

Microchip**Filter specification****TFS 498****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	200	Ω
Output:	200	Ω

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 498 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 nominal frequency f_N is fixed at 498,00 MHz without any tolerance. The given values for both the relative attenuation a_{rel} and the group delay ripple have to be achieved at the frequencies given below even 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 .

D a t a	typ. value	tolerance / limit
Insertion loss (reference level)	a_e 3,2	max. 5,0 dB
Nominal frequency	f_N	498,00 MHz
Centre frequency	f_c 498,00** MHz	
Passband		$f_N \pm 8,4$ MHz
Pass band ripple	2,0 dB	max. 3,0 dB
Relative attenuation	a_{rel}	
f_N ... $f_N \pm 8,4$ MHz	2,0	max. 3,0 dB
$f_N \pm 30,0$ MHz ... $f_N \pm 38,0$ MHz	33,0	min. 28,0 dB
$f_N \pm 38,0$ MHz ... $f_N \pm 100,0$ MHz	50,0	min. 40,0 dB
Operating temperature range	OTR	0 °C ... + 80°C
Storage temperature range		- 40 °C ... + 85°C
Temperature coefficient of frequency	TC_f *	-37 ppm/K

*) at 40 °C operating temperature

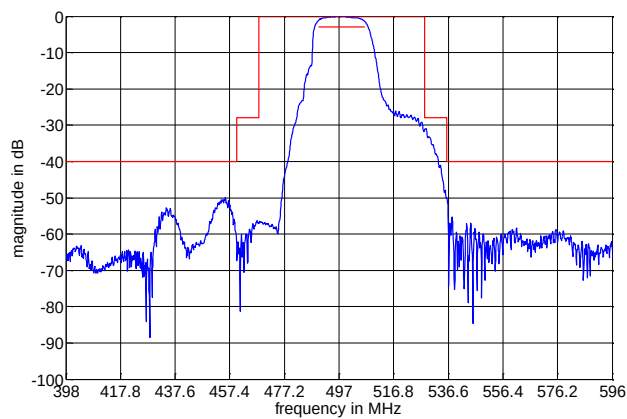
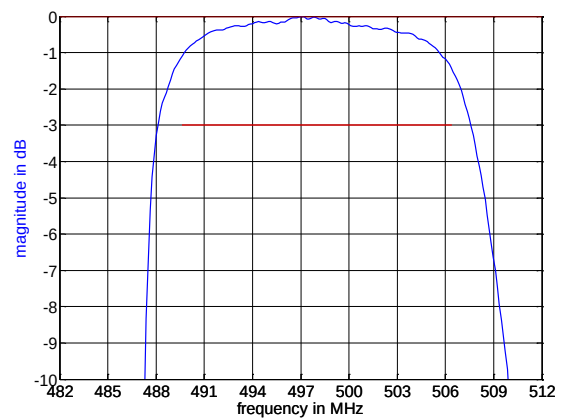
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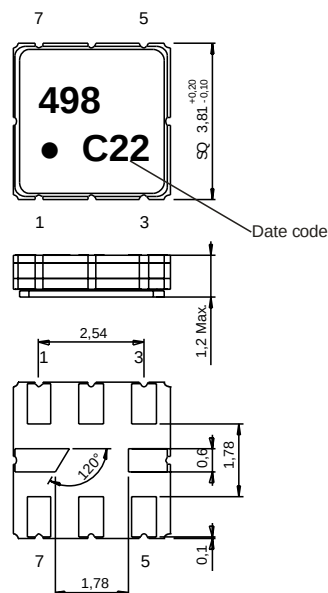
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Filter characteristic



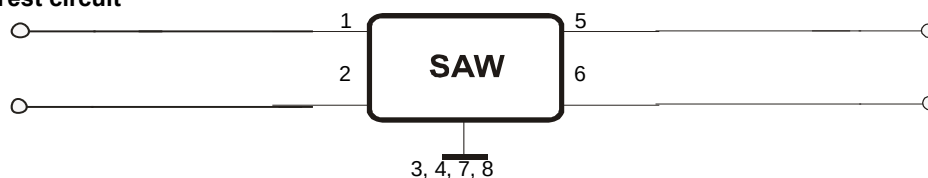
Construction and pin connection

(All dimensions in mm)



1	Input
2	Input
3	Ground
4	Ground
5	Output
6	Output
7	Ground
8	Ground

Date code:	Year + week
C	2012
D	2013
E	2014
...	

200 Ω Test circuit

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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, 0,35 mm or 5 g 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 refer to the attached "Air reflow temperature conditions" on page 4;

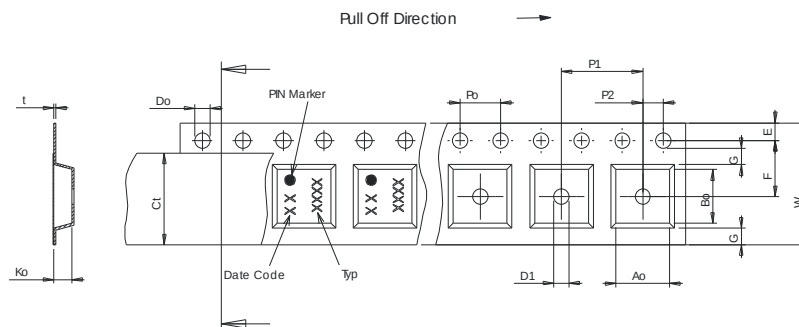
Packing

Tape & Reel: IEC 286 – 3, with exeption of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

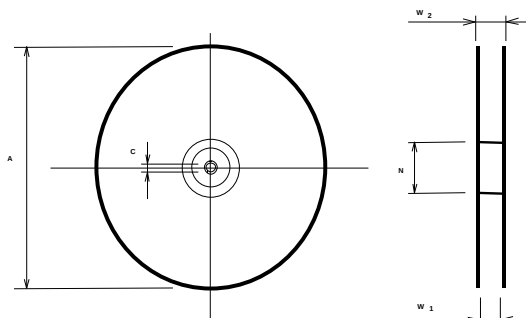
max. pieces of filters peer reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 12,00 ± 0,3
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,1
F	: 5,50 ± 0,05
G(min)	: 0,75
P2	: 2,00 ± 0,05
P1	: 8,00 ± 0,1
D1(min)	: 1,50
Ao	: 4,30 ± 0,1
Bo	: 4,30 ± 0,1
Ct	: 9,5 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 12,4 +2/-0
W2(max)	: 18,4
N(min)	: 50
C	: 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

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.	

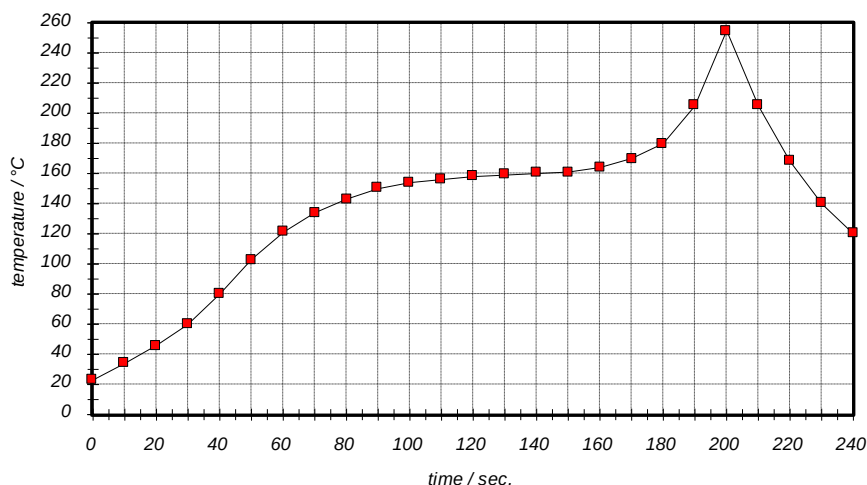
Chip-mount air reflow profile

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

Microchip**Filter specification****TFS 498****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- generation of development specification according to customer specification	Dr. Sabah	18.02.2002
1.1	- change package from 5x5 mm to 3,8x3,8mm and operating temperature range	Dr. Sabah	14.04.2002
1.2	- suggestion development specification; change of attenuation and insertion loss	Dr. Sabah	09.07.2004
1.3	- add typical values - add filter characteristic - add test circuit	M. Springfeldt	29.07.2004
2.0	- change pull off direction from reel	C. Schönbein	29.05.2012