Measurement condition

Ambient temperature: 22 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 82 Ω || -17.2pF
Output: 187 Ω || - 8 pF

Characteristics

Remark:
Reference level for the relative attenuation a_{rel} of the TFS280H 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 280 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 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	a_e	7,6	MHz	max.	10	dB
Nominal Frequency	f_N	279,9	MHz		280	MHz
Centre Frequency	f_C	280	MHz		-	
Relative Attenuation	a_{rel}					
f_N ... f_N ± 9,5 MHz		0,8	dB	max.	3	dB
f_N ± 18,7 MHz ... f_N ± 19,2 MHz		35	dB	min.	16	dB
f_N ± 19,2 MHz ... f_N ± 20,0 MHz		30	dB	min.	25	dB
f_N ± 20,0 MHz ... f_N ± 100,0 MHz		43	dB	min.	40	dB
Group Delay Ripple						
f_N ... f_N ± 8,1 MHz		25	ns		30	ns
Operating Temperature Range	OTR	-		- 40°C ... + 85°C		
Storage Temperature Range		-		- 40°C ... + 85°C		
Temperature Coefficient of Frequency	TC_f **	- 87	ppm/K		-	
Input Power Level		-		max.	10	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.
**) $\Delta f(Hz) = TC_f(ppm/K) \times (T-T_0) \times f_{To}(MHz)$

Generated:

Checked / Approved:

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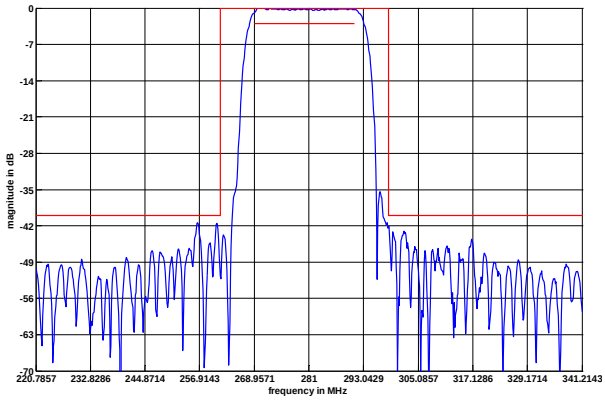
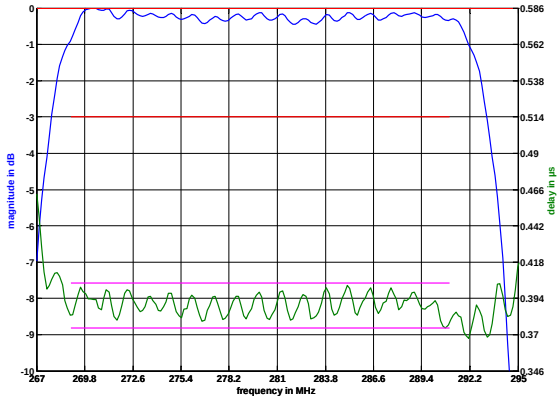
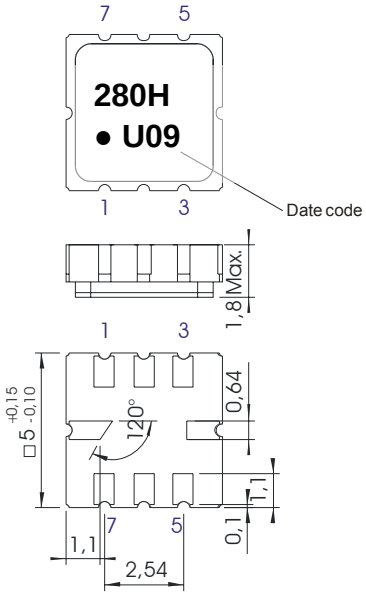
Filter characteristic





Construction and pin connection

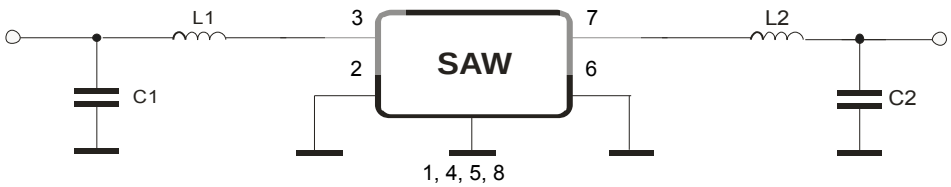
(All dimensions in mm)



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

Date code:	Year + week
U	2006
V	2007
W	2008
...	

50 Ohm Test circuit



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Stability characteristics

1. High Temperature (IEC 60068 -3-1)
   1,000 hours at +85C

2. Low Temperature (IEC 60068 -3-1)
   1,000 hours at – 40C

3. Humidity (IEC 60068 -2-78)
   1,000 hours at 85% /85C

4. Thermal Shock (IEC60068-2-14)
   -55 °C to 125°C / 30 min. each / 10 cycles

5. Vibration (IEC 60068 -2-6)
   10 Hz to 500 Hz, 0,35 mm or 5g respectively, 1 octave per min, 10 cycles per plan, 3 plans

6. Shock (IEC 60068 -2-27)
   500g, 1 ms, half sine wave, 3 shocks each plane

7. Reflow Profile (defined at specification)
   260°C +/- 5°C for 10 seconds, 2 cycles

8. Solerability
   235°C +/- 5°C for 15 seconds, 1 cycle

9. Pullability, Distortion
   according to MIL-STD 883 method 2004.5 Condition D

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

Packing

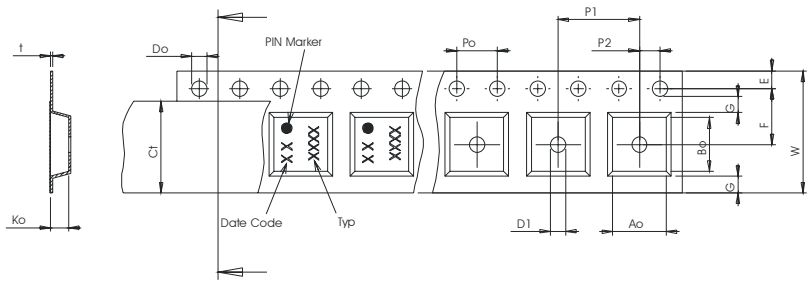
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel:	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

Pull Off Direction →

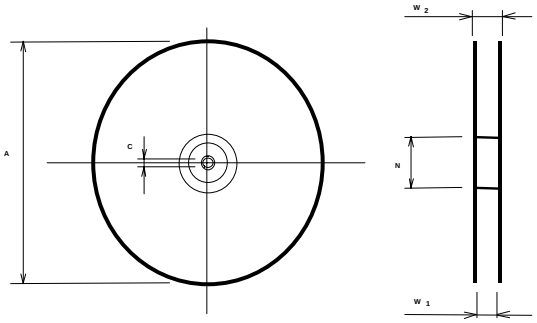
Tape (all dimensions in mm)

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	:	5,30 ± 0,1
Bo	:	5,30 ± 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.

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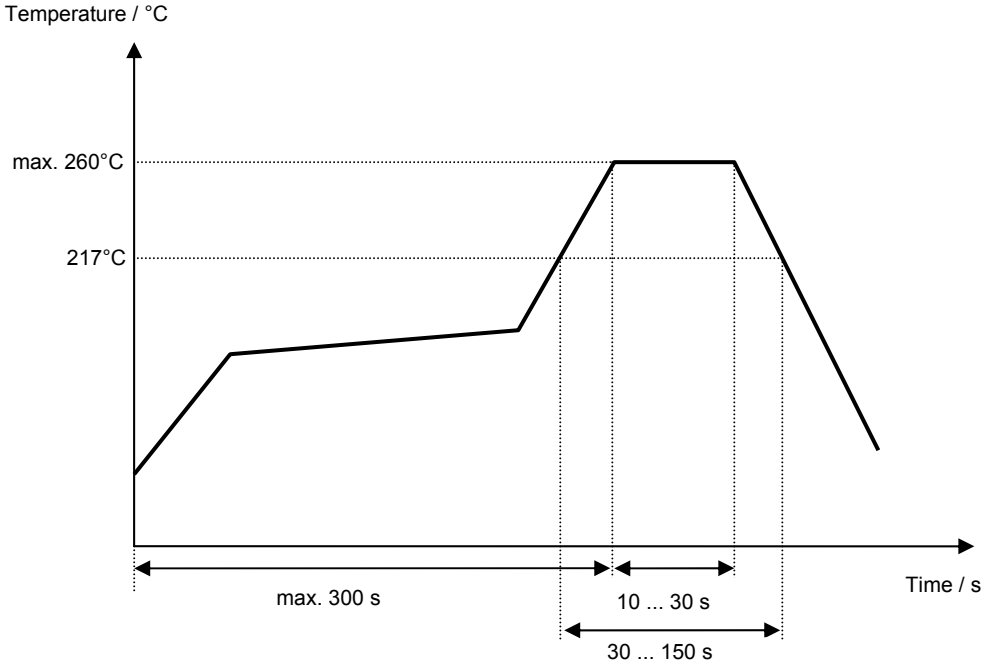
Air reflow temperature conditions

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



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History

Version	Reason of Changes	Name	Date
1.0	generate specification	Pfeiffer	17.03.2003
1.1	frequency range for group delay ripple (GDR) changed pin 6 set to output rf return	Chilla	02.06.2003
1.2	Reel information corrected. Preliminary values for termination impedances added. 50 Ω matching network added. Relative attenuation of 16 dB and 25 dB added.	Dr. Wall	19.06.2003
1.3	insertion loss changed. temperature coefficient of frequency added. 50 Ω matching network modified. termination impedance changed	Chilla	14.08.2003
1.4	typical values added.	Chilla	13.01.2004
1.5	filter characteristics added test circuit updated stability characteristics updated air reflow temperature conditions updated	Chilla	03.03.2006

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