

VI TELEFILTER**Filter specification****TFS 248C****1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance: *
 Input: 63 Ω || -1,65 pF
 Output: 63 Ω || -0,42 pF

Characteristics**Remark:**

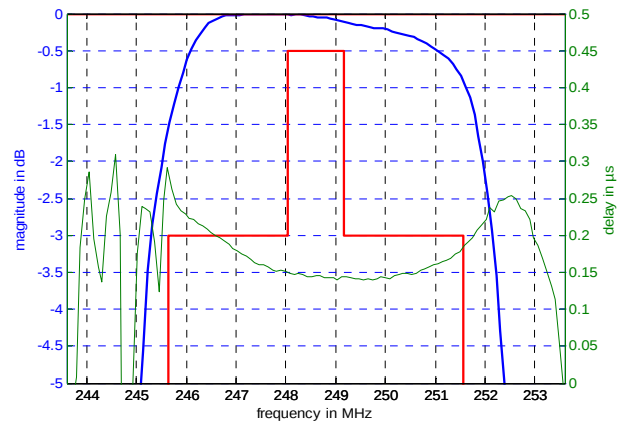
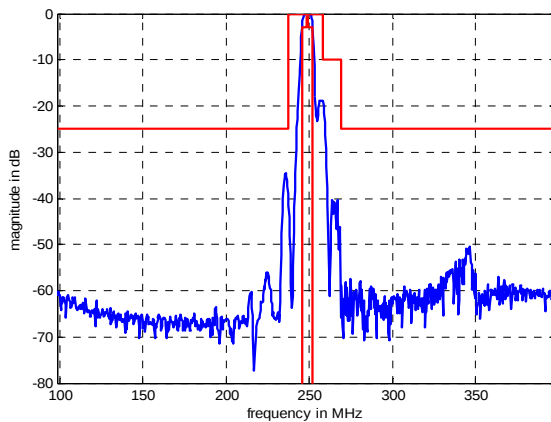
The reference level for the relative attenuation a_{rel} of the TFS 248C is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 3,0 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 248,6 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)	$a_e = a_{min}$	1,9 dB	3,5 dB
Nominal Frequency	f_N	-	248,6 MHz
Centre Frequency	f_C	248,6 MHz	-
3 dB Band width		6,6 MHz	5,0 MHz
Pass Band Ripple $f_N \pm 120$ kHz		0,05 dB	0,5 dB
Relative Attenuation	a_{rel}		
$f_N - 248,5$ MHz ... $f_N - 12$ MHz		35-80 dB	min. 25 dB
$f_N + 10$ MHz ... $f_N + 21$ MHz		18-40 dB	min. 10 dB
$f_N + 21$ MHz ... $f_N + 251,4$ MHz		40-60 dB	min. 25 dB
Group Delay GD		150 ns	max. 300 ns
Group Delay Ripple $f_N \pm 120$ kHz		10 ns	max. 100 ns
Input Power Level			max. 12 dBm
Operating Temperature Range		-	- 25 °C ... + 75 °C
Storage Temperature Range		-	- 40 °C ... + 85 °C
Temperature Coefficient		-36 ppm/K	-

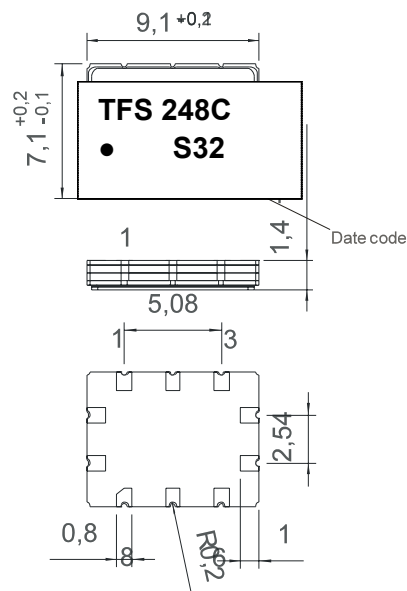
*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

**) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$.

Generated:**Checked / Approved:**

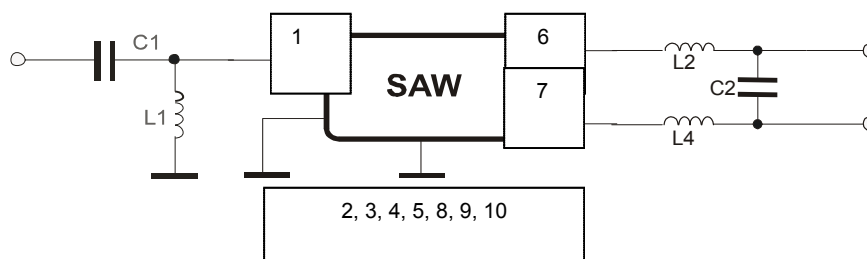
VI TELEFILTER**Filter specification****TFS 248C****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



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

Date code:	Year + week
S	2004
T	2005
U	2006
...	

50/200 Ω Test circuit

VI TELEFILTER**Filter specification****TFS 248C****3/5****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 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;

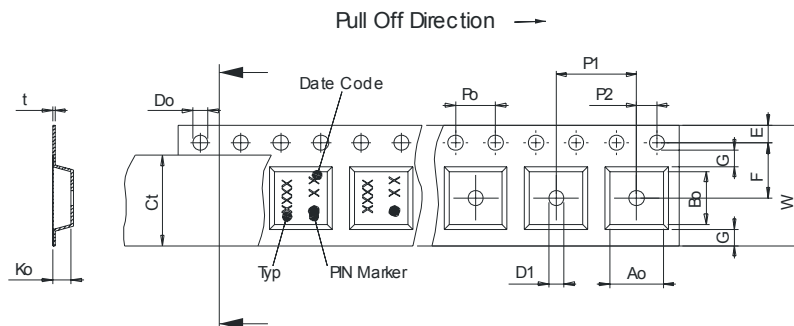
Packing

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;

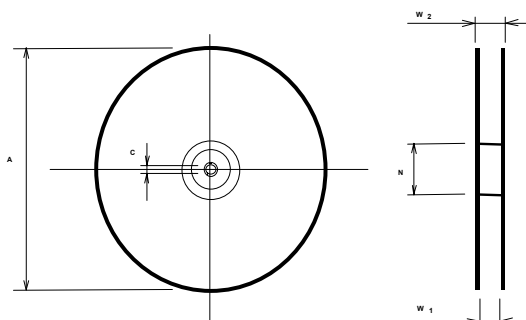
max. pieces of filters peer reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 16,00 ± 0,3
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,10
F	: 7,50 ± 0,10
G(min)	: 0,60
P2	: 2,00 ± 0,1
P1	: 12,00 ± 0,1
D1(min)	: 1,50 +0,1/-0
Ao	: 7,60 ± 0,10
Bo	: 9,60 ± 0,10
Ct	: 13,5

**Reel (all dimensions in mm)**

A	: 330
W1	: 16,4
W2(max)	: 22,4
N(min)	: 50
C	: 13,0



The minimum bending radius is 45 mm.

VI TELEFILTER**Filter specification****TFS 248C****4/5****Air reflow temperature conditions**

1st and 2nd air reflow profile

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

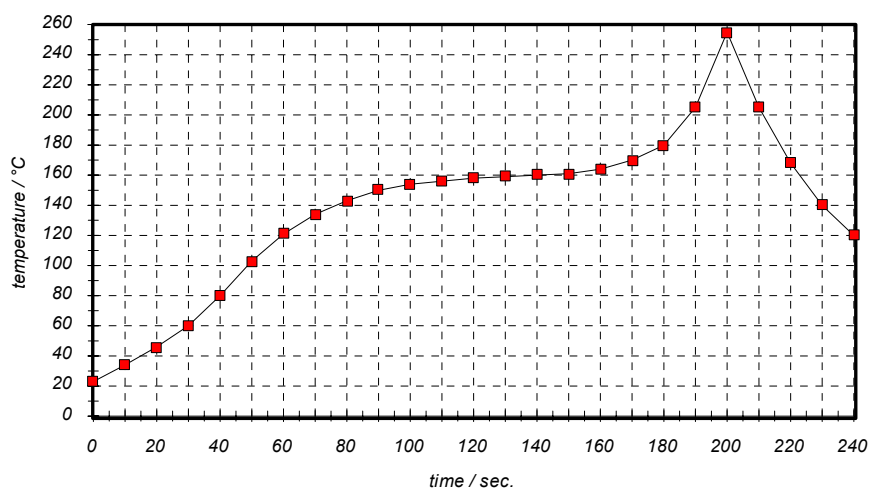
Chip-mount air reflow profile

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

<u>time / sec.</u>	<u>temperature / °C</u>	<u>time / sec.</u>	<u>temperature / °C</u>
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

VI TELEFILTER**Filter specification****TFS 248C****5/5****History**

Version	Reason of Changes	Name	Date
1.4	- add filter characteristic - change drawing of package (construction, pin connection) - change drawing of packing (tape and reel)	Noack	06.08.04