Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 1260 Ω || -2,5 pF
Output: 1260 Ω || -2,5 pF

Characteristics

Remark:
The nominal frequency f_N is fixed at 92,025 MHz. The insertion loss a_e is defined as loss value determined at f_N. Reference level for the relative attenuation a_{rel} of the TFS 92D is the insertion loss a_e. All specified data are met within the operating temperature range.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	a_e	2,8	dB	max.	4,0	dB
Nominal frequency	f_N	-			92,025	MHz
Passband	PB	-		f_N	± 15	kHz
Pass band ripple		0,5	dB	max.	1,0	dB
Bandwidth	BW					
3 dB		51	kHz	min.	30	kHz
Relative attenuation	a_{rel}					
f_N … f_N ± 15 kHz		0,5	dB	max.	1,0	dB
f_N - 1,0 MHz … f_N - 910 kHz		68	dB	min.	60	dB
f_N - 910 kHz … f_N - 900 kHz		72	dB	min.	70	dB
f_N - 900 kHz … f_N - 300 kHz		62	dB	min.	60	dB
f_N - 300 kHz … f_N - 120 kHz		46	dB	min.	35	dB
f_N + 200 kHz … f_N + 500 kHz		42	dB	min.	25	dB
f_N + 500 kHz … f_N + 1,0 MHz		58	dB	min.	40	dB
Group delay ripple within PB		3,8	µs	max.	4	µs
Input power level				max.	10	dBm
Operating temperature range	OTR	-		- 20 °C ... + 70°C		
Storage temperature range		-		- 40 °C ... + 85°C		
Frequency inversion temperature		28	°C			
Temperature coefficient of frequency	TC_f **	-0.04	ppm/K^2			

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

Generated:

Checked / Approved:

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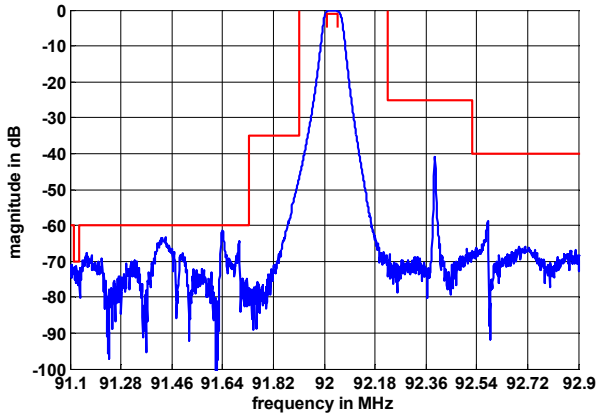
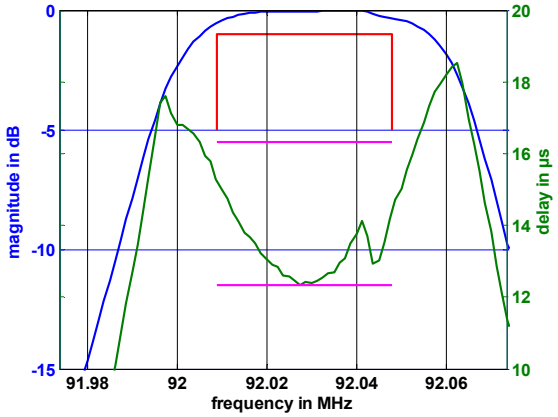
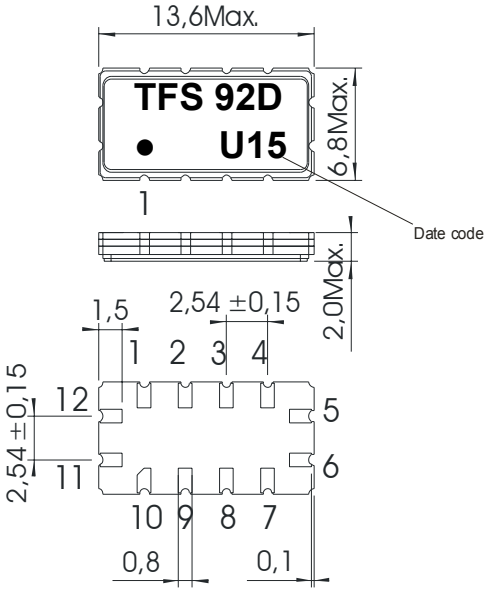
Filter characteristic





Construction and pin connection

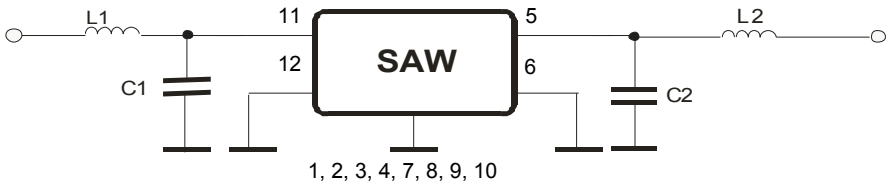
(All dimensions in mm)



1	Ground
2	Ground
3	Ground
4	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
U	2006
V	2007
W	2008
...	

50 Ω Test circuit



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Stability characteristics, reliability

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

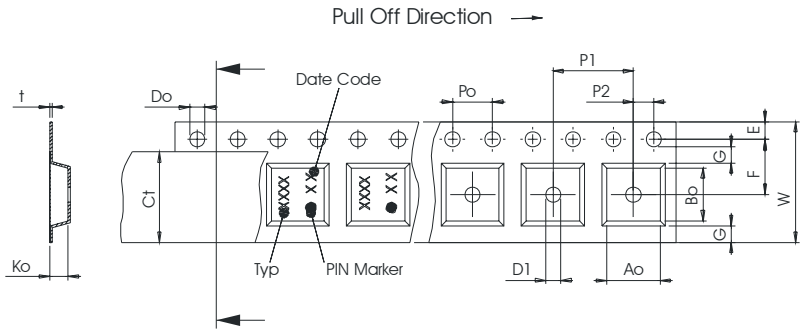
1. Shock:	500g, 1 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration:	10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans; DIN IEC 68 T2 - 6
3. Change of temperature:	-55 °C to 125°C / 30 min. each / 10 cycles DIN IEC 68 part 2 – 14 Test N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

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

Packing

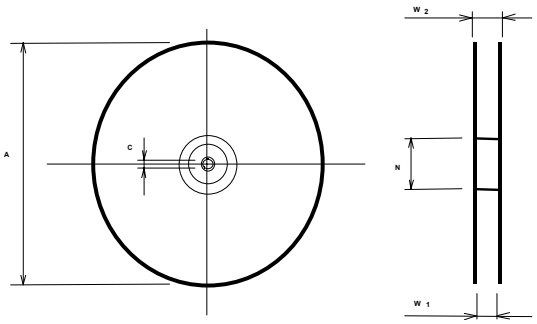
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel:	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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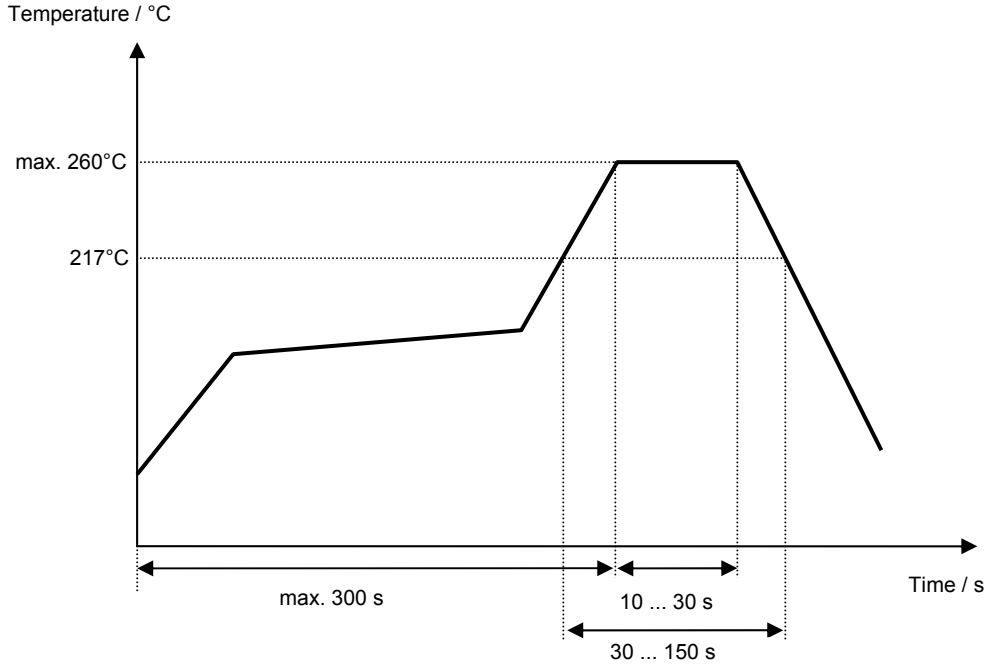
Air reflow temperature conditions

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 development specification	AdH	15.02.2006
1.1	Change passband and relative attenuation from f_C to f_N Change characteristics	Strehl	17.02.2006
1.2	Change operating temperature range	Alawneh	28.02.2006
1.3	Generation of filter specification Add filter characteristic Add typical values	Martens	11.04.2006

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