Measurement Condition

Ambient Temperature: 23 °C
Input Power Level: 0 dBm
Source impedance: 50 Ω
Load impedance: 50 Ω
Terminating impedances: *
input: 1,05 kΩ || -7.9 pF
output: 1,02 kΩ || -8.2 pF

Characteristics

Remark:
Reference level for the relative attenuation a_{rel} is the minimum pass band attenuation a_{min}. It is defined as the insertion loss a_e. The nominal frequency f_N is fixed to 250,0 MHz. The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 1,0 dB filter attenuation level relative to the insertion loss a_e. The given values for the insertion loss, the relative attenuation a_{rel} and 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**		**Limit**	
Insertion loss (Reference level)	$a_e = a_{min}$	13,0	dB	max. ± 1	dB
Nominal frequency	f_N	-		250,0	MHz
Passband	PB	-		f_N ± 2	MHz
Amplitude ripple in PB		0,4	dB	max.	1,0 dB
Relative attenuation	a_{rel}				
f_N ± 3,0 MHz ... f_N ± 3,5 MHz		25	dB	min. 11	dB
f_N ± 3,5 MHz ... f_N ± 4,0 MHz		40	dB	min. 21	dB
f_N ± 4,0 MHz ... f_N ± 6,0 MHz		40	dB	min. 24	dB
f_N - 249,0 MHz ... f_N - 6,0 MHz		52	dB	min. 40	dB
f_N + 6,0 MHz ... f_N + 12,5 MHz		52	dB	min. 40	dB
f_N + 12,5 MHz ... f_N + 14,3 MHz		65	dB	min. 54	dB
f_N + 14,3 MHz ... f_N + 24,6 MHz		65	dB	min. 40	dB
f_N + 24,6 MHz ... f_N + 29,0 MHz		70	dB	min. 54	dB
f_N + 29 MHz ... 2,5 GHz		40	dB	min. 30	dB
Group delay ripple in PB	φ	60	ns	max. 150	ns
Phase ripple in PB		3,5	°p-p	max. 5	° p-p
VSWR in PB		1,65:1		max. 2:1	
Input power level					
Continous power		-		max. 10	dBm
Peaks for cycle times<1%		-		max. 20	dBm
Operating temperature range		-		- 10 °C ... + 85 °C	
Temperature coefficient of frequency	TC **	-0,036	ppm/K²	-	
Frequency inversion temperature	T_0	25	°C	-	

*) 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.

**) $\Delta f(Hz) = TC_f(ppm/K^2) \times (T-T_0)^2 \times f_{To}(MHz)$

Generated:

Checked / approved:

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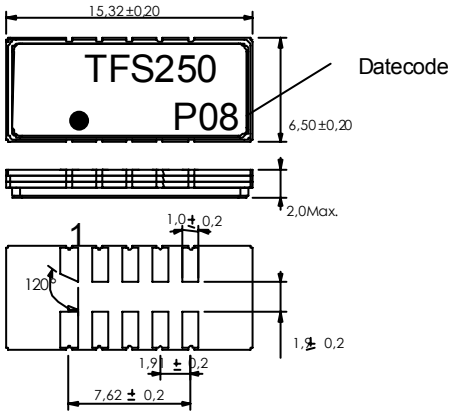
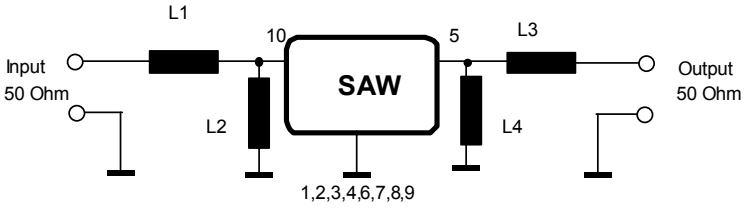
Construction and pin connection



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

Datecode:	Year+week
M	2000
N	2001
P	2002
...	

50 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, 1,5 mm or 20g 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):	max. 2 times reflow process; for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

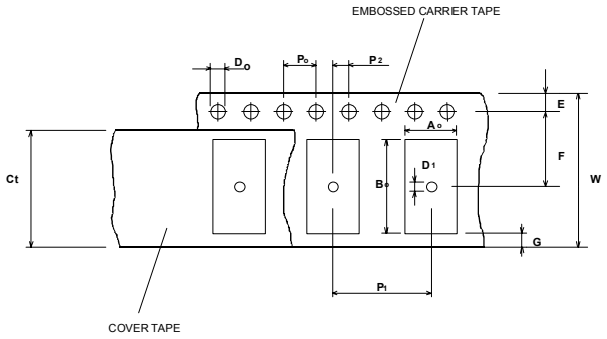
Packing

Tape & Reel: DIN 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
Real of empty components at start:	min 300 mm
Real of empty components at start including leader:	min 500 mm
Trailer	min 300 mm

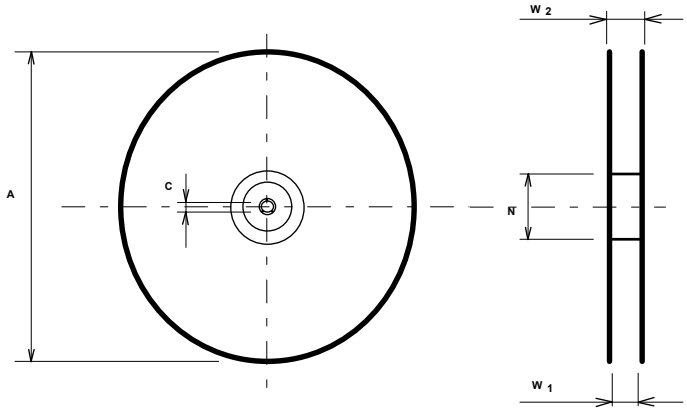
Tape (all dimensions in mm)

W	:	24	± 0,3
Po	:	4	± 0,1
Do	:	1,5	+ 0,1
E	:	1,75	± 0,1
F	:	11,5	± 0,1
G (min)	:	0,60	
P2	:	2	± 0,1
P1	:	12	± 0,1
D1(min)	:	1,5	
Ao	:	7,1	± 0,1
Bo	:	15,9	± 0,1
Ct	:	21,5	± 0,1



Reel (all dimensions in mm):

A	:	330	
W1	:	24,40	+2,0
W2 (max)	:	30,4	
N (min)	:	60	
C	:	13	0,5/-0.2



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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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

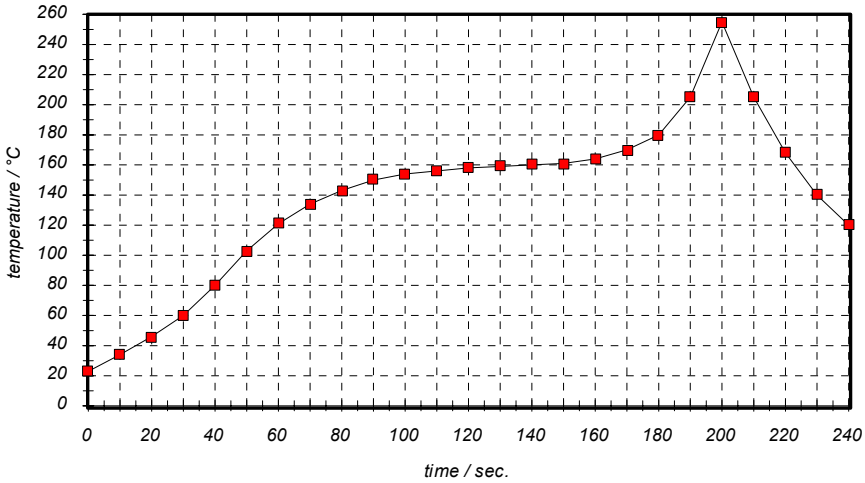

Table for temperature vs. time during the air reflow process

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

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History

Version	Reason of Changes	Name	Date
1.0	Generation of "Development Specification" accordin to customers requirements	Steiner	01.06.2001
1.1	Add "Temperature coefficient" to "Characteristics" Add "Frequency inversion temperature" to "Characteristics" Use lower conditions for "Relative attenuation" Add "Phase ripple" to "Characteristics" Use lower conditions for "Group delay ripple" Add footnotes Correct "Tape" information	Herrler	09.08.2001
Filter specification			
2.0	- terminating impedances and typical values added - package changed to 15x6mm 10 pad	Steiner	5.11.01
3.0	- terminating impedance adjusted	Steiner	

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