

Vectron International**Filter specification****TFS 70L****1/5****Measurement condition**

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	50 Ω 33 pF	
Output:	50 Ω 0 pF	

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of the TFS 70L is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . 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 . The nominal frequency f_N is fixed at 70 MHz without any tolerance. The given values for both the relative attenuation a_{rel} and the group delay ripple have to be achieved at the frequencies given below even if the centre frequency f_c is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_c .

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	a_e	24,5	dB	max.	27	dB
Nominal frequency	f_N	-			70,0	MHz
Centre frequency at ambient temperature	f_c	70,0	MHz		$\pm 0,10$	MHz
Passband	PB			f_c	$\pm$	3,9 MHz
Pass band ripple		0,4	dB	max.	1,0	dB
Bandwidth at ambient temperature	BW					
1 dB		8,12	MHz	min.	7,8	MHz
2 dB		8,26	MHz	min.	8,2	MHz
3 dB		8,36	MHz		-	
20 dB		8,98	MHz	max.	9,0	MHz
25 dB		9,08	MHz	max.	9,2	MHz
30 dB		9,17	MHz		-	
Relative attenuation	a_{rel}					
f_c	$f_c \pm 3,9$ MHz	0,4	dB	max.	1	dB
$f_c \pm 3,9$ MHz	$f_c \pm 4,1$ MHz	1,7	dB	max.	2	dB
$f_c \pm 4,5$ MHz	$f_c \pm 4,7$ MHz	25	dB	min.	20	dB
$f_c \pm 4,7$ MHz	$f_c \pm 6$ MHz	35	dB	min.	25	dB
$f_c \pm 6$ MHz	$f_c \pm 30$ MHz	50	dB	min.	35	dB
Group delay	mean value in PB	2,94	μ s	max.	3	μ s
Group delay ripple within PB	p-p	60	ns	max.	100	ns
Deviation from linear phase within PB		4 °	(r.m.s. 0,9 °)		-	
Triple transit attenuation compared to main signal		54	dB		-	
Crosstalk		60...65	dB		-	
Operating temperature range	OTR	-			- 25 °C ... + 80 °C	
Storage temperature range		-			- 40 °C ... + 85 °C	
Temperature coefficient of frequency	TC_f **	- 87	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.

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

Generated:**Checked / Approved:**

Vectron International GmbH & Co. KG

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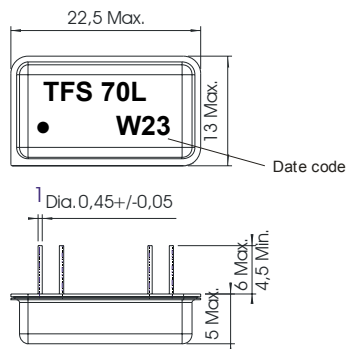
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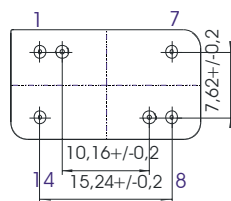
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Construction and pin connection

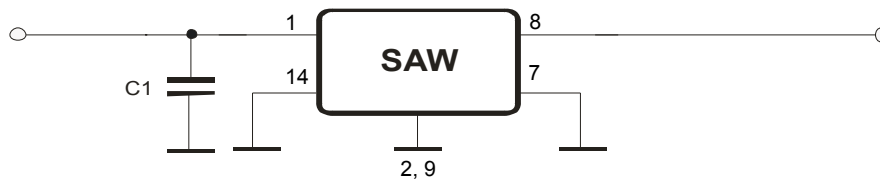
(All dimensions in mm)



1	Input
2	Ground
7	Output RF Return
8	Output
9	Ground
14	Input RF Return



Date code:	Year + week
W	2008
X	2009
A	2010
...	

50 Ω Test circuit**Vectron International GmbH & Co. KG****Potsdamer Straße 18****D 14 513 TELTOW / Germany****Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30****E-Mail: tft@vectron.com**

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Stability characteristics, reliability

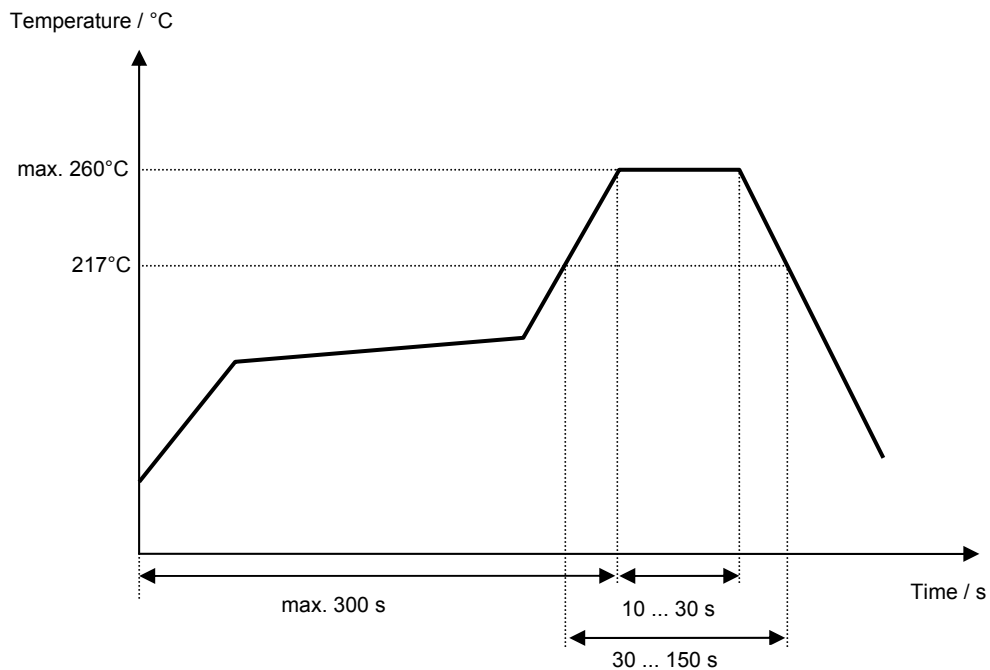
After the following tests the filter shall meet the whole specification:

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)

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 GmbH & Co. KG****Potsdamer Straße 18****D 14 513 TELTOW / Germany****Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30****E-Mail: tft@vectron.com**

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Vectron International**Filter specification****TFS 70L****5/5****History**

Version	Reason of changes	Name	Date
1,0...5.2	Generate filter specification .	Dunzow W.	12.01.1999
5.3	correct package drawing .	Dunzow W.	14.02.2002
5.4	change stability characteristics	Strehl	06.06.2008

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