Measurement condition

Ambient temperature: 25 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 390 Ω || -19,3 pF
Output: 480 Ω || -16,3 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS 110Y 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 110,592 MHz without any tolerance. 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)	a_e	3,7	dB	max.	4,5	dB
Nominal frequency	f_N	-			110,592	MHz
Centre frequency	f_C	110,592	MHz		-	
Passband	PB			f_N	± 280	kHz
Pass band ripple		-		max.	3	dB
Relative attenuation	a_{rel}					
f_N … f_N ± 0,280 MHz		1,5	dB	max.	3	dB
f_N ± 1,150 MHz … f_N ± 1,728 MHz		14	dB	min.	10	dB
f_N ± 1,728 MHz … f_N ± 1,828 MHz		35	dB	min.	30	dB
f_N ± 1,828 MHz … f_N ± 3,456 MHz		40	dB	min.	35	dB
f_N + 3,456 MHz … f_N + 5,184 MHz		45	dB	min.	40	dB
f_N - 3,456 MHz … f_N - 5,184 MHz		50	dB	min.	45	dB
f_N - 5,184 MHz		65	dB	min.	50	dB
f_N - 5,184 MHz … f_N - 15,000 MHz		50	dB	min.	40	dB
Group delay ripple within PB	p-p	70	ns	max.	700	ns
Input power level				max.	0	dBm
Permissible DC voltage				max.	3	V
Operating temperature range	OTR	-		- 20 °C ... + 70°C		
Storage temperature range		-		- 40 °C ... + 85°C		
Temperature coefficient of frequency	TC_f **	-19	ppm/K			

*) The terminating impedances depend on parasites 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.
**) $\Delta f_C(Hz) = Tc_f(ppm/K) \times (T - T_A) \times f_{Cat}(MHz)$

Generated:

Checked / Approved:

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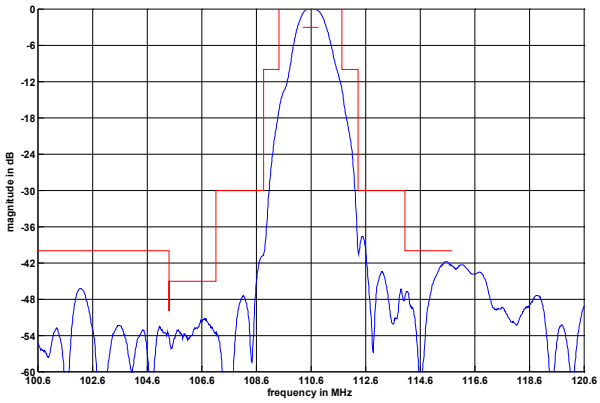
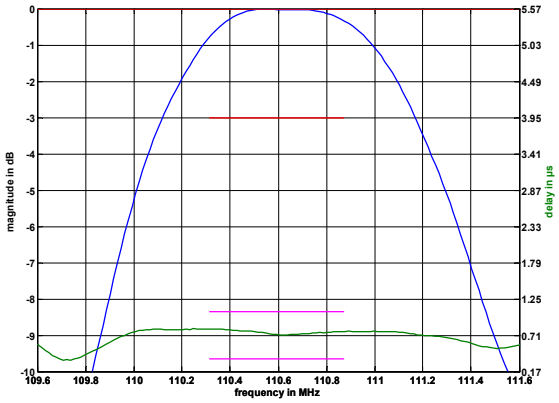
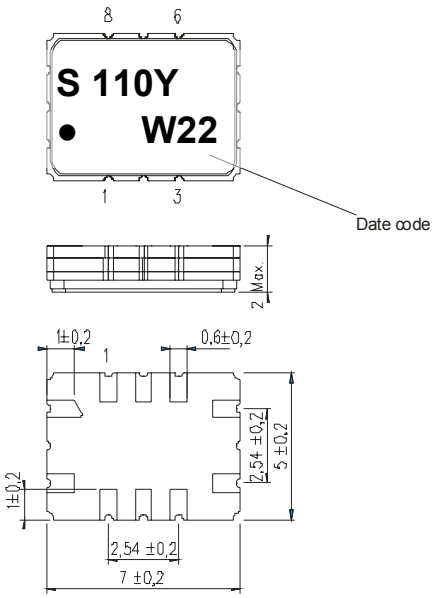
Filter characteristic





Construction and pin connection

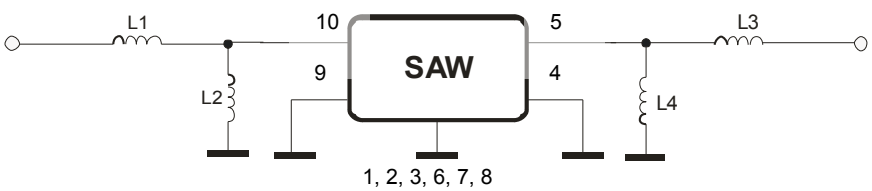
(All dimensions in mm)



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

Date code:	Year + week
W	2008
X	2009
A	2010
...	

50 Ω Test circuit



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Stability characteristics, reliability

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

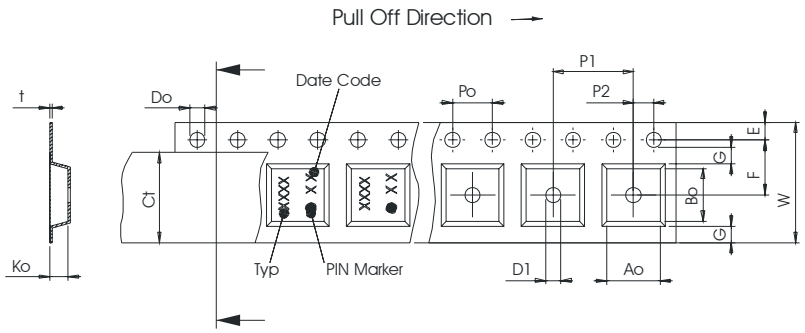
1. Shock:	500g, 1 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration:	10 Hz to 500 Hz, 0,35 mm or g respectively, 1 octave per min, 10 cycles per plan, 3 plans; DIN IEC 68 T2 - 6
3. Change of temperature:	-55 °C to 125°C / 30 min. each / 10 cycles DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow):	reflow possible: three times max.; for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
5. ESD	ANSI/ESD S20.20-1999, class 1A for HBM

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

Packing

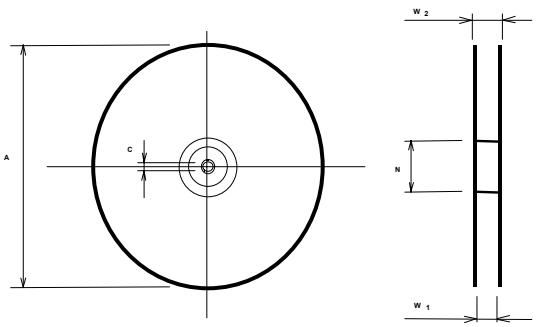
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer 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



Tape (all dimensions in mm)

W	:	16,00 ± 0,3
Po	:	4,00 ± 0,1
Do	:	1,50 +0,1/-0
E	:	1,75 ± 0,1
F	:	7,50 ± 0,1
G(min)	:	0,60
P2	:	2,00 ± 0,1
P1	:	8,00 ± 0,1
D1(min)	:	1,50
Ao	:	5,50 ± 0,1
Bo	:	7,50 ± 0,1
Ct	:	13,5 ± 0,1



Reel (all dimensions in mm)

A	:330	
W1	: 16,4	+2/-0
W2(max)	: 22,4	
N(min)	: 50	
C	: 13,0	+0,5/-0,2

The minimum bending radius is 45 mm.

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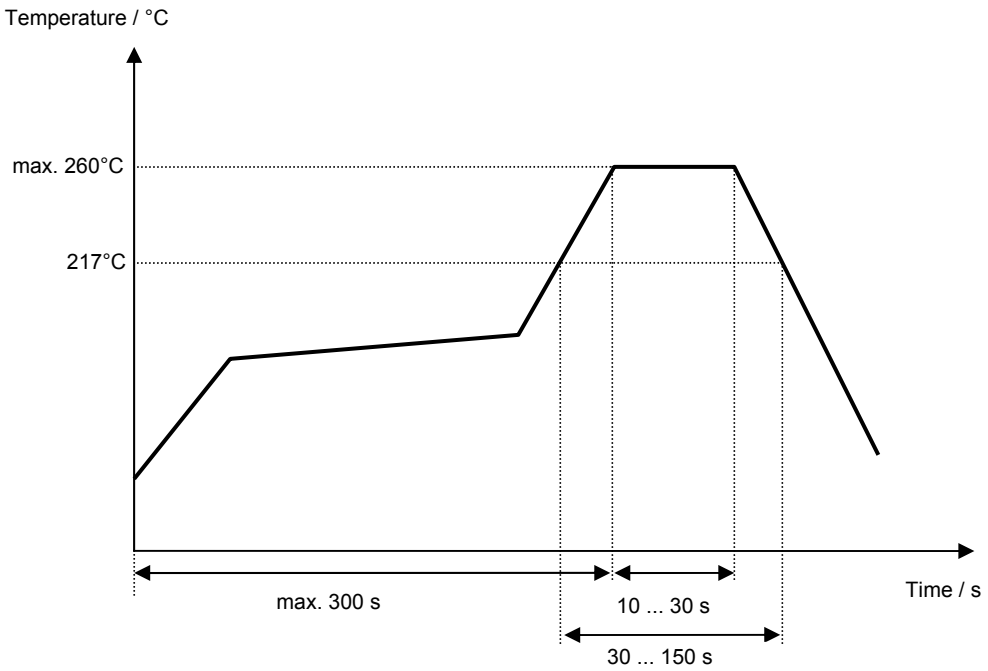
Air reflow temperature conditions

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	- development specification	Pfeiffer	11.01.2008
1.1	- add of terminating impedances (preliminary values), typical values and filter characteristics - change of matching configuration	Pfeiffer	05.03.2008
1.2	- change of matching configuration according customer requirements - change of terminating impedances, typical values and filter characteristics	Pfeiffer	29.05.2008

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