

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 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 **20 dB** filter attenuation level relative to the insertion loss a_e . The temperature coefficient of frequency T_{Cf} 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.

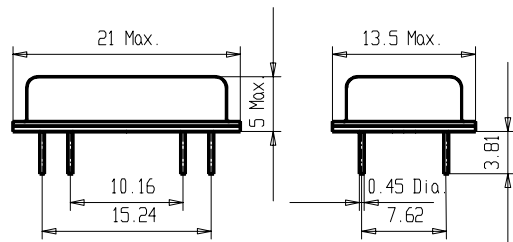
Data		typ. value	tolerance / limit
Insertion loss (Reference level) a_e		20 dB	max 22 dB
Reference frequency f_C at ambient temperature (f_{CAT})		70,00 MHz	70,0 \pm 0,3 MHz
1 dB - band width		11,96 MHz	
3 dB - band width		13,67 MHz	
20 dB - band width		18,00 MHz	
40 dB - band width		20,15 MHz	
Amplitude ripple (p-p): $f_C \dots f_C \pm 5,6$ MHz		0,2 dB	max 1,0 dB
Relative attenuation a_{rel}			
f_C	$f_C \pm 5,6$ MHz	-	max 1 dB
$f_C \pm 5,6$ MHz	$f_C \pm 6,5$ 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 μ s
Group delay ripple (p-p): $f_C \dots f_C \pm 7,5$ MHz		± 15 ns	\pm max 20 ns
Deviation from linear phase (p-p): $f_C \dots f_C \pm 7,5$ 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 (T_{Cf})		-72 ppm/K	
Frequency deviation of f_C over temperature		$\Delta f_C(\text{Hz}) = T_{Cf}(\text{ppm/K}) \times (T - T_A) \times f_{CAT} (\text{MHz})$	
Operating temperature range		- 25 °C ... + 80 °C	
Storage temperature range		- 40 °C ... + 85 °C	

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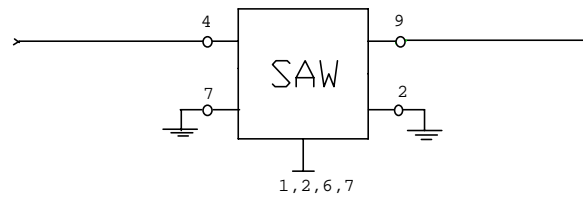
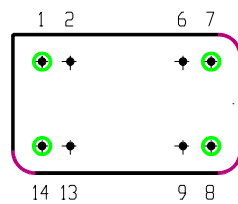
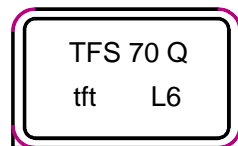
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VI TELEFILTER**Filter specification****TFS 70 Q 2/3****3. Package**

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

**Air reflow temperature conditions**

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

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.	

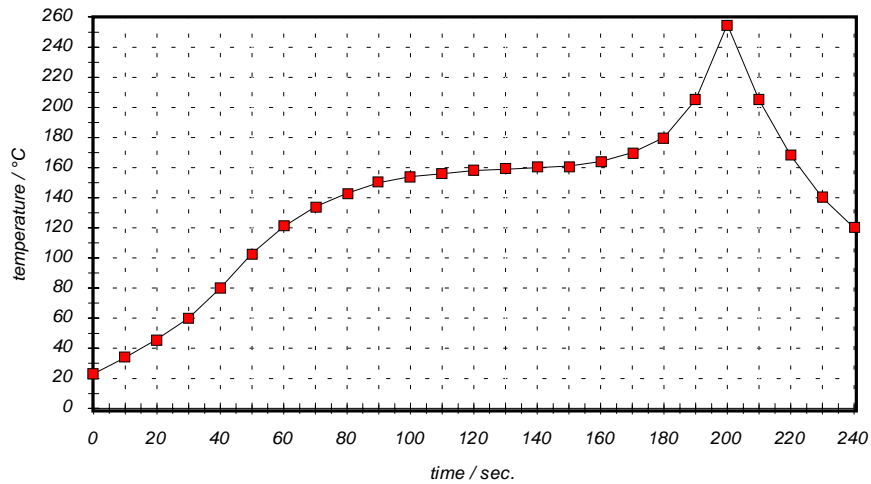
Chip-mount air reflow profile

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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