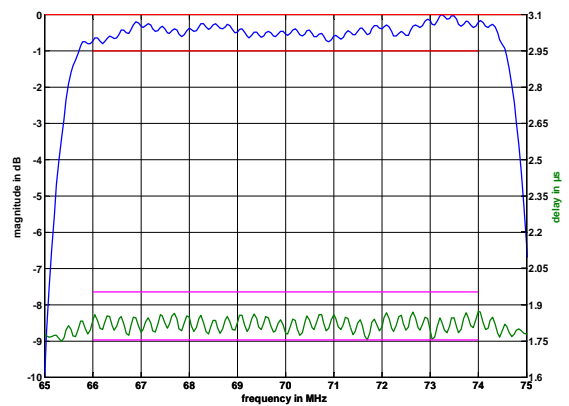
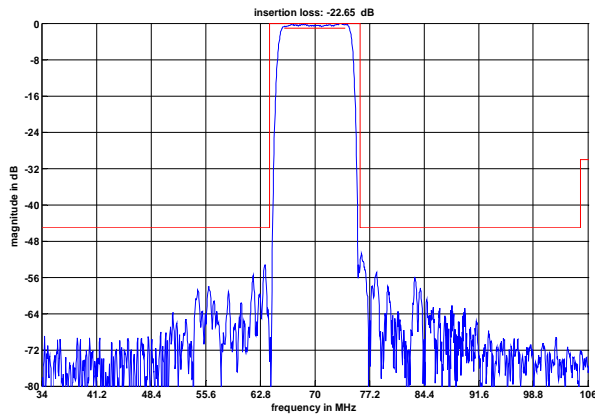
**Checked / Approved:**

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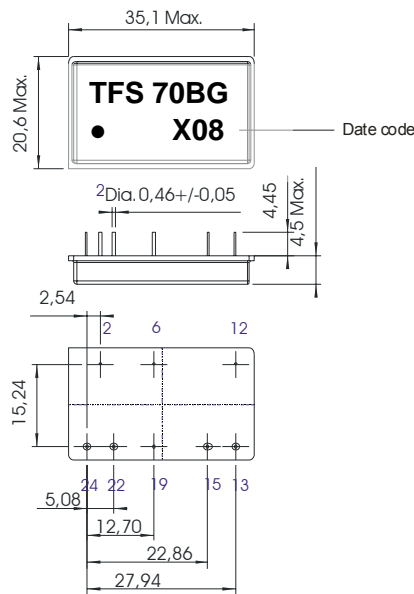
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**Filter characteristic**



**Construction and pin connection**

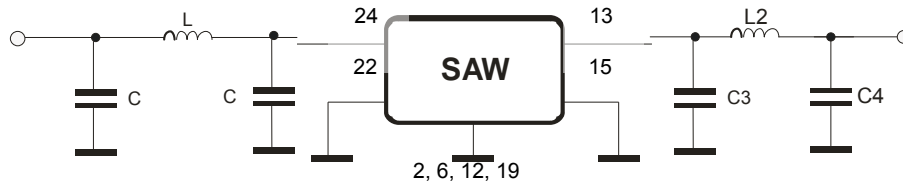
(All dimensions in mm)



2	Ground
6	Ground
12	Ground
13	Output
15	Output RF Return
19	Ground
22	Input RF Return
24	Input

Date code: Year + week  
 X 2009  
 A 2010  
 B 2011  
 ...

**50 Ohm Test circuit**



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**Stability characteristics, reliability**

After the following tests the filter shall meet the whole specification:

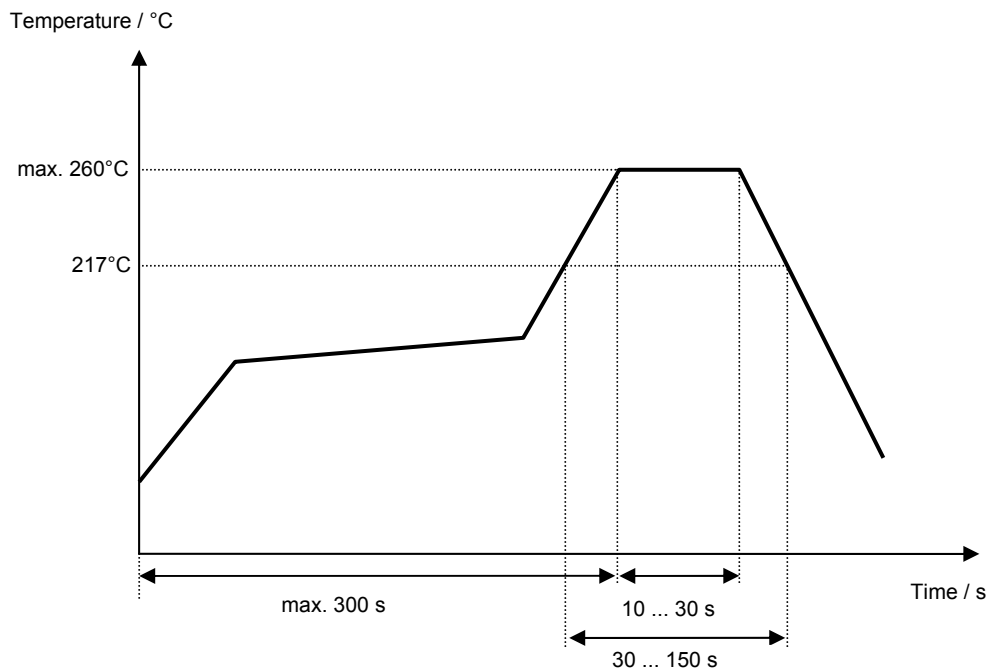
1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;  
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;  
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles  
DIN IEC 68 part 2 – 14 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;
5. ESD MIL-STD-883E using coupling network of ISO 10605 and EN 6100-4-2  
HBM:250V;

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

## 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



**History**

<b>Version</b>	<b>Reason of changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generation of development specification	Strehl	30.10.2008
1.1	- terminating impedances, typical values, filter characteristics and matching configuration added	Pfeiffer	16.02.2009