Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 86 Ω || -36 pF
Output: 98 Ω || -28 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS 170G is the maximum attenuation in the pass band. The maximum attenuation in the pass band is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 170,6 MHz without any tolerance or limit. The values of relative attenuation a_{rel} are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value	tolerance / limit
Insertion loss (Reference level)	ae	4,9 dB	max. 8,0 dB
Nominal frequency	f_N	-	170,6 MHz
Passband	PB	-	f_N ± 90 kHz
Pass band ripple		0,3 dB	max. 1,0 dB
Centre frequency		170,6 MHz	-
Relative attenuation	a_{rel}		
f_N ± 90 kHz ... f_N ± 200 kHz		-0,1 dB	min. -1 dB**
f_N ± 0,2 MHz ... f_N ± 0,4 MHz		2 dB	min. 1 dB
f_N ± 0,4 MHz ... f_N ± 0,6 MHz		23 dB	min. 13 dB
f_N ± 0,6 MHz ... f_N ± 0,8 MHz		35 dB	min. 27 dB
f_N ± 0,8 MHz ... f_N ± 1,6 MHz		45 dB	min. 40 dB
f_N ± 1,6 MHz ... f_N ± 3 MHz		48 dB	min. 43 dB
f_N ± 3 MHz ... f_N ± 5,8 MHz		55 dB	min. 47 dB
f_N ± 5,8 MHz ... f_N ± 35 MHz		60 dB	min. 50 dB
f_N ± 35 MHz ... f_N ± 75 MHz		65 dB	min. 45 dB
f_N - 75 MHz ... f_N - 170 MHz		70 dB	min. 40 dB
f_N + 75 MHz ... 2 GHz		70 dB	min. 40 dB
Group delay variation in PB		0,28 µs	max. 1 µs
VSWR in PB		1,6 : 1	max. 2 : 1
Temperature coefficient of frequency Tc_f ****		-0,036 ppm/K²	-
Frequency inversion temperature T_0		45 °C	-
Operating temperature range		-	- 10 °C .. + 85 °C
Storage temperature range		-	- 40 °C.. + 125 °C
Input power level :		-	max. 10,0 dBm

*) 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.
**) reference is max. loss in PB
***) $\Delta f(Hz) = TC_f(ppm/K) \times (T-T_0)^2 \times f_{To}(MHz)$

Generated:

Checked / approved:

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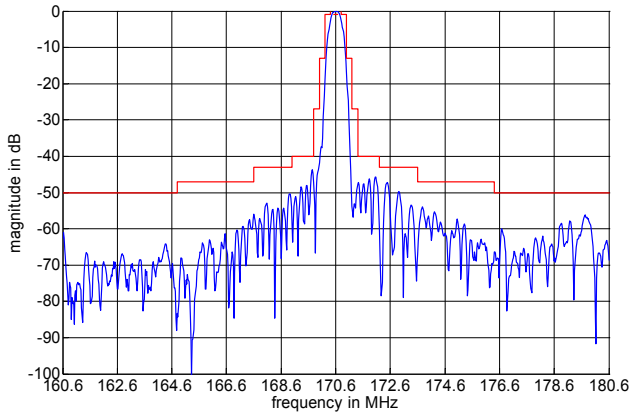
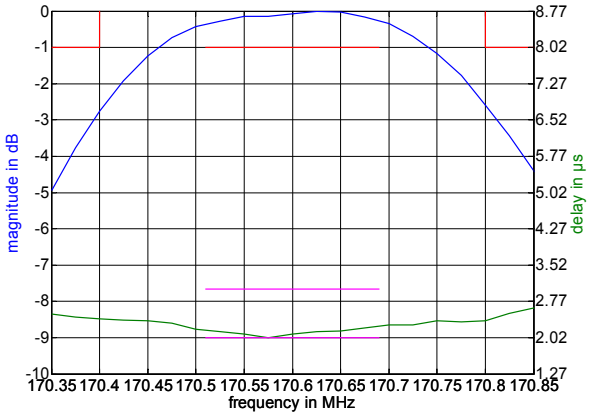
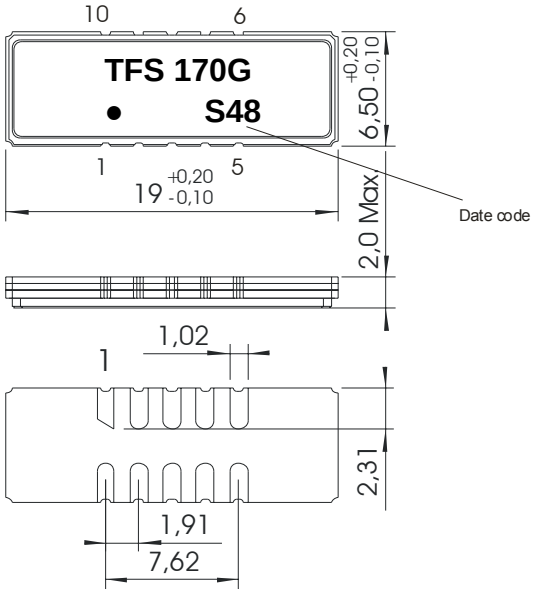
Filter characteristic





Construction and pin connection

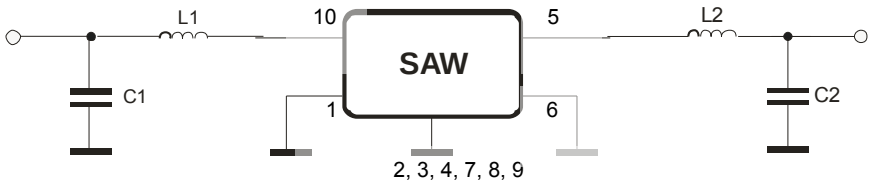
(All dimensions in mm)



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

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

50 Ohm 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 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans; DIN IEC 68 T2 - 6
3. Damp heat: (cycle)	25 °C to 55°C / 95% r.H. / 10 cycles 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;

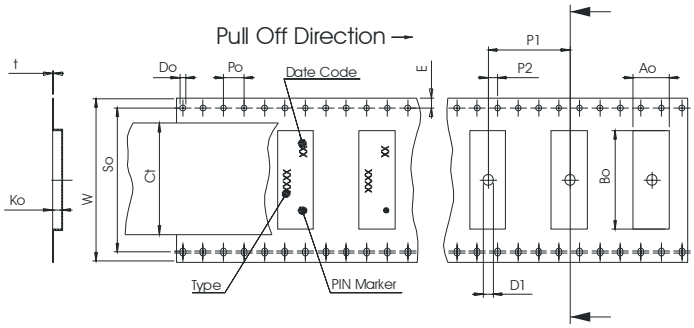
Packing

Tape & Reel: IEC 286 – 3, with 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:	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

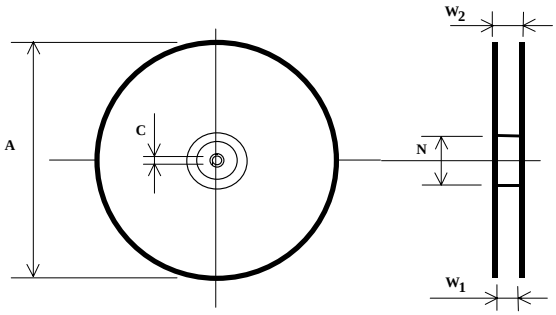
Tape (all dimensions in mm)

W	: 32,00	± 0,3
Po	: 4,00	± 0,1
Do	: 1,50	+0,1/-0
E	: 1,75	± 0,1
F	: 14,20	± 0,1
P2	: 2,00	± 0,1
P1	: 12,00	± 0,1
D1(min)	: 2,00	
Ao	: 7,10	± 0,1
Bo	: 19,60	± 0,1
So	: 28,40	± 0,1
Ct	: 25,5	± 0,1



Reel (all dimensions in mm)

A	:330	
W1	: 32,4	+2/-0
W2(max)	: 38,4	
N(min)	:100	
C	: 13,0	+0,5/-0,2



The minimum bending radius is 45 mm.

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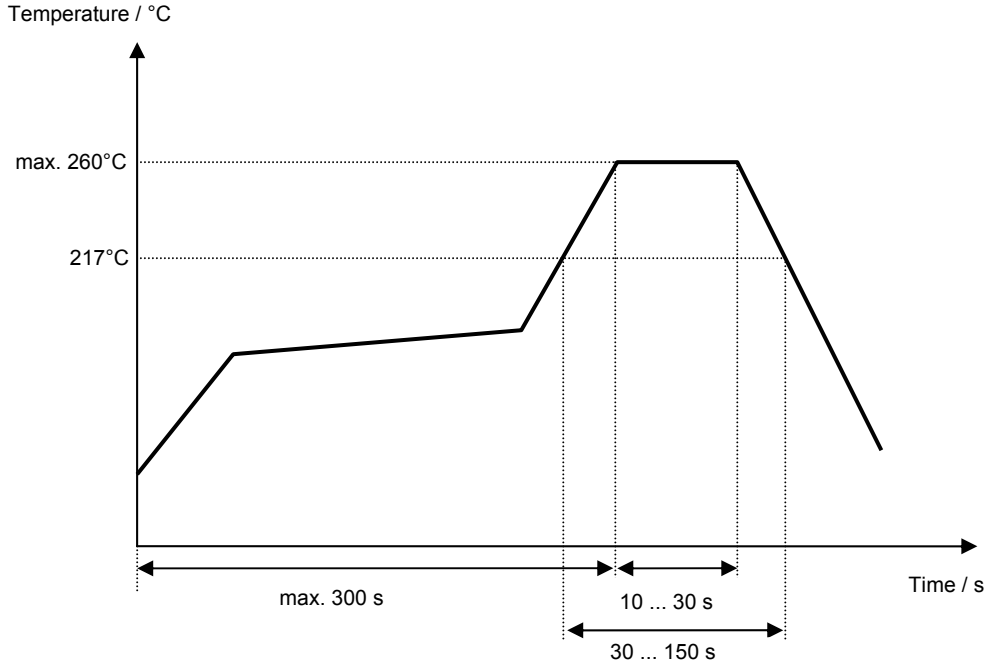
Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



History

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Version	Reason of Changes	Name	Date
1.0	- identical with specification from hudson	Sabah	08.10.1999
1.1	- customer specification (requierment) Max. input power instead of 10 dBm is 20 dBm VSWR : instead of ≤ 1.7 is ≤ 2.0:1 Rejection (± 200 KHz): instead of ≥ 0.50 dB is 0 dB Impedance Value: Input corrected from 20 Ω || -10.9 pF to 86 || -36 pF Outpu: corrected from 20 Ω || -5.5pF to 98 || -28 pF	Sabah	28.03.2000 30.03.2000
1.2	- No necessity for IP3 –measurement - The sprocket holes: instead of the right side of the tape is on the left side of the tape (according to customer requirement, e mail from: 7. Juli.00) - Input power changed from 20 dBm to 10 dBm	Sabah	12.07.2000
1.3	- typical values, filter characteristic added - air reflow temperature conditions modified	Pfeiffer	22.11.2004

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