

**Measurement condition**

Ambient temperature  $T_A$ : 23 °C  
 Input power level: 0 dBm.  
 Terminating impedances: 50  $\Omega$

**Characteristics****Remark:**

Reference level for the relative attenuation  $a_{rel}$  of the **TFS 450** 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 **3dB** filter attenuation level relative to the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed on **450,00 MHz** without tolerance. The given values for the relative attenuation  $a_{rel}$  and for the group delay ripple have to be reached at the frequencies given below also if the centre frequency  $f_c$  is shifted due to the temperature coefficient of frequency  $TC_f$  in the operating temperature range and due to a production tolerance for the centre frequency  $f_c$

Data		typ. value	tolerance/ limit
<b>Insertion loss</b> (Reference level)	$a_e = a_{min}$	3,50 dB	max 4,50 dB
<b>Nominal frequency</b> $f_N$		-	450,00 MHz
<b>Centre frequency</b> $f_c$		450,0 MHz	
<b>3 dB - bandwidth</b> BW		9,50 MHz	min 4,0 MHz
<b>Relative attenuation</b> $a_{rel}$			
$f_N - 42,8$ MHz		-	min 55,0 dB
<b>Temperature coefficient of the frequency</b> $TC_f$ *)		- 32,0 ppm/K	
<b>Operating temperature range</b>		-	- 10 °C ... + 55 °C
<b>Storage temperature range</b>		-	- 30 °C ... + 80 °C

\*  $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_{CAT}(\text{MHz})$

Generated: Sabah (23.06.00)

Checked/Approved:

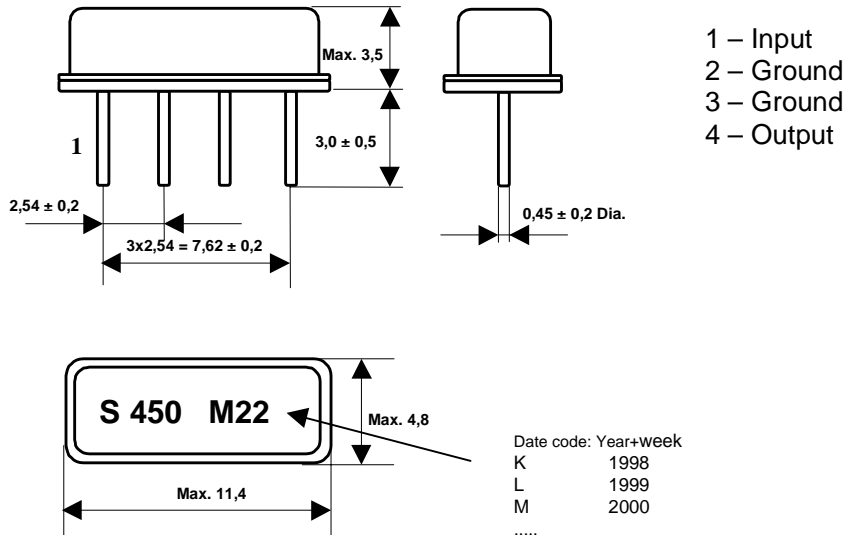
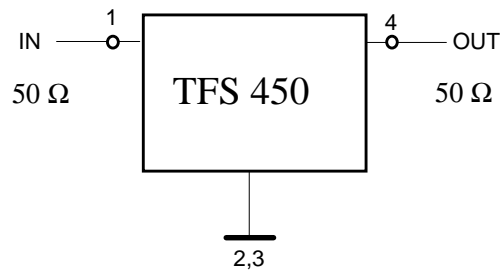
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**Construction and Pin Configuration**

(All Dimensions in mm)

**50 Ω matching**

**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, 0,035 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;  
DIN IEC 68 T2 - 6
3. Damp heat:  
(steady state) 90 % to 95 % rel. humidity, 55 °C, 10 days;  
DIN IEC 68 - 2 - 30
4. Resistance to  
solder heat (reflow): max. 2 times reflow process;  
for temperature conditions refer to the attached "Air reflow temperature conditions" on sheet 4;

**Air reflow temperature conditions**

## 1st and 2nd air reflow profile

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

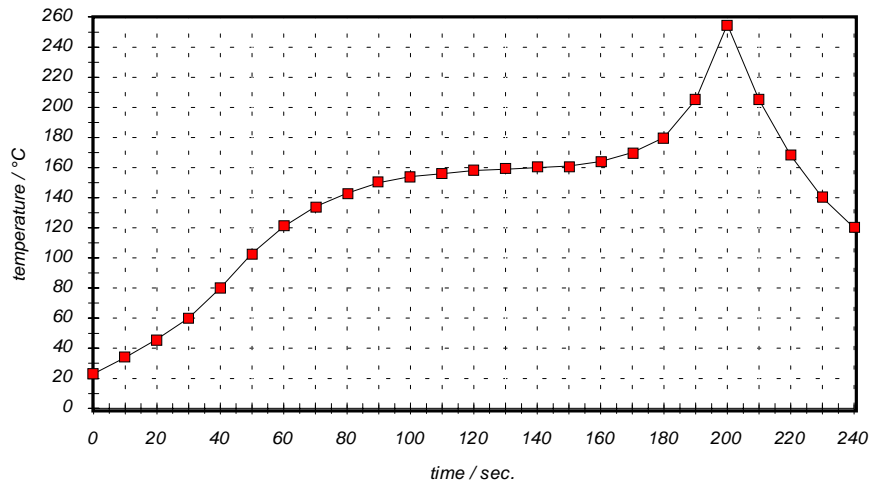
**Chip-mount air reflow profile**

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

**History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	generated specification according to customer requierment (scaling from TFS 468B).	S. Sabah	23.06.2000