

Measurement condition

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

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the **TFS 438** 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 **438,00 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
Insertion loss (Reference level)	$a_e = a_{min}$	3,50 dB	max 4,50 dB
Nominal frequency f_N		-	438,00 MHz
Centre frequency f_c		438,0 MHz	
3 dB - bandwidth BW		9,50 MHz	min 4,0 MHz
Relative attenuation a_{rel}			
$f_N + 42,8$ MHz		-	min 55,0 dB
Temperature coefficient of the frequency TC_f *)		- 32,0 ppm/K	
Operating temperature range		-	- 10 °C ... + 55 °C
Storage temperature range		-	- 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:

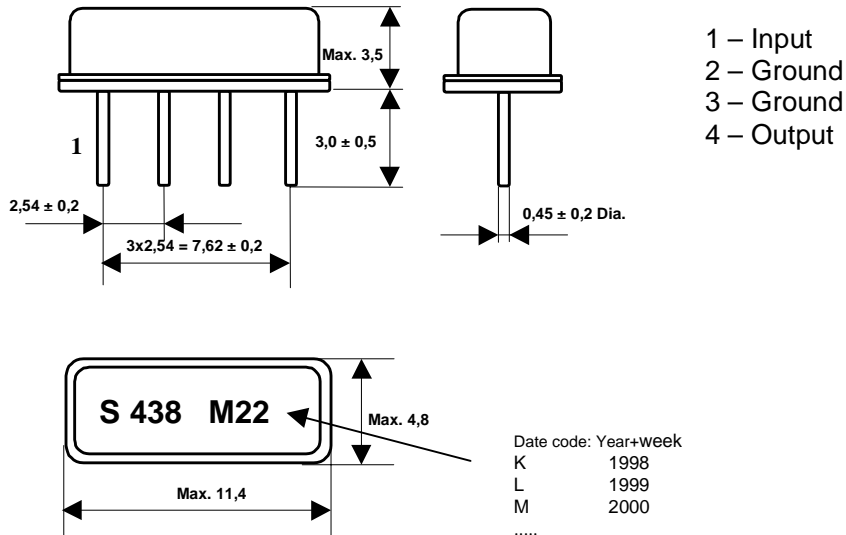
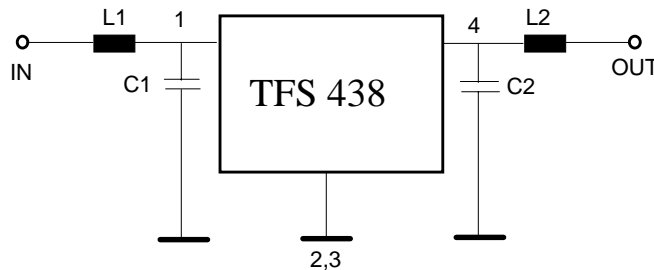
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Construction and Pin Configuration

(All Dimensions in mm)

**50 Ω matching**

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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

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.	

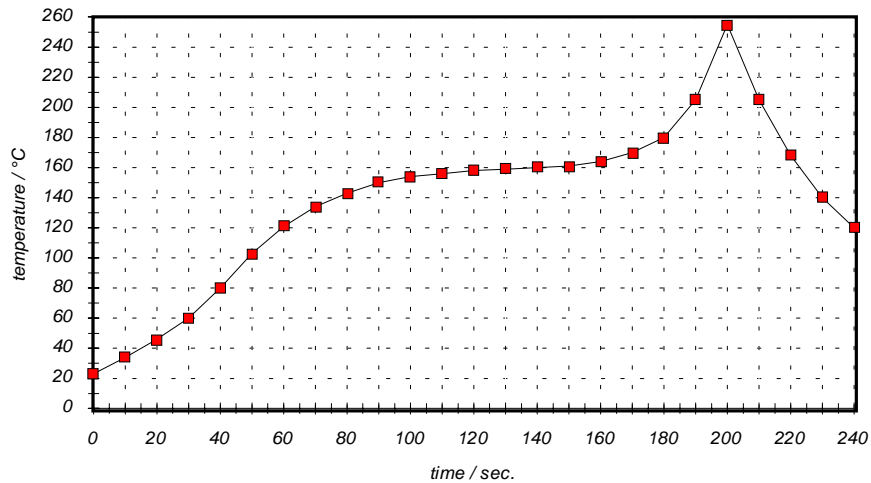
Chip-mount air reflow profile

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

History

Version	Reason of Changes	Name	Date
1.0	generated specification according to customer requierment	S. Sabah	23.06.2000