

VI TELEFILTER**Filter Specification****TFS 36 B****1/4****1. Measurement condition**

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

2. Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the **TFS 36B** 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 40 dB filter attenuation level relative to the insertion loss a_e . The filter shall meet the specification at operating temperature.

Data	typ. value	tolerance / limit
Insertion loss (Reference level) a_e	28,5 $\pm$ 0,5 dB	max. 36 dB
Reference frequency (f_C) :		
at ambient temperature (23°C) (f_{CAT})	36,065 $\pm$ 0,010 MHz	
at operating temperature (45°C) (f_{COP})	36,000 $\pm$ 0,010 MHz	
Nominal frequency f_N at operating temperature (Top = 45°C)		36 MHz
Pass band (PB) :	$f_N - 3,325 \text{ MHz} \dots f_N + 3,325 \text{ MHz}$	
Amplitude ripple in PB (p-p) :	0,7...0,8 dB	max. 1,0 dB
Bandwidth at operating temperature Top = 45°C :		
1 dB - band width	6,70 MHz	min. 6,65 MHz
3 dB - band width	6,91 MHz	
40 dB - band width	7,44 MHz	max. 7,5 MHz
50 dB - band width	7,65 MHz	max. 7,8 MHz
Relative attenuation at operating temperature Top = 45°C :	a_{rel}	
$f_N \dots f_N \pm 3,325 \text{ MHz}$	-	max. 1 dB
$f_N \pm 3,75 \text{ MHz} \dots f_N \pm 3,9 \text{ MHz}$	45...48 dB	min. 40 dB
$f_N - 35 \text{ MHz} \dots f_N - 30 \text{ MHz}$	42...45 dB	min. 40 dB
$f_N - 30 \text{ MHz} \dots f_N - 16 \text{ MHz}$	48...51 dB	min. 45 dB
$f_N - 16 \text{ MHz} \dots f_N - 3,9 \text{ MHz}$	52...55 dB	min. 50 dB
$f_N + 3,9 \text{ MHz} \dots f_N + 30 \text{ MHz}$	54...60 dB	min. 50 dB
$f_N + 30 \text{ MHz} \dots f_N + 50 \text{ MHz}$	49...52 dB	min. 47 dB
Group delay (mean value in PB):	4,64 μ s	max. 5,0 μ s
Group delay ripple in PB (p-p):	120...160 ns	max. 350 μ s
Deviation from linear phase in PB (p-p) :	3,2...4,2°	max. 4,5 °
Triple transit attenuation compared to main signal	65...68 dB	min. 55 dB
Crosstalk	60...65 dB	
Reflection attenuation compared to main signal	42...50 dB	
Temperature coefficient of frequency (T_{Cf})	-87 ppm/K	-94 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 (Top) :		+ 45 °C
Storage temperature range		- 25 °C ... + 85 °C

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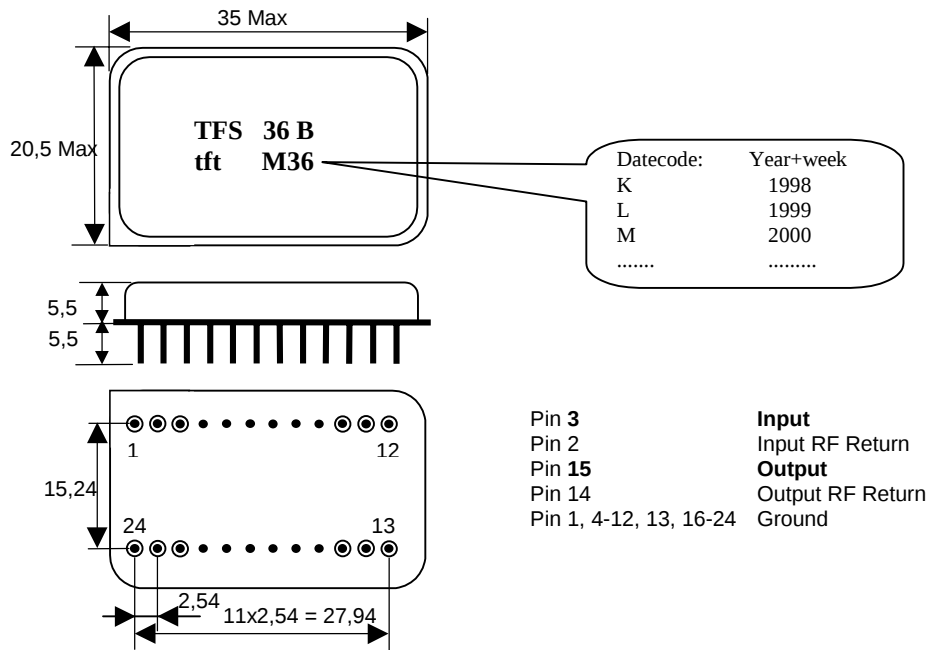
Checked/Approved:

VI TELEFILTER
 Potsdamer Straße 18
 D 14 513 TELTOW / Germany
 Tel: (+49) 3328 4784-52 / Fax: (+49) 3328 4784-30
 E-Mail: tft@telefilter.com

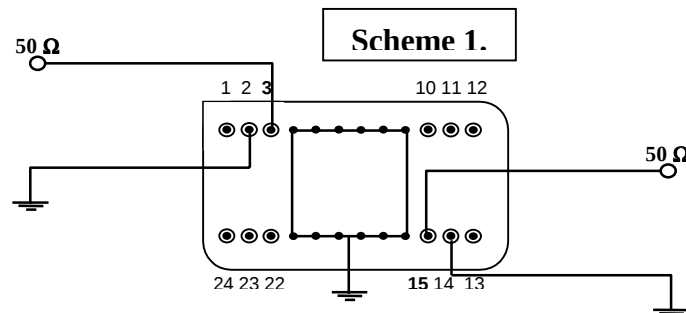
Vectron International, Inc.
 267 Lowell Road
 Hudson, NH 03051 / USA
 Tel: (603) 598-0070 Fax: (603) 598-0075
 E-Mail: vti@vtinh.com

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3. Package :



4. 50 Ω matching network :



Soldering temperature conditions

Soldering temperature 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.	

Soldering temperature profile

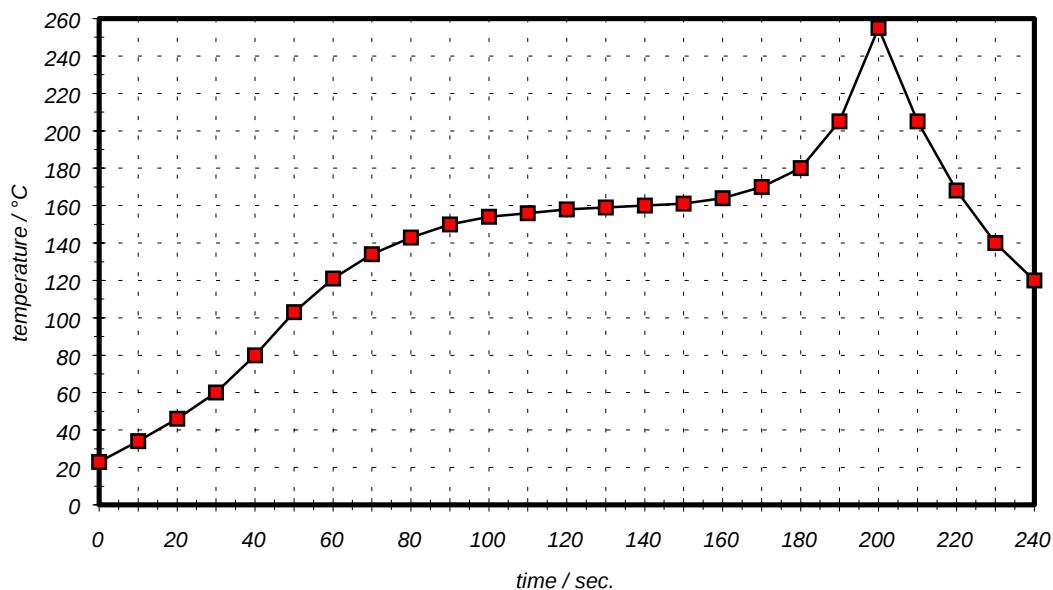


Table for temperature vs. time during the soldering process

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

History

Version	Reason of Changes	Name	Date
1.0....1.3	Generate Development Specification according to customer requirements.	Wall B.	21.12.1999
1.4	Add typical measured values of filter parameters after 2-nd iteration. Change limit value in stop band : $f_N - 35 \text{ MHz} \dots f_N - 30 \text{ MHz}$ from min. 50 dB to min. 40 dB $f_N - 30 \text{ MHz} \dots f_N - 16 \text{ MHz}$ from min. 50 dB to min. 45 dB	Dunzow W.	28.09.2000