VI TELEFILTER **Filter specification** **TFS 70 Q 1/3**

1. Measurement condition

Ambient temperature T_A: 23 °C
Input power level: 0 dBm (typ.) Max 10 dBm.
Terminating impedances at f_C: for input: 50 Ω | 0 pF.
for output: 50 Ω | 0 pF.

Package, pin connection and 50 Ω matching network
see page 2

2. Characteristics

Remark:
Reference level for the relative attenuation a_{rel} of the **TFD 70 Q** is the minimum of the pass band attenuation $\mathbf{a_{min}}$. The minimum of the pass band attenuation a_{min} is defined as the insertion loss $\mathbf{a_e}$. The reference frequency 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 $\mathbf{a_e}$. The temperature coefficient of frequency $\mathbf{Tc_f}$ is valid both for the reference frequency $\mathbf{f_C}$ 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) $\mathbf{a_e}$	20	dB	max 22	dB
Reference frequency $\mathbf{f_C}$ at ambient temperature (f_{CAT})	70,00	MHz	70,0±0,3	MHz
1 dB - band width	11,96	MHz		
3 dB - band width	13,67	MHz		
20 dB - band width	18,00	MHz		
40 dB - band width	20,15	MHz		
Amplitude ripple (p-p): f_C ... f_C ± 5,6 MHz	0,2	dB	max 1,0	dB
Relative attenuation $\mathbf{a_{rel}}$				
f_C — f_C ± 5,6 MHz		-	max 1	dB
f_C ± 5,6 MHz — f_C ± 6,5 MHz		-	max 3	dB
f_C - 30 MHz — f_C - 11 MHz	55	dB	min 40	dB
f_C + 11 MHz — f_C + 30 MHz	50	dB	min 40	dB
f_C - 70 MHz — f_C - 30 MHz	60	dB	-	
f_C + 30 MHz — f_C + 70 MHz	45	dB	-	
Group delay	720	ns	max 1,5	µs
Group delay ripple (p-p): f_C ... f_C ± 7,5 MHz	± 15	ns	± max 20	ns
Deviation from linear phase (p-p): f_C ... f_C ± 7,5 MHz	2,3°			
Triple transit attenuation compared to main signal	50	dB		
Input/Output return loss with matching network (S11/S22):	1,5/1,5	dB		
Crosstalk	56	dB		
Temperature coefficient of frequency (Tc_f)	-72	ppm/K		
Frequency deviation of f_C over temperature	$\Delta f_C(Hz) = Tc_f(ppm/K) \times (T - T_A) \times f_{CAT}$ (MHz)			
Operating temperature range	- 25 °C ... + 80 °C			
Storage temperature range	- 40 °C ... + 85 °C			

Generated:

Checked/Approved:

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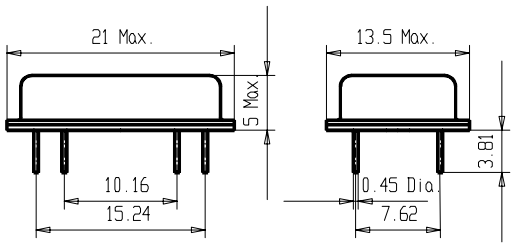
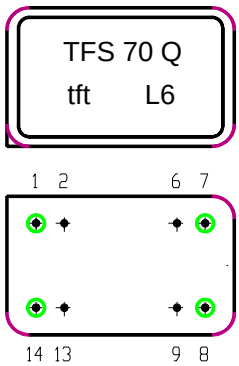
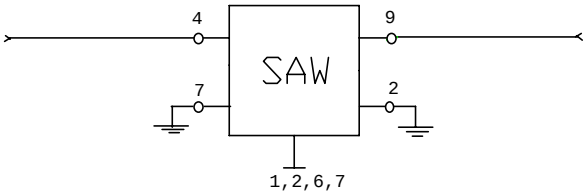
3. Package



14 Input
1 Input RF Return
7 Output
8 Output RF Return
13 Package Ground





Air reflow temperature conditions

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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

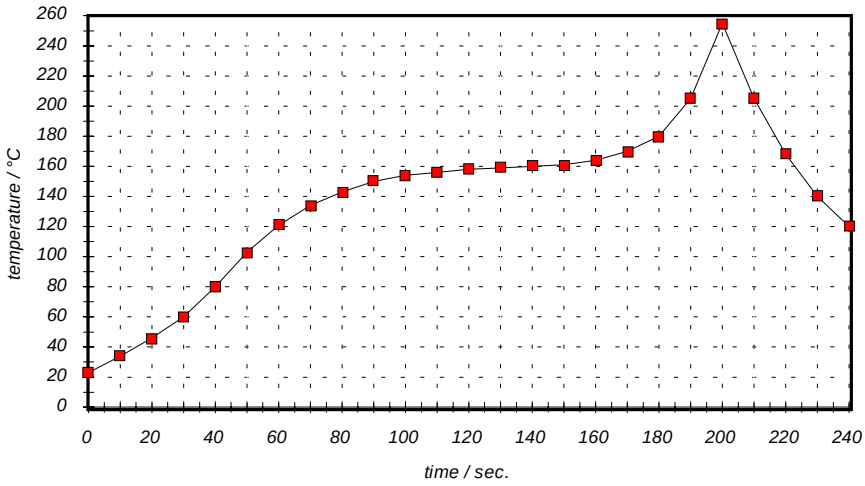

Table for temperature vs. time during the air reflow process

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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