

VI TELEFILTER**Filter specification****TFS 70H29A****1/5****Measurement condition**

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	1500 Ω	-6,7 pF
Output:	1700 Ω	-7,1 pF

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of the TFS 70H29A 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 frequency 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 for both 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	24,5 dB	max.	26	dB
Centre frequency		f_c	70,01 MHz		70,0 $\pm$ 0,09 MHz	
Passband					$f_c \pm 1,75$ MHz	
Bandwidth		BW				
1	dB		3,20 MHz	min.	3,0	MHz
3	dB		3,60 MHz	min.	3,5	MHz
40	dB		5,22 MHz	max.	5,6	MHz
Relative attenuation		a_{rel}				
f_c		... $f_c \pm 1,4$ MHz	0,4 dB	max.	0,8	dB
$f_c \pm 1,4$ MHz		... $f_c \pm 1,5$ MHz	0,6 dB	max.	1	dB
$f_c \pm 1,5$ MHz		... $f_c \pm 1,75$ MHz	2,5 dB	max.	3	dB
$f_c \pm 2,8$ MHz		... $f_c \pm 5$ MHz	50 dB	min.	40	dB
$f_c \pm 5$ MHz		... $f_c \pm 10$ MHz	48 dB	min.	45	dB
$f_c \pm 10$ MHz		... $f_c \pm 30$ MHz	56 dB	min.	50	dB
Group delay		mean value in PB	2,45 μ s	max.	3	μ s
				min.	2	μ s
Group delay ripple within PB			40 ns	max.	90	ns
Deviation from linear phase within PB			2,2 °	max.	4	°
Triple transit response suppression			54 dB		-	
Crosstalk attenuation compared to main signal			55 dB		-	
Operating temperature range		OTR	-		- 40 °C ... + 85 °C	
Storage temperature range			-		- 55 °C ... + 85 °C	
Frequency inversion temperature			30 °C		-	
Temperature coefficient of frequency		TC_f **	- 0,04 ppm/K ²		-	

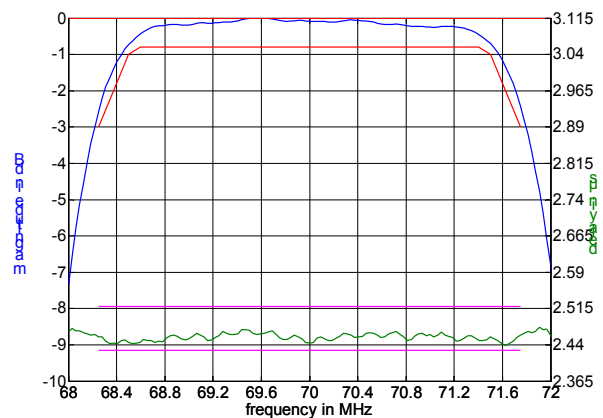
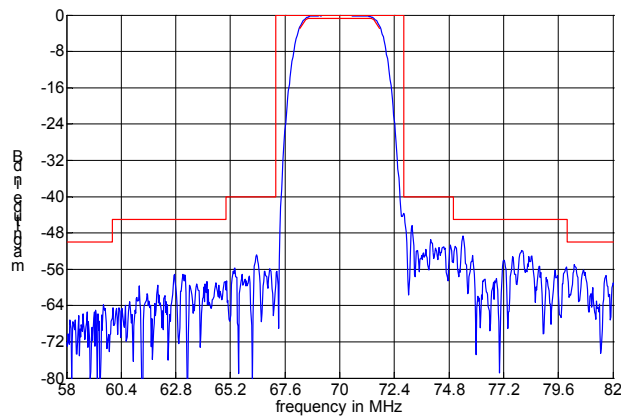
*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

**) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$.

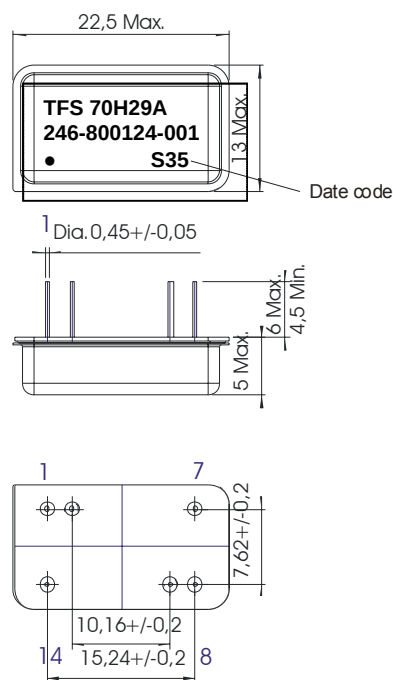
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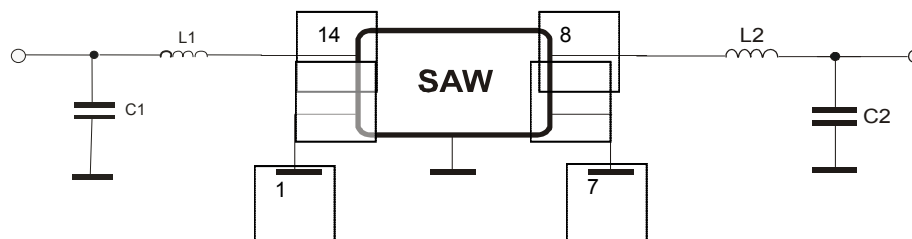
VI TELEFILTER**Filter specification****TFS 70H29A****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



- | | |
|----|------------------|
| 1 | Input RF Return |
| 2 | Ground |
| 7 | Output RF Return |
| 8 | Output |
| 9 | Ground |
| 14 | Input |

Date code: Year + week
 S 2004
 T 2005
 U 2006
 ...

50 Ohm Test circuit**Stability characteristics :**

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VI TELEFILTER**Filter specification****TFS 70H29A****3/5**

After the following tests the filter shall meet the whole specification:

- | | |
|---------------------|---|
| 1. Shock: | 30g, 11 ms, sawtooth, 3 shocks each plane;
MIL-STD-202, Method 213 test condition K |
| 2. Vibration: | 10 Hz to 2000 Hz, 15g, 20min per cycle, 12 cycles per plan, 3 plans;
MIL-STD 202, Method 204, test condition B |
| 3. Thermal
shock | -40°C to 85°C, 5 cycles
MIL-STD 202, Method 107, test condition A |

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Air reflow temperature conditions :

1st and 2nd air reflow profile

Name:	<u>pre-heating periods</u>	<u>main-heating periods</u>	<u>peak temperature</u>
Temperature:	150 °C - 170 °C	over 200 °C	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

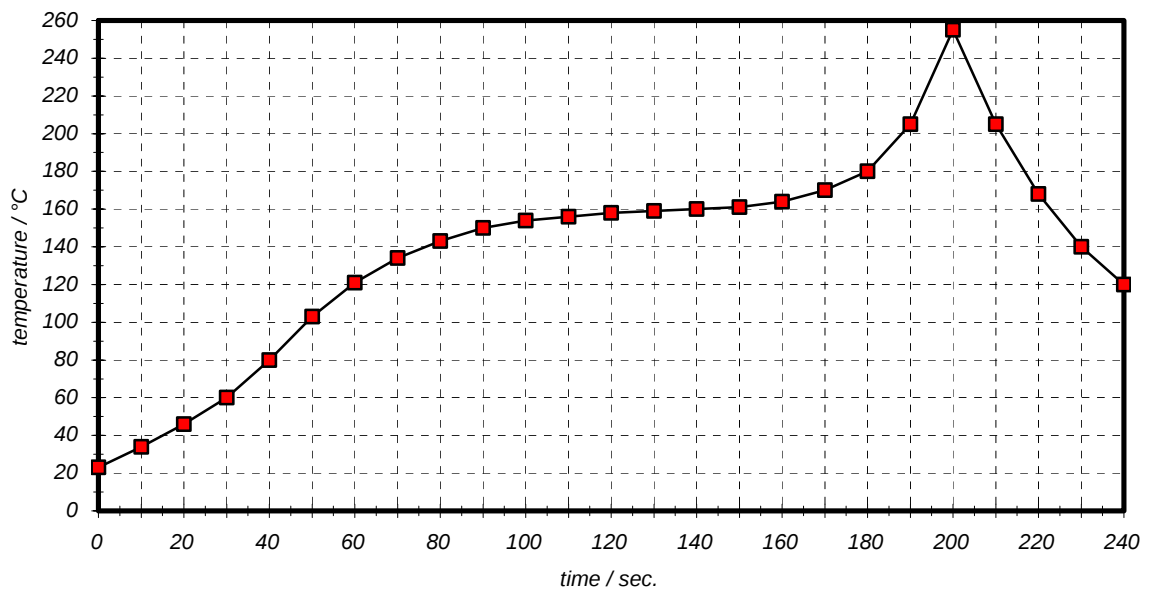
Air reflow profile

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

VI TELEFILTER**Filter specification****TFS 70H29A****5/5****History**

Version	Reason of changes	Name	Date
1.0	filter specification created	Pfeiffer	17.06.2004
1.1	operating and storage temperature range extended	Pfeiffer	26.08.2004

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