Measurement condition

Ambient temperature: 20 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 120 Ω || -15,5 pF
Output: 210 Ω || -11,7 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS 140Y is the minimum of the pass band attenuation. This value is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 140,16 MHz without any tolerance.. The frequency shift of the filter in the operating temperature range is not included in the production tolerance scheme, except the values of stopband attenuation are guaranteed for the whole operating temperature range.

D a t a		**typ. value**		**tolerance / limit**		
Insertion loss (reference level)	a_e	13	dB	max.	15	dB
Nominal frequency	f_N	-			140,16	MHz
Passband		-		f_N	± 10	MHz
Relative attenuation ******	a_{rel}					
f_N - 6 MHz … f_N + 6 MHz		0,025	dB(rms)	max.	0,05	dB(rms)
f_N ± 6 MHz … f_N ± 10 MHz		0,15	dB(p-p)	max.	0,7	dB(p-p)
f_N ± 20 MHz … f_N ± 45 MHz		45	dB	min.	40	dB
f_N ± 45 MHz … f_N ± 100 MHz		55	dB	max.	45	dB
Phase linearity ******						
f_N - 6 MHz … f_N + 6 MHz		0,15	°(rms)	max.	0,35	°(rms)
f_N ± 6 MHz … f_N ± 10 MHz		0,6	°(p-p)	max.	2,5	°(p-p)
Return loss		4	dB		-	
Operating temperature range	OTR	-		- 54 °C ... + 80 °C		
Storage temperature range		-		- 54 °C ... + 95 °C		
Temperature coefficient of frequency	TC_f **	-87	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.
**) $\Delta f_C(Hz) = Tc_f(ppm/K) \times (T - T_o) \times f_{CAT}$ (MHz).
*******) The ripple is defined as a difference in the characteristic to a fixed golden sample. It is additionally allowed to remove cubic trends from the differential characteristic in case of these ripple measurements

Generated:

Checked / Approved:

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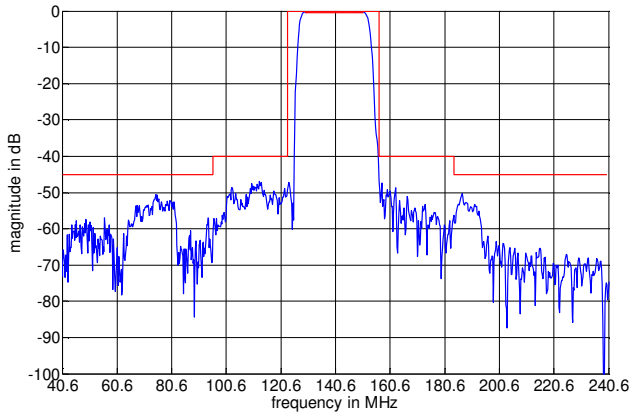
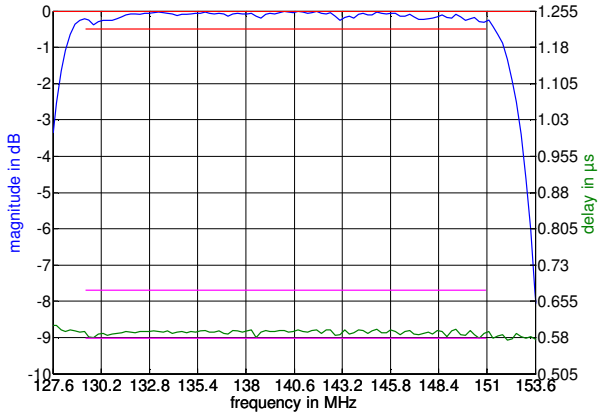
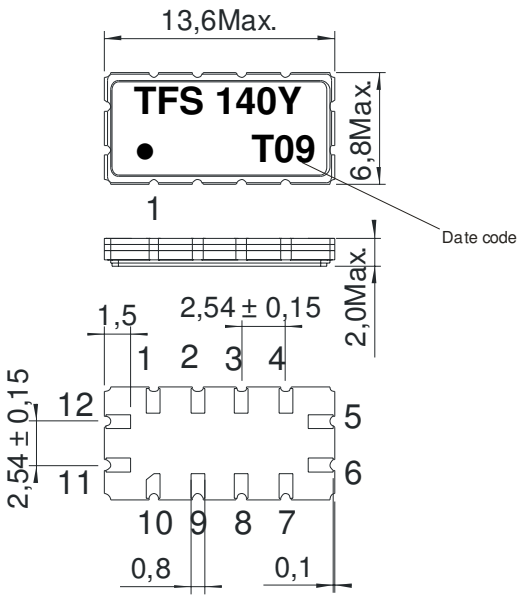
Filter characteristic





Construction and pin connection

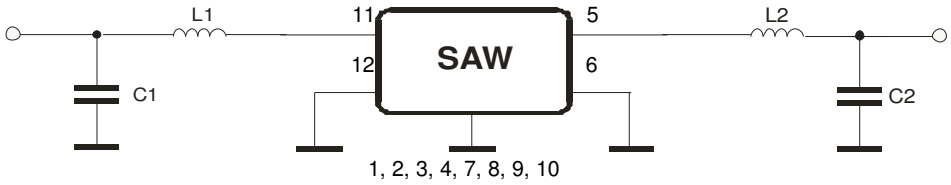
(All dimensions in mm)



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

Date code:	Year + week
T	2005
U	2006
V	2007
...	

50 Ω Test circuit



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Stability characteristics

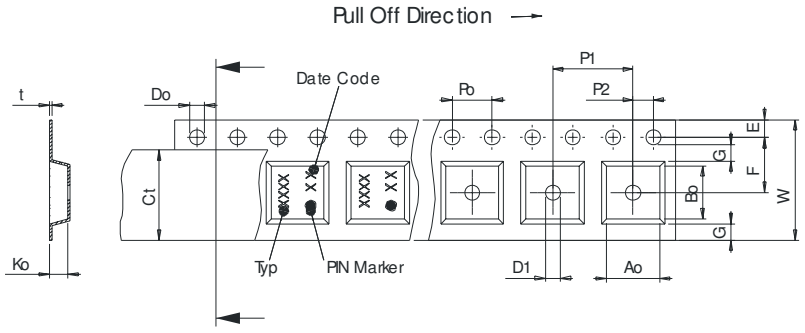
After the following tests the filter shall meet the whole specification:

1. Shock:	500g, 1 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

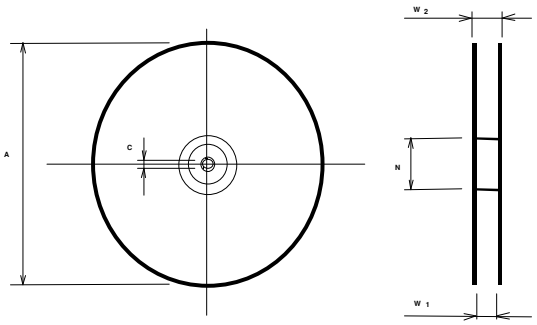
Tape & Reel: IEC 286 – 3, with exeption of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer reel:	1700
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	:	24,00	+0,30/-0,10
Po	:	4,00	± 0,1
Do	:	1,50	+0,1/-0
E	:	1,75	± 0,10
F	:	11,50	± 0,10
G(min)	:	0,60	
P2	:	2,00	± 0,1
P1	:	12,00	± 0,1
D1(min)	:	1,50	
Ao	:	7,10	± 0,10
Bo	:	13,90	± 0,10
Ct	:	21,5	± 0,1



Reel (all dimensions in mm)

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

The minimum bending radius is 45 mm.

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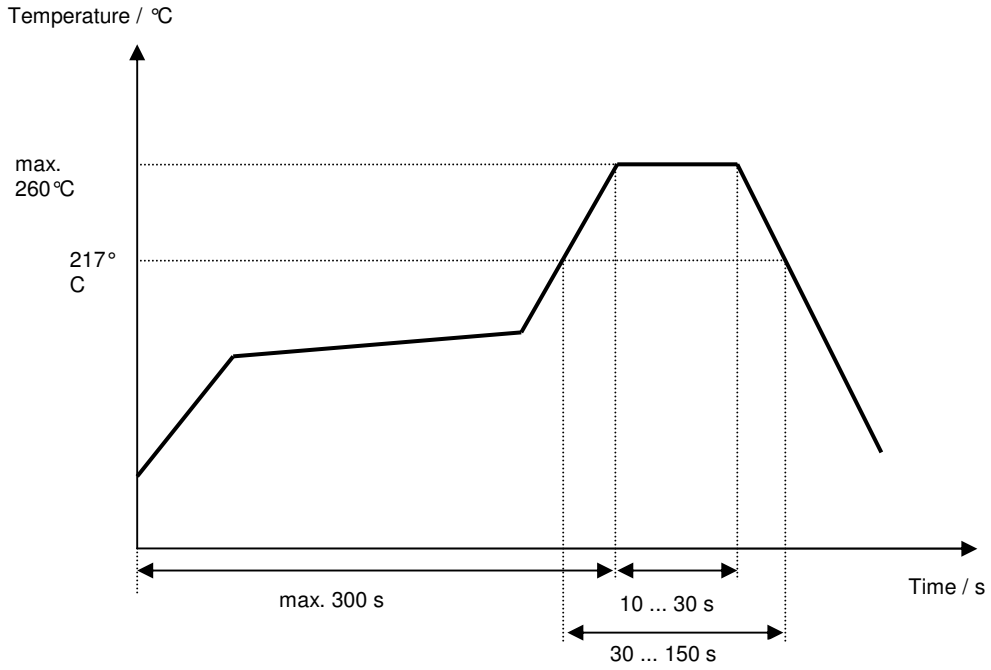
Air reflow temperature conditions

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	Generation of specification according to customer requirements	E. Chilla	30.09.2003
2.0	rework of specification according to updated customer requirements	Steiner	08.01.2004
2.1	change centre frequency according to customer requirement	Steiner	13.01.2004
3.0	filter spec generated, impedances and typ. values added	Steiner	23.02.2005
3.1	references for fulfilling the spec over temperature corrected	Steiner	15.01.2007

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