1. Measurement condition

Ambient temperature T_A:	25 °C.	
Input power level:	0 dBm.	
Terminating impedances in f_C:	for input:	833,5 Ω ‖ - 7,879 pF. (typical value)
	for output:	941,3 Ω ‖ - 8,379 pF. (typical value)
Q-value of matching elements:	30	

2. Characteristics

Remark:
Reference level for the relative attenuation a_{rel} of the **TFS 140C** 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 **3 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	21 dB	max. 23 dB
Centre frequency f_C at ambient temperature (f_{CTA})	140,01 MHz	140 ± 0,1MHz
Pass band (PB) :		f_C - 2,35 MHz ... f_C + 2,35 MHz
Amplitude ripple in PB (p-p):	0,3..0,4 dB	max. 0,7 dB
Bandwidth :	at ambient temperature T_A	
0,7 dB - band width	4,73 MHz	min. 4,7 MHz
3 dB - band width	5,23 MHz	min. 5,0 MHz
20 dB - band width	6,29 MHz	
40 dB - band width	6,80 MHz	max. 7,0 MHz
45 dB - band width	6,88 MHz	max. 9,0 MHz
Relative attenuation a_{rel}		
f_C ..... f_C ± 2,35 MHz	-	max. 0,7 dB
f_C ± 2,35 MHz ..... f_C ± 2,50 MHz	-	max. 3 dB
f_C ± 3,50 MHz ..... f_C ± 4,50 MHz	48 dB	min. 40 dB
f_C - 135 MHz ..... f_C - 4,50 MHz	70...55 dB	min. 45 dB
f_C + 4,50 MHz ..... f_C + 400 MHz	55...70 dB	min. 45 dB
Group delay (mean value in PB): 2,14	µs max.	2,2 µs
Group delay ripple in PB (p-p):	60...80 ns	max. 120 ns
Deviation from linear phase in f_C ... f_C ± 2,5 MHz	5 ° (r.m.s. 1,3 °)	
Triple transit attenuation compared to main signal	44..47 dB	
Crosstalk	60...65 dB	
Substrate material	Quartz	
Frequency inversion temperature (T_o) :	20 °C.	
Temperature coefficient of frequency (Tc_f) :	-0.036 ppm/K²	
Frequency deviation of f_C over temperature :	Δf_C(Hz) = Tc_f(ppm/K) x (T - T_o)² x f_{CTA} (MHz)	
Operating temperature range		- 25 °C ... + 80 °C
Storage temperature range		- 40 °C ... + 85 °C

***)** $f_O = f_{To}$ is reference frequence f_C at frequency inversion temperature (T_o)

Generated: **Wadim Dunzow**

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

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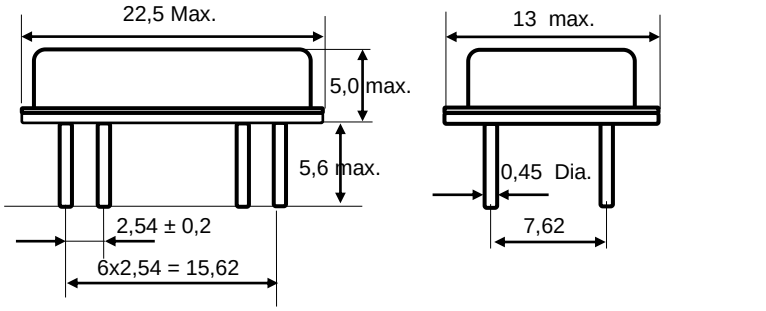
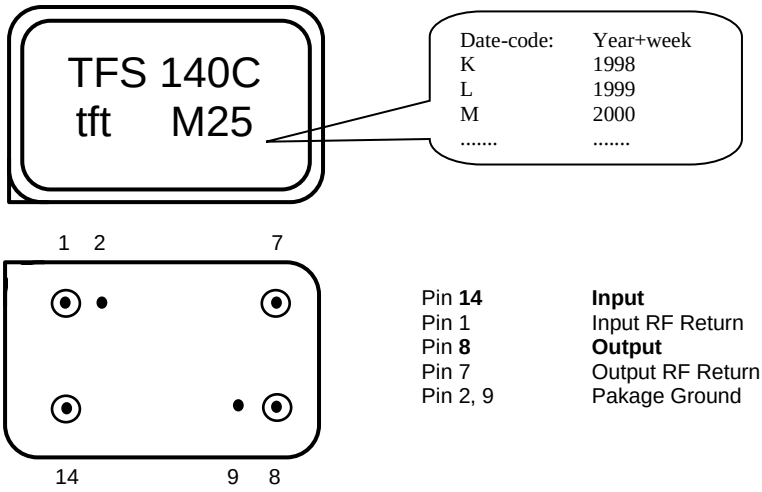
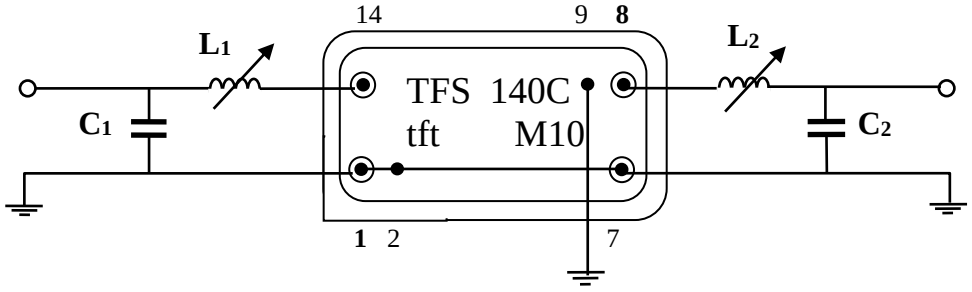
3. Package :





Pin **14**	**Input**
Pin 1	Input RF Return
Pin **8**	**Output**
Pin 7	Output RF Return
Pin 2, 9	Pakage Ground

4. 50 Ω matching network:



Remark: L_1 , L_2 have to be adjusted (refer to Application Note TFS 140C).

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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.	

Air reflow profile

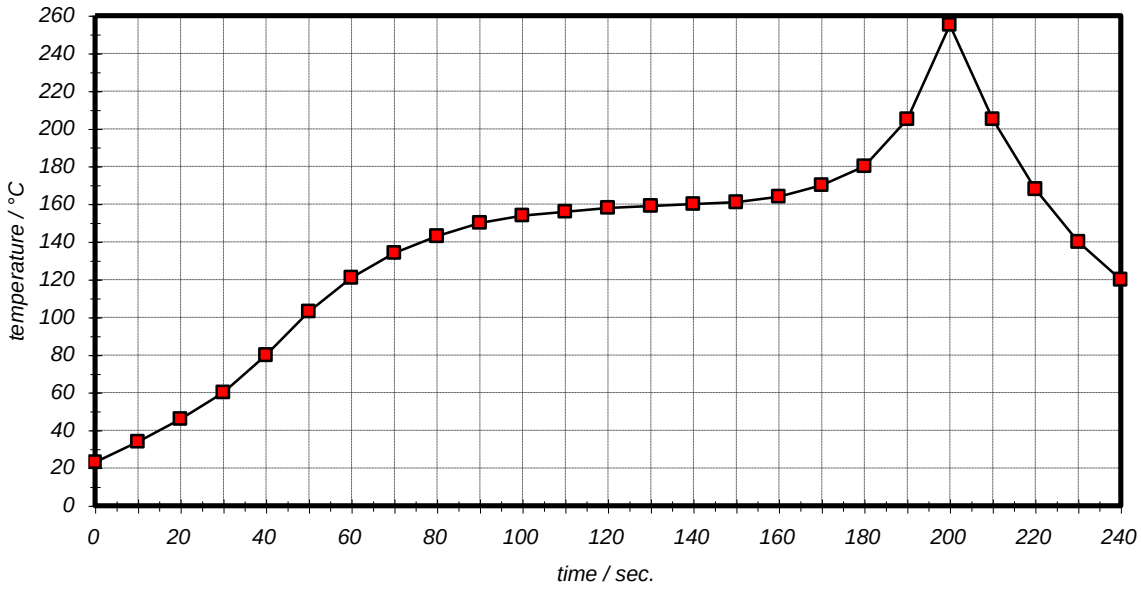

Table for temperature vs. time during the air reflow process

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
3.1	Correct **Amplitude ripple** information.	Dunzow W.	04.07.2000.

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