

VI TELEFILTER**Filter specification****TFS 100C****1/5****1. Measurement condition :**

Ambient temperature T_A : 23 °C
 Input power level: 0 dBm.

Terminating impedances in f_C *) :
 for input: 19 Ω | - 52 pF.
 for output: 38 Ω | - 64 pF.

2. Characteristics

Remark: Reference level for the relative attenuation a_{rel} of the **TFS 100C** 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 3 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 bandwidth shift of the filter in the operating temperature range (OTR) is included in the production tolerance scheme.

Data	typ. value	tolerance / limit
Insertion loss (Reference level) a_e	22,5 dB	max. 25 dB
Centre frequency f_C at ambient temperature (f_{CAT})	100,0 MHz	100,0 $\pm$ 0,10 MHz
Pass band (PB) at ambient temperature :	-	$f_C - 2,9$ MHz ... $f_C + 2,9$ MHz
Amplitude ripple in PB (p-p):	0,6...0,8 dB	max. 1,30 dB
Bandwidth :	at T_A	in OTR
1 dB - band width	5,88 MHz	
1,3 dB - band width	5,91 MHz	min 5,8 MHz
3 dB - band width	6,06 MHz	min. 6,0 MHz
20 dB - band width	6,57 MHz	
33 dB - band width	6,75 MHz	max. 6,8 MHz
40 dB - band width	6,84 MHz	
43 dB - band width	6,90 MHz	max. 7,2 MHz
48 dB - band width	7,10 MHz	max. 8,0 MHz
Relative attenuation a_{rel} :		
f_C	0,8 dB	max. 1,3 dB
$f_C \pm 2,9$ MHz	2,5 dB	max. 3 dB
$f_C \pm 3,4$ MHz	36 dB	min. 33 dB
$f_C \pm 3,6$ MHz	49...52 dB	min. 43 dB
$f_C \pm 4,0$ MHz	50...60 dB	min. 48 dB
$f_C \pm 17,1$ MHz	55...70 dB	min. 50 dB
Group delay (mean value in PB):	2,89 μ s	max. 3,4 μ s
Group delay ripple in PB (p-p):	130...150 ns	max. 170 ns
Deviation from linear phase in PB:	5...7°	-
Triple transit attenuation compared to main signal:	47 dB	-
Crosstalk:	50...60 dB	-
Temperature coefficient of frequency (T_{Cf})	- 20 ppm/K	-
Frequency deviation of f_C over temperature	$\Delta f_C(\text{Hz}) = T_{Cf}(\text{ppm/K}) \times (T - T_A) \times f_{CTA}(\text{MHz})$	-
Operating temperature range (OTR) :	-	- 25 °C ... + 80 °C
Storage temperature range (STR) :	-	- 40 °C ... + 85 °C

*) 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.

Generated: Dunzow W.

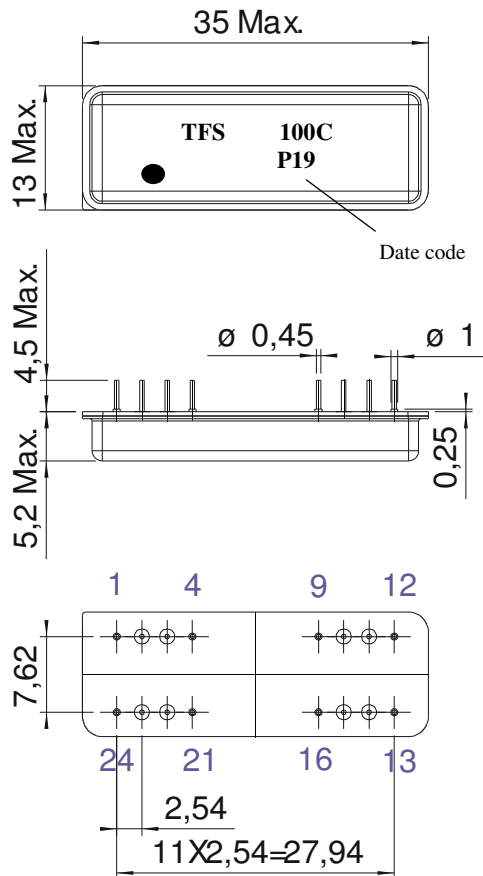
Checked / approved: Dr. Bert Wall

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3. Construction and pin connection

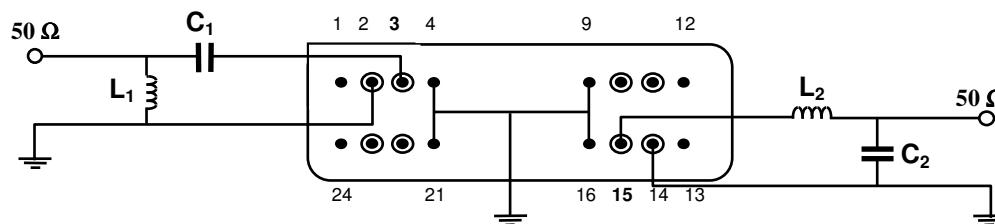
(all dimensions in mm)
pin grid 2,54 mm



Datecode: Year+week
M 2000
N 2001
P 2002
... ..

Pin 3 **Input**
Pin 2 Input RF Return
Pin 15 **Output**
Pin 14 Output RF Return
Pin 1, 4, 9, 12, 13, 16, 21, 24 –
Package Ground
Pin 10, 11, 22, 23 – not connected.

4. 50 Ω matching network (please refer to the application note for further details) :



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5. Stability characteristics :

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

1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: twice max.;
for temperature conditions, please refer to the attached "Air reflow temperature conditions" on page 4;

6. 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

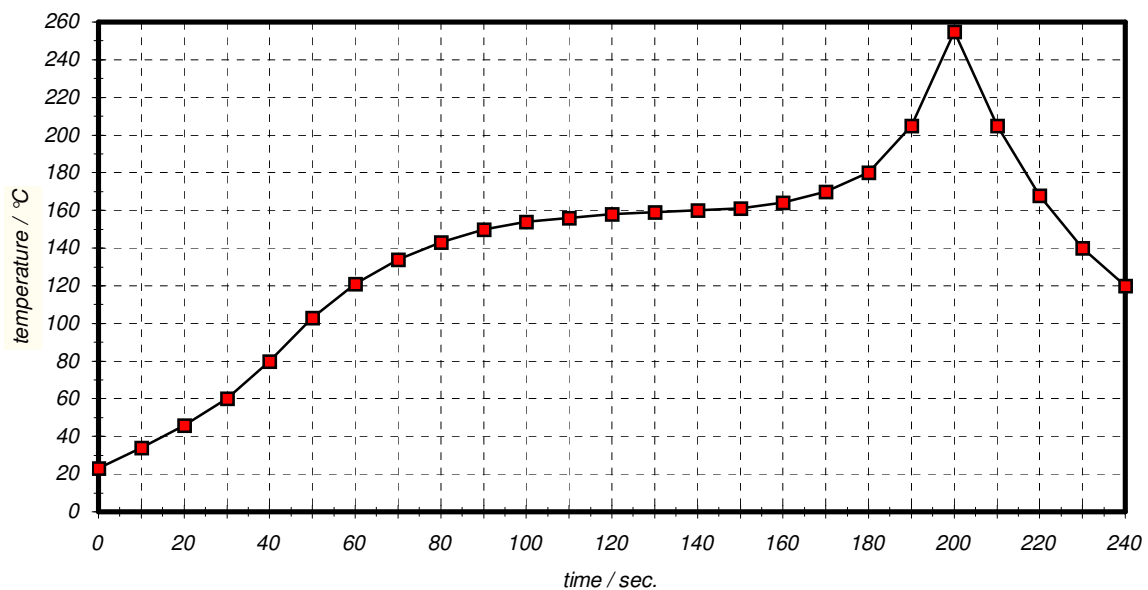


Table for temperature vs. time during the air reflow process

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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7. History :

Version	Reason of Changes	Name	Date
1.0	- edit customer development specification.	Dunzow	17.04. 2000
1.1	- generate preliminary specification. - add and correct typical values of filter ; - add termination impedances of matching networks ; - add matching network configuration.	Dunzow W.	20.04.2001
1.2	- generate filter specification.	Dunzow W.	21.08.2002

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