Measurement condition

Ambient temperature T_A:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	150	Ω
Output:	150	Ω

Characteristics

Remark:
The reference level for the absolute attenuation a_{abs} of the TFS698 is the attenuation at nominal frequency. This value is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 698.81 MHz without any tolerance. The values of the absolute attenuation a_{abs} 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	2.4	dB	max.	4.5	dB
Nominal frequency	f_N	-			698.81	MHz
Centre frequency	f_C	698.81	MHz			
Bandwidth	BW					
3 dB		26.10	MHz		-	
Absolute attenuation	a_{abs}					
@ 116.47 MHz		70		min.	50	dB
@ 232.94 MHz		70		min.	50	dB
@ 349.41 MHz		72		min.	50	dB
@ 465.87 MHz		70		min.	50	dB
@ 582.34 MHz		67		min.	48	dB
@ 815.28 MHz		70		min.	48	dB
@ 931.75 MHz		67		min.	50	dB
Input power level		-		max.	0	dBm
Operating temperature range	OTR	-		-40 °C ... +90 °C		
Storage temperature range		-		-65 °C ... +125 °C		
Temperature coefficient of frequency	*TCf* *)	-73	ppm/K			

*) $\Delta f = TC_f(T - T_A)f_N$. No relevant temperature-induced charge generation.

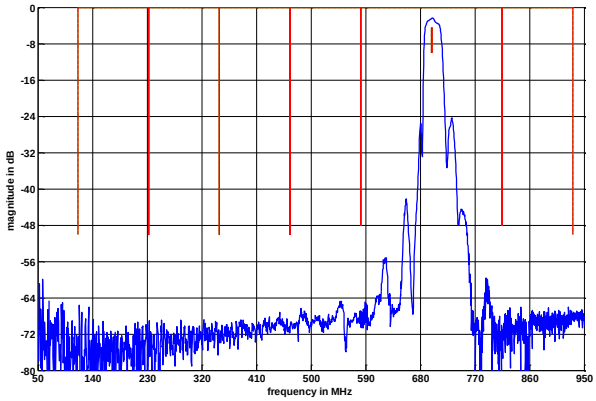
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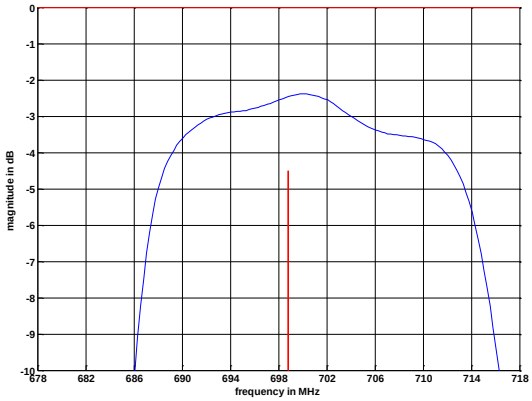
Checked / Approved:

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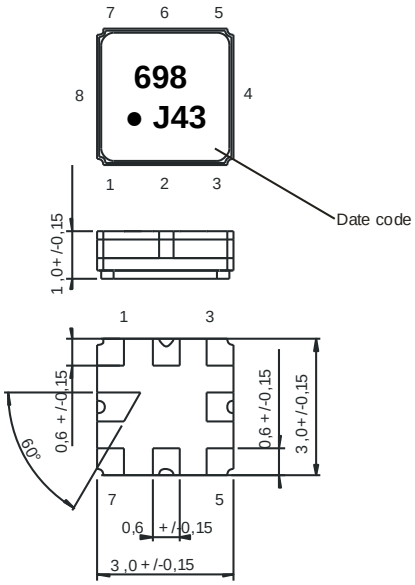
Filter characteristic





Construction and pin connection

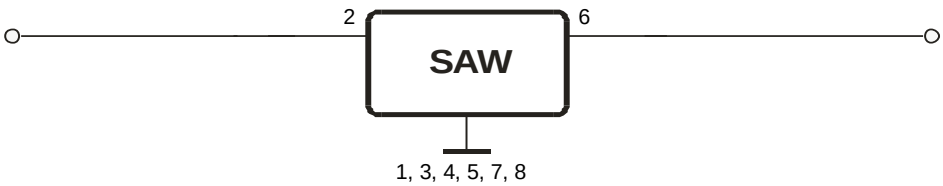
(All dimensions in mm)



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

Date code:	Year + week
J	2017
K	2018
L	2019
...	

150 Ω Test circuit



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Stability characteristics, reliability

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

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;
   DIN IEC 60068 T2 - 27

2. Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 60068 T2 - 6

3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
   DIN IEC 60068 part 2 – 14 Test N

4. Resistance to solder heat (reflow): reflow possible: three times max.;
   for temperature conditions, see page 4: "Air reflow temperature conditions"

5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

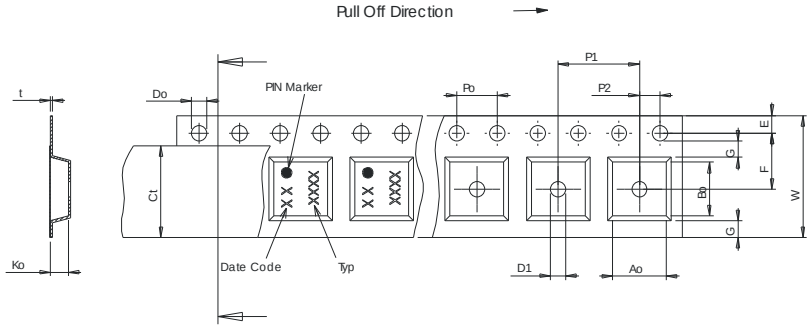
ESD SIMULATION MODEL	CLASSIFICATION LEVEL	CRITERIA
Human Body Model (HBM) acc. to ANSI/ESDA/JEDEC JS-001-2014	Class 1A	1 positive + 1 negative pulse 250 … 500 Volts

This filter is RoHS compliant (2011/65/EU)

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;

reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

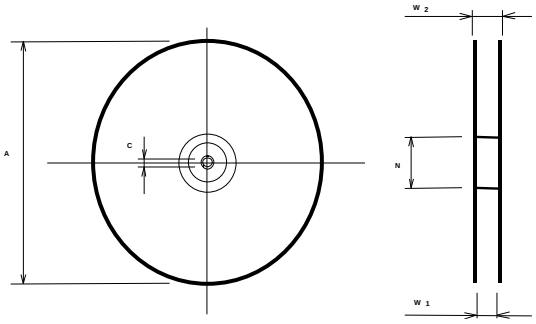


Tape (all dimensions in mm)

W	:	8.00	±0.3
Po	:	4.00	±0.1
Do	:	1.50	+0.1/-0
E	:	1.75	±0.1
F	:	3.50	±0.05
G(min)	:	0.75	
P2	:	2.00	±0.05
P1	:	4.00	±0.1
D1(min)	:	1.50	
Ao	:	3.25	±0.1
Bo	:	3.25	±0.1
Ct	:	5.30	±0.1
Ko	:	1.50	±0.1
t	:	0.25	±0.05

Reel (all dimensions in mm)

A	:	330	or 180
W1	:	8.40	+1.5/-0
W2(max)	:	14.40	
N(min)	:	60.00	
C	:	13.0	±0.2



The minimum bending radius is 45 mm.

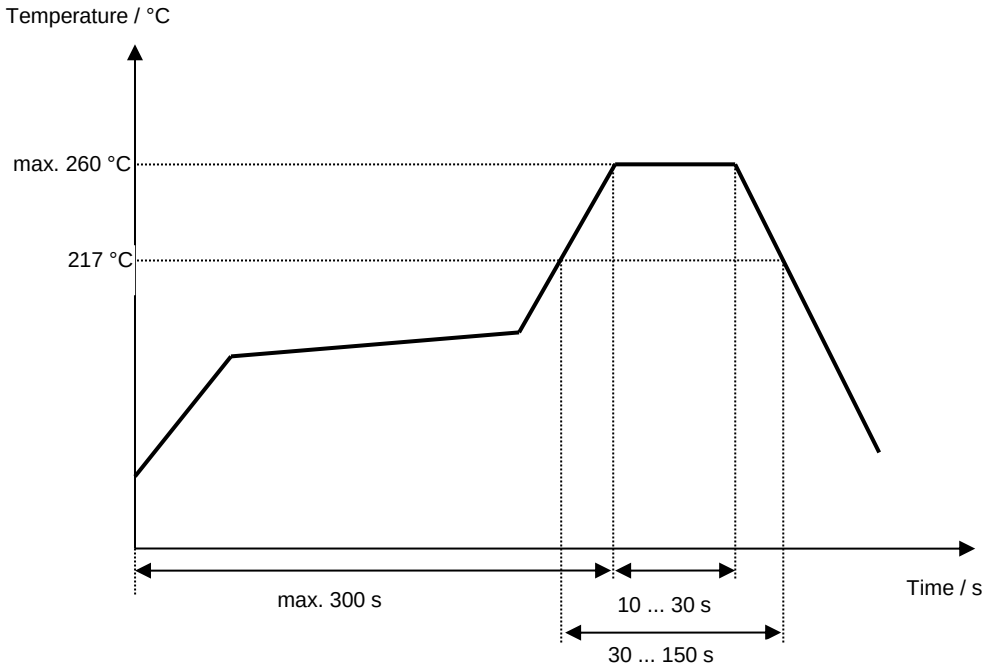
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Air reflow temperature conditions

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.	S. Channaa	16.09.2011
1.1	- Generation of filter specification.	Schönbein	06.09.2012
1.2	- Maximum input power updated	Kortenbeutel	16.01.2014
2.0	- changed storage temperature range - changed formula for Δf - updated stability characteristics, reliability and Tape & Reel	P. Jaster	25.10.2017

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