VI TELEFILTER — Filter Specification — TFS 70H21 1/5

Measurement condition

Ambient temperature: 25 °C
Input power level: 10 dBm
Terminating impedances *: for input: 53,5 Ω // -8,3 pF
for output: 53,5 Ω // -8,4 pF

Remark:
Reference level for the relative attenuation a_{rel} of the **TFS 70H21** 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 reference frequency f_c is the arithmetic mean value of the upper and lower frequencies at the **1 dB** filter attenuation level relative to the insertion loss a_e. The temperature coefficient of frequency Tc_f is valid both for the reference frequency f_c and the frequency response of the filter at the operating temperature. The frequency shift of the filter at the operating temperature not included in the production tolerance scheme.

D a t a		typ. value		tolerance/limit		
Insertion loss (Reference level)	a_e	17,5	dB	max.	20,0	dB
Centre frequency	f_c	70,0	MHz	70,0 ±	0,04	MHz
1 dB bandwidth	BW	0,17	MHz	min.	0,16	MHz
40 dB bandwidth	BW	0,93	MHz	max.	1,00	MHz
Relative attenuation	a_{rel}					
f_c - 0,08 MHz ..... f_c + 0,08 MHz				max.	1	dB
f_c ± 0,50 MHz ..... f_c ± 0,75 MHz		-		min.	40	dB
f_c ± 0,75 MHz ..... f_c ±10,00 MHz		70	dB	min.	50	dB
Phase linearity in PB		0,7	°	max.	3	°
Group delay in PB		3,0	µs		-	
Group delay variation in PB		150	ns	max.	300	ns

Temperature coefficient of frequency (Tc_f)	- 0.036	ppm/K²	
Frequency deviation of f_C over temperature T:		$\Delta f_C(Hz) = Tc_f(ppm/K^2) \times (T - T_A)^2 \times f_{CAT}$ (MHz)	
Operating temperature			- 20..... + 70 °C
Storage temperature range			- 25..... + 85 °C

*) 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.

Generated:

Checked / approved:

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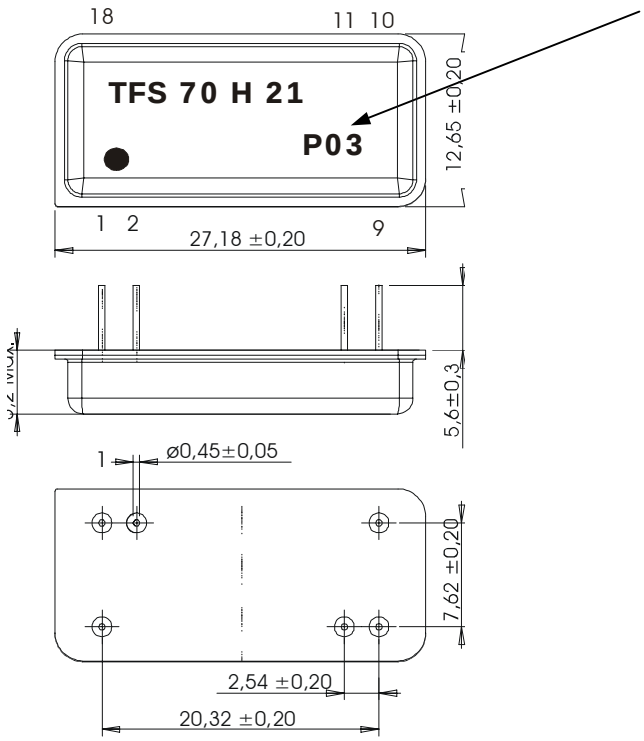
Construction, pin configuration and 50 Ω - matching network

(All dimensions in inch)

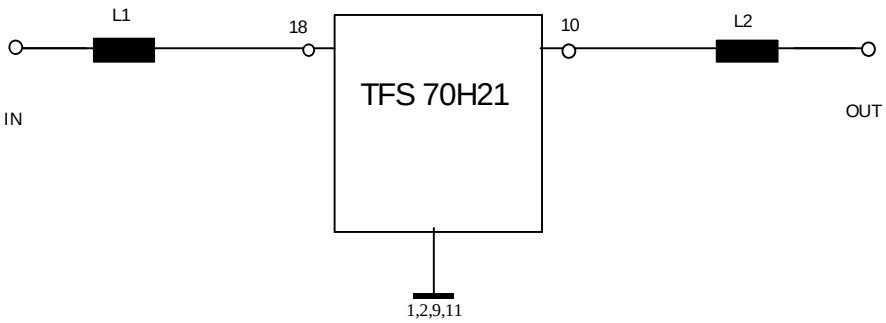


Date code:	Year+week
M	2000
N	2001
P	2002
....	

Pin Configuration

Input:	18
Input Return:	1
Output:	10
Output Return:	9
Ground:	2,11

50 Ohm test circuit



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Stability characteristics

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

1. Shock:	500g, 18 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration:	10 Hz to 500 Hz, 1,5 mm or 5g 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):	max. 2 times reflow process; for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

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Air reflow temperature conditions

1st and 2nd air reflow profile

Name:	pre-heating periods	main-heating periods	peak temperature
Temperature:	150 °C - 170 °C	over 200 °C	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

Air reflow profile

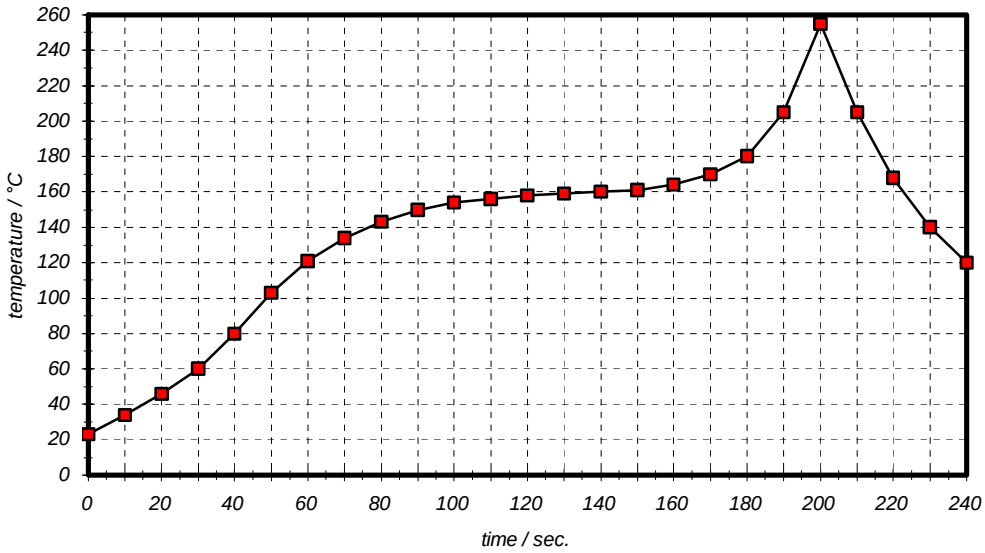

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

time / sec.	temperature / °C	time / sec.	temperature / °C
0	23	140	160
10	34	150	161
20	46	160	164
30	60	170	170
40	80	180	180
50	103	190	205
60	121	195	230
70	134	200	255
80	143	205	230
90	150	210	205
100	154	215	180
110	156	220	165
120	158	230	140
130	159	240	120

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History

version	reason of changes	name	date
1.0	generate specification	Pfeiffer	15.08.2001
1.1	- new definition of insertion loss (minimum of the passband attenuation) - terminated impedances added - typical values added	Pfeiffer	21.08.2001
1.2	- pass band variation p-p deleted	Pfeiffer	14.09.2001
1.3	- package changed	Pfeiffer	27.11.2001

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