1. Measurement condition :

Ambient temperature T_A:	25 °C	
Input power level:	0 dBm	
Terminating impedances in f_C *) :	for input:	440 Ω ‖ - 29,12 pF.
	for output:	450 Ω ‖ - 33,11 pF.

2. Characteristics

Remark: Reference level for the relative attenuation a_{rel} of the **TFS 71H** 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 frequence f_C is the arithmetic mean value of the upper and lower frequencies at the **3,75 dB** filter attenuation level relative to the insertion loss a_e. The nominal frequency f_N is fixed on **71,100 MHz** without tolerance. The given values for the relative attenuation a_{rel} and for the group delay ripple have to be reached at the frequencies given below also 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. All specified values are guarantied in operating temperature range.

Data		**typ. value**		**tolerance / limit**		
Insertion loss (Reference level)	a_e	16	dB	max. 17		dB
Nominal frequency	f_N			71,100		MHz
Centre frequency	f_C at ambient temperature (f_{CTA})	71,110	MHz			
Pass band	**PB**			f_N - 525 kHz ... f_N + 525 kHz		
Amplitude ripple (p-p) in	f_N .... f_N ± 500 kHz	0,5	dB			
Bandwidth :						
1 dB		1120	kHz	min.	1050	kHz
1,5 dB		1150	kHz			
3,0 dB		1205	kHz			
3,75 dB		1215	MHz	min.	1180	kHz
25 dB		1445	MHz	max.	1500	kHz
40 dB		1520	kHz			
45 dB		1540	kHz	max.	1800	kHz
50 dB		1555	kHz			
Relative attenuation	a_{rel}					
f_N ..... f_N ± 525 kHz		-		max.	1	dB
f_N ± 525 kHz .... f_N ± 590 kHz		-		max.	3,75	dB
f_N ± 750 kHz .... f_N ± 900 kHz		32	dB	min.	25	dB
f_N ± 900 kHz .... f_N ± 40 MHz		55	dB	min.	45	dB
Group delay (mean value in PB):		7,1	µs	6,0 7,75		µs
Group delay ripple in PB (p-p):		550	ns	max.	1	µs
Deviation from linear phase (p-p) in	f_N .... f_N ± 630 kHz	6°				
Deviation from linear phase (r.m.s.) in	f_N .... f_N ± 630 kHz	1,6°		max.	2	degree
Input/Output return loss with matching network (S11/S22):		9...12	dB	min.	8	dB

Frequency inversion temperature (T_o) :	20...30 °C
Temperature coefficient of frequency (Tc_f) :	- 0,036 ppm/K²
Frequency deviation of f_C over temperature: **)	$\Delta f_C(Hz) = Tc_f(ppm/K) \times (T - T_o)^2 \times f_{To}$ (MHz)
Operating temperature range (OTR) :	0 °C ... + 85 °C
Storage temperature range :	- 30 °C ... + 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.
**) f_{To} is reference frequence f_C at frequency inversion temperature (T_o)

Generated: **Wadim Dunzow**

Checked/Approved: **Dr. Bert Wall**

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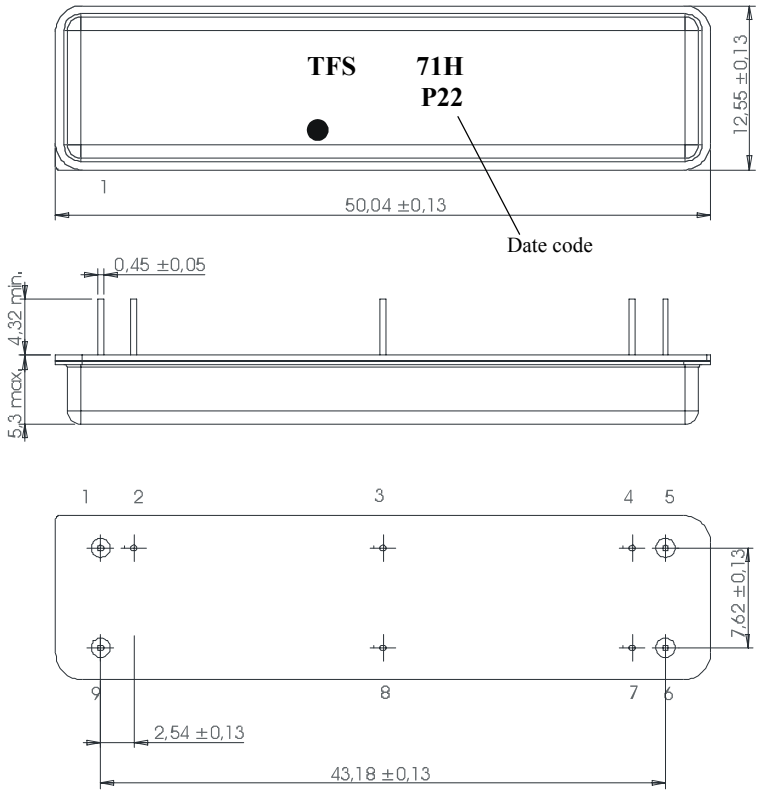
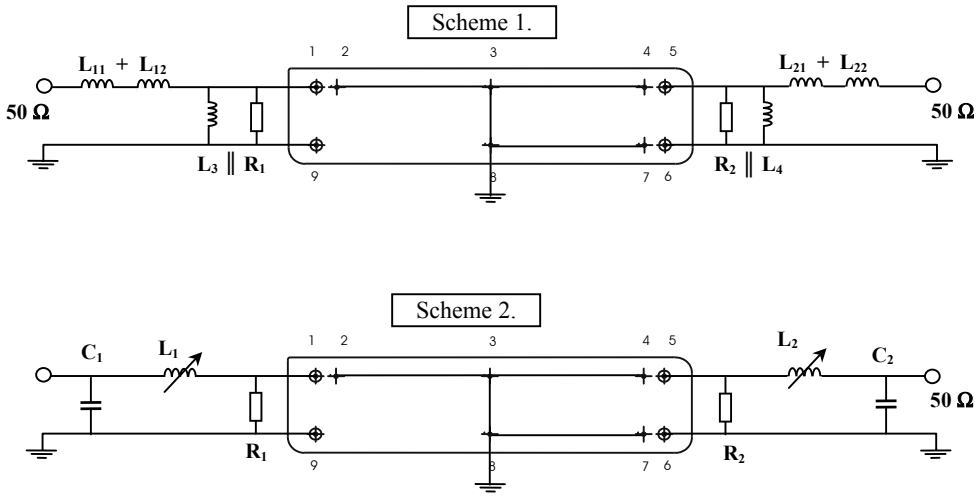
3. Package, pin grid 2,54 mm



Datecode:	Year+week
M	2000
N	2001
P	2002
…	…

Pin **1** - Input.
Pin 9 - Input RF Return.
Pin **5** - Output.
Pin 6 - Output RF Return.
Pin 2 - 4, 7, 8 PackageGround.

4. 50 Ω matching network (see Application Note):



For final test we use scheme 1.

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5. 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, 0,35 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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6. 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

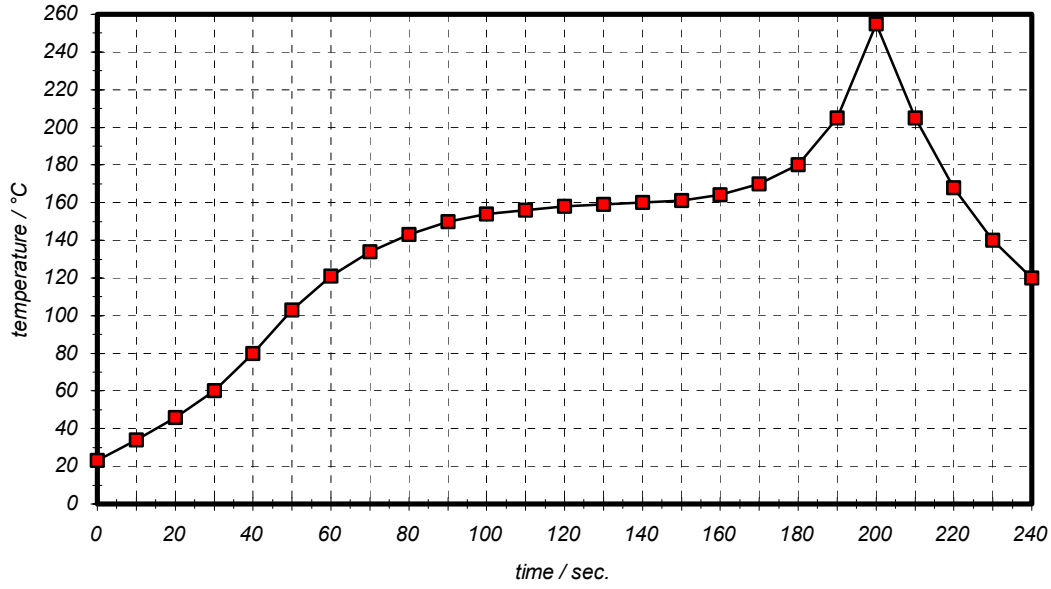

Table for temperature vs. time during the air reflow process

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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7. History :

Version	Reason of Changes	Name	Date
1.0	Generate development specification according to customer requirements.	Pfeiffer W.	18.07.2001
1.1	Generate filter specification.	Dunzow W.	11.01.2002

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