1. Measurement condition **Package, pin connection and 50 Ω matching network** (see page 2.)

Ambient temperature T_A: 23 °C
Input power level: 0 dBm.
Terminating impedances in f_C: for input: 56,8 Ω | - 40,8 pF. [27,9 Ω + j 28,4 Ω]
for output: 46,5 Ω | - 35,3 pF. [30,6 Ω + j 22,0 Ω]
(see Application Note)

2. Characteristics

Remark:
Reference level for the relative attenuation a_{rel} of the **TFS 70N** 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 frequence f_C is the arithmetic mean value of the upper and lower frequencies at the **20 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 in the operating temperature range. The frequency shift of the filter in the operating temperature range is not included in the production tolerance scheme.

Data	**typ. value**		**tolerance / limit**	
Insertion loss (Reference level) a_e	20,6	dB	max 24	dB
Reference frequency f_C at ambient temperature (f_{CAT}) **:**	70	MHz	70 ± 0,1	MHz
Pass band (-2 dB) :			f_C - 4,8 MHz ... f_C + 4,8 MHz	
Bandwidth at ambient temperature**:**				
1,0 dB - band width	9,92	MHz		
1,5 dB - band width	9,94	MHz		
2,0 dB - band width	9,98	MHz	min. 9,6	MHz
3,0 dB - band width	10,12	MHz	min. 10,0	MHz
20 dB - band width	10,60	MHz		
35 dB - band width	10,77	MHz	min. 10,8	MHz
45 dB - band width	10,843	MHz	min. 11,2	MHz
50 dB - band width	10,900	MHz		
Amplitude ripple (p-p): f_C ... f_C ± 4,8 MHz	0,7	dB	max 2	dB
Relative attenuation a_{rel}				
f_C ... f_C ± 4,8 MHz		-	max 2	dB
f_C ± 4,8 MHz ... f_C ± 5,0 MHz		-	max 3	dB
f_C ± 5,4 MHz ... f_C ± 5,6 MHz	40	dB	min 35	dB
f_C ± 5,6 MHz ... f_C ± 6,0 MHz	55	dB	min 45	dB
f_C ± 6,0 MHz ... f_C ± 35 MHz	55...65	dB	min 50	dB
Group delay inpass band:	3,74	µs	max 4,5	µs
Group delay ripple (p-p): f_C ... f_C ± 4,8 MHz	140	ns	max 200	ns
Deviation from linear phase (p-p): f_C ... f_C ± 5,0 MHz	5,5°			
Crosstalk attenuation compared to main signal	70	dB		
Triple transit attenuation compared to main signal	50	dB		
Temperature coefficient of frequency (Tc_f)	-87	ppm/K	-94	ppm/K
Frequency deviation of f_C over temperature	Δf_C(Hz) = Tc_f(ppm/K) x (T - T_A) x f_{CAT} (MHz)			
Operating temperature range	0 °C ... + 60 °C			
Storage temperature range	- 20 °C ... + 85 °C			

Generated: **Wadim P. Dunzow**

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

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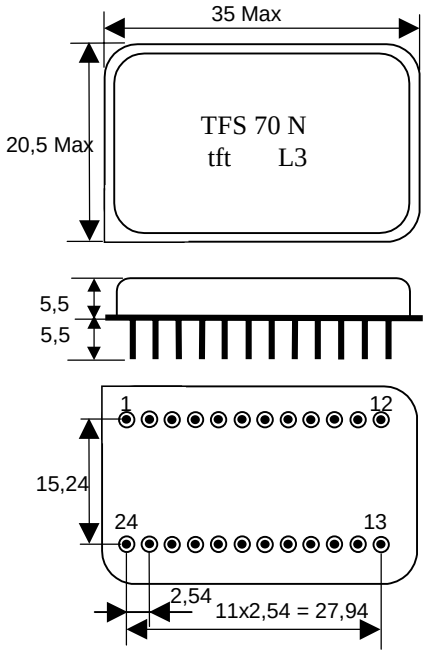
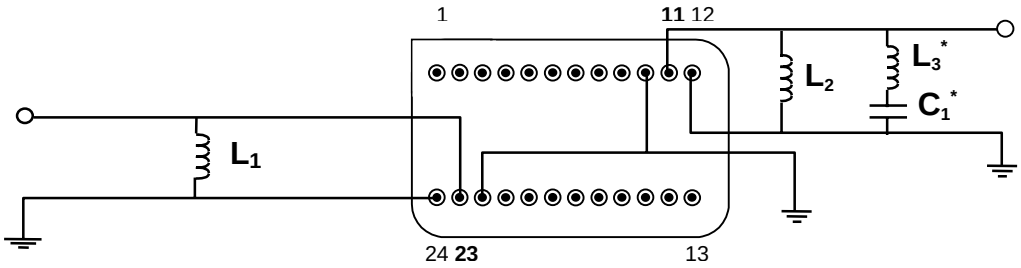
3. Package



Pin **23**	**Input**
Pin 24	Input RF Return
Pin **11**	**Output**
Pin 12	Output RF Return
Pin 1-10, 13-22	Ground

4. 50 Ω matching network:



L_1 = 125 nH
L_2 = 60 nH
C_1 = 27 pF.

*) $L_3 \approx$ 85 ± 5 nH. L_3 : $L_3 C_1 = \sqrt{2 \pi f_1}$, f_1 = 94,3 ± 0,3 MHz

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5. 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.	

Chip-mount air reflow profile

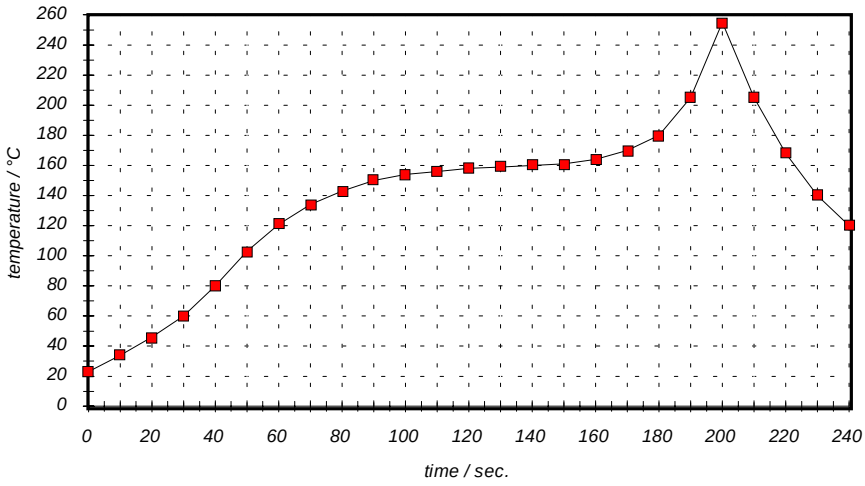

Table for temperature vs. time during the air reflow process

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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