

VI TELEFILTER**Filter Specification****TFS 179****1/5****Measurement condition**

Ambient temperature: 23 °C

Input power level: 0 dBm

Terminating impedances:

for input: 470 Ohm // 0.8 pF (measured between the two source pins)

for output: 470 Ohm // 0.8 pF (measured between the two load pins)

Characteristics**Remark:**

Reference level for the relative attenuation a_{rel} of the **TFS 179** 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 **179,55 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 .

D a t a		typ. value		tolerance/limit		
Insertion loss (Reference level)	a_e	2,7	dB	max.	5	dB
Nominal frequency	f_N	-			179,550	MHz
Centre frequency	f_c	179,554	MHz		-	
3 dB bandwidth	BW	86	kHz			
Pass band ripple $f_N \pm 10$ kHz		0.3	dB	max.	1	dB
Relative attenuation	a_{rel}					
@ $f_N \pm 200$ kHz		63	dB	min.	50	dB
@ $f_N \pm 910$ kHz		80	dB	min.	50	dB
Operating temperature range					- 10 °C ... + 60 °C	
Storage temperature range					- 30 °C ... + 85 °C	
Temperature coefficient of frequency TC		- 0,036	ppm/K ²			
Frequency inversion temperature		+ 25	°C			

Generated:**Checked / approved:**

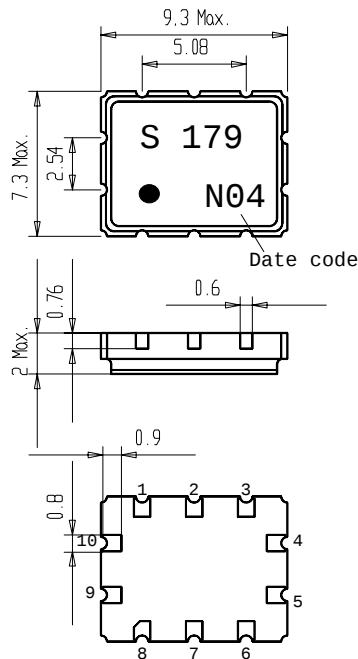
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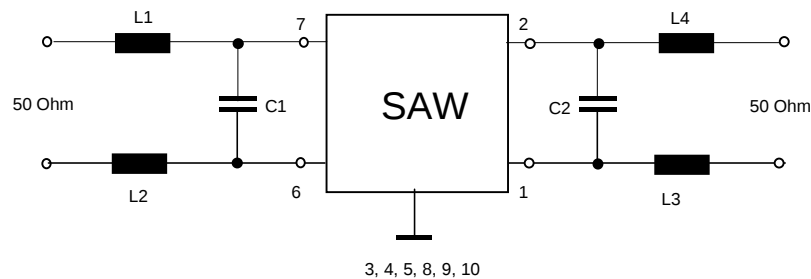
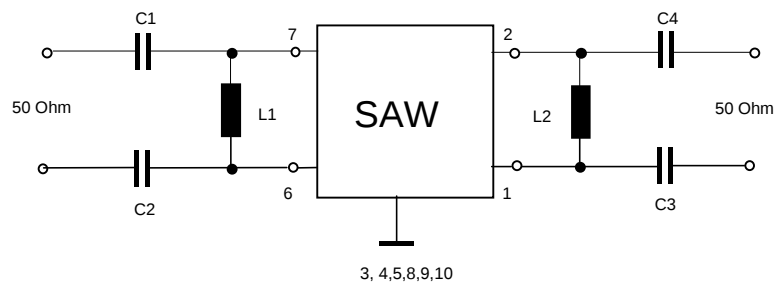
Construction, pin configuration and 50 Ω - matching network

(All dimensions in mm)



Date code: Year + week
 L 1999
 M 2000
 N 2001
 ...

Pin 1,2: balanced Output
 Pin 6,7: balanced Input
 Pin 3,4,5,8,9,10: Ground

50 Ohm Test circuit 1**50 Ohm Test circuit 2**

VI TELEFILTER**Filter Specification****TFS 179****3/5****Stability Characteristics**

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

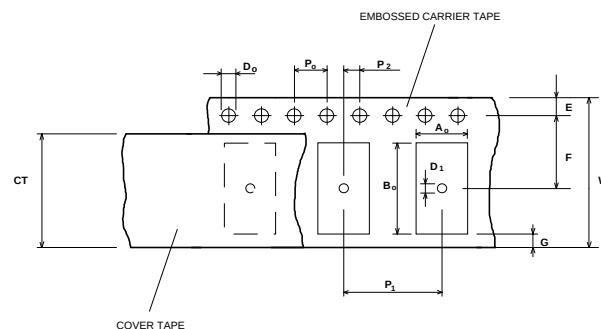
1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Damp heat: 25 °C to 55°C / 95% r.H. / 10 cycles
(cycle) DIN IEC 68 - 2 - 30 Db
4. Resistance to solder heat (reflow): max. 2 times reflow process;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

Packing

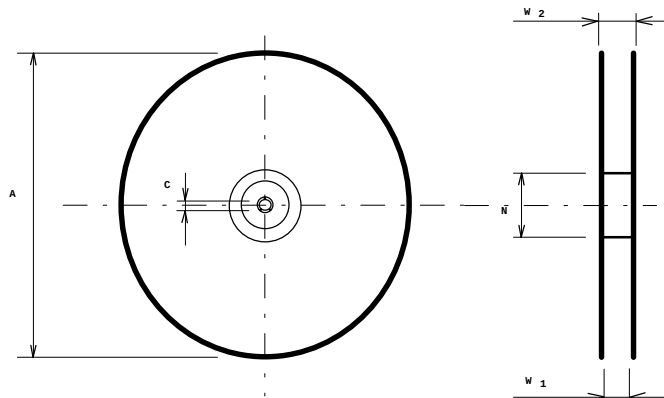
Tape & Reel: IEC 286 - 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;
max. pieces of filters per reel: 2000
Reel of empty components at start: min 300 mm
Reel of empty components at start including leader: min 500 mm
Trailer min 300 mm

Tape (all dimensions in mm)

W	: 16	± 0,3
Po	: 4	± 0,1
Do	: 1,5	+ 0,1
E	: 1,75	± 0,1
F	: 7,5	± 0,1
G (min)	: 0,6	
P2	: 2	± 0,1
P1	: 12	± 0,1
D1(min)	: 1,5	
Ao	: 7,6	± 0,1
Bo	: 9,6	± 0,1
CT	: 13,5	+ 0,1

**Reel (all dimensions in mm):**

A	:	330
W1	:	16,4 +2
W2 (max)	:	22,4
N (min)	:	60
C	:	12,8 ± 0,1



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. The marking of the filters is able to read if the view is directed on the upper side of the carrier tape with the sprocket holes on the right side of the tape.

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VI TELEFILTER**Filter Specification****TFS 179****4/5****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.	

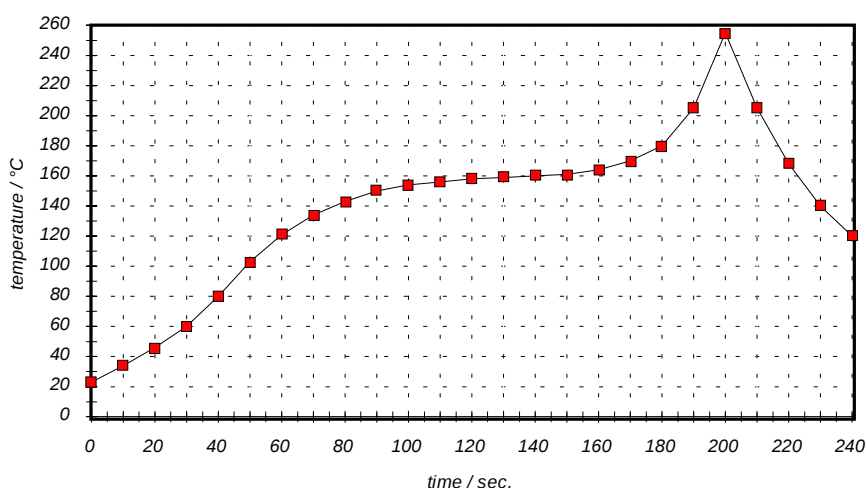
Chip-mount air reflow profile

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

VI TELEFILTER**Filter Specification****TFS 179****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of specification according to customer requirements.	Dr. Wall	13.06.2000
1.1	Balanced access to input and output Operating temperature range changed to -10 °C to +60 °C	Dr. Wall	13.06.2000
1.2	Add preliminary values for termination impedances and typical 3 dB bandwidth.	Dr. Wall	19.06.2000
1.3	Change nominal frequency from 180 MHz to 179,55 MHz. Rename the filter from TFS180B to TFS179. Change target value for termination impedance to 495 Ohm // -1,2 pF Add maximum value for termination impedance 1 kOhm.	Dr. Wall	28.06.2000
1.4	Change termination impedance target window.	Dr. Wall	30.06.2000
1.5	Add final termination impedances Add typical filter data	Dr. Wall	24.01.2001

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