Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS 1709 is the minimum attenuation in the passband. The maximum attenuation in the passband is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 1709.4 MHz without any tolerance or limit. 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	a_e	4.6	dB	max.	5.0	dB
Nominal frequency	f_N				1709.4	MHz
Passband	PB			f_N ±	30.0	MHz
Passband variation		1.2	dB	max.	1.5	dB
Relative attenuation	a_{rel}					
10 MHz … 1398.2 MHz		40	dB	min.	35	dB
1398.2 MHz … 1568.8 MHz		34	dB	min.	14	dB
1859 MHz … 2020.6 MHz		35	dB	min.	13	dB
2020.6 MHz … 3000 MHz		29	dB	min.	27	dB
3000 MHz … 3800 MHz		22	dB	min.	20	dB
Return loss		9	dB	min.	7	dB
Input power level		-		max.	0	dBm
Operating temperature range	OTR	-		- 40 °C ... + 85 °C		
Storage temperature range		-		- 40 °C ... + 85 °C		
Temperature coefficient of frequency	TC_f *	-72	ppm/K			

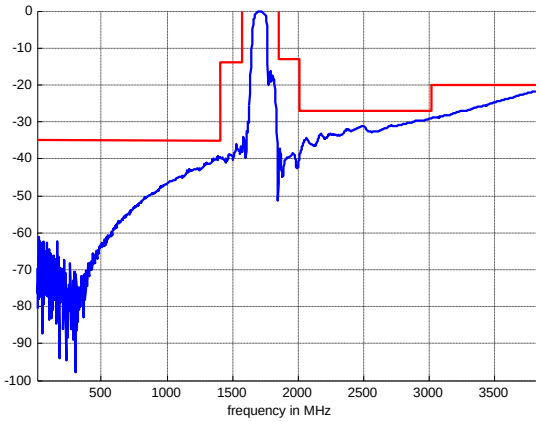
*) $\Delta f(Hz) = TC_f(ppm/K) \times (T-T_0) \times f_{CAT}(MHz)$

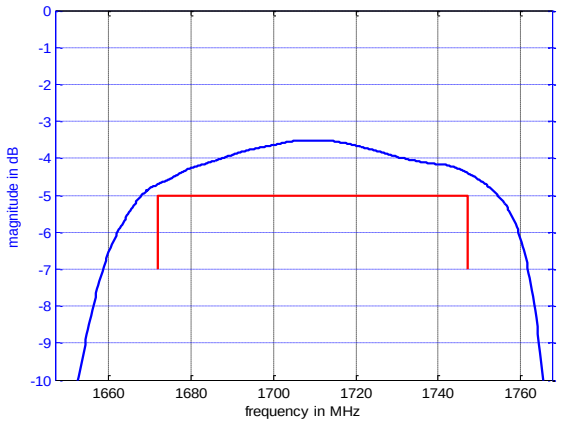
Generated:

Checked / Approved:

Microchip Frequency Technology GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30

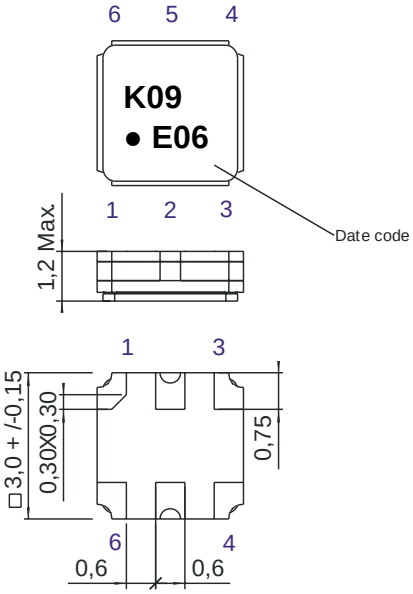
Filter characteristic





Construction and pin connection

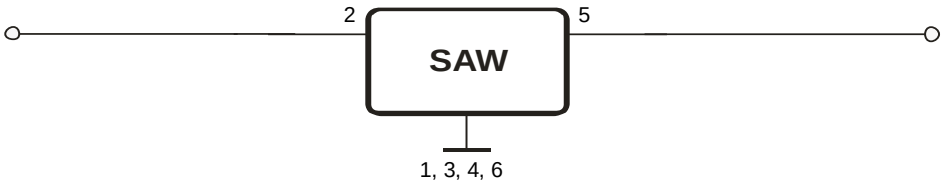
(All dimensions in mm)



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

Date code:	Year + week
E	2014
F	2015
G	2016
...	

50 Ω Test circuit



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Stability characteristics, reliability

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

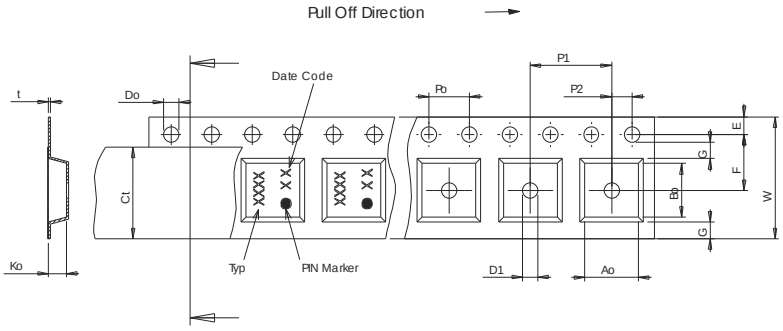
1. Shock:	500g, 1 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration:	10 Hz to 500 Hz, 0.35 mm or g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
3. Change of temperature:	-55 °C to 125°C / 15 min. each / 100 cycles DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow):	reflow possible: three times max.; for temperature conditions, see page 4: "Air reflow temperature conditions"

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

Packing

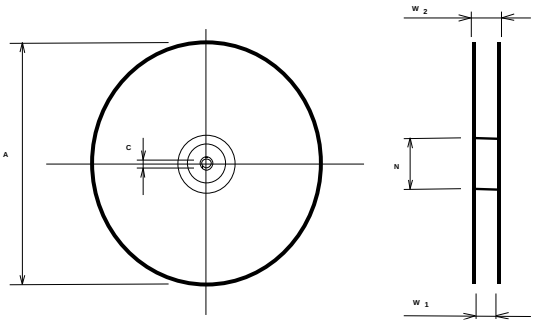
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel:	9000
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	:	5,5	± 0,1



Reel (all dimensions in mm)

A	:	330	
W1	:	8,4	+1,5/-0
W2(max)	:	14,4	
N(min)	:	50	
C	:	13,0	+0,5/-0,2

The minimum bending radius is 45 mm.

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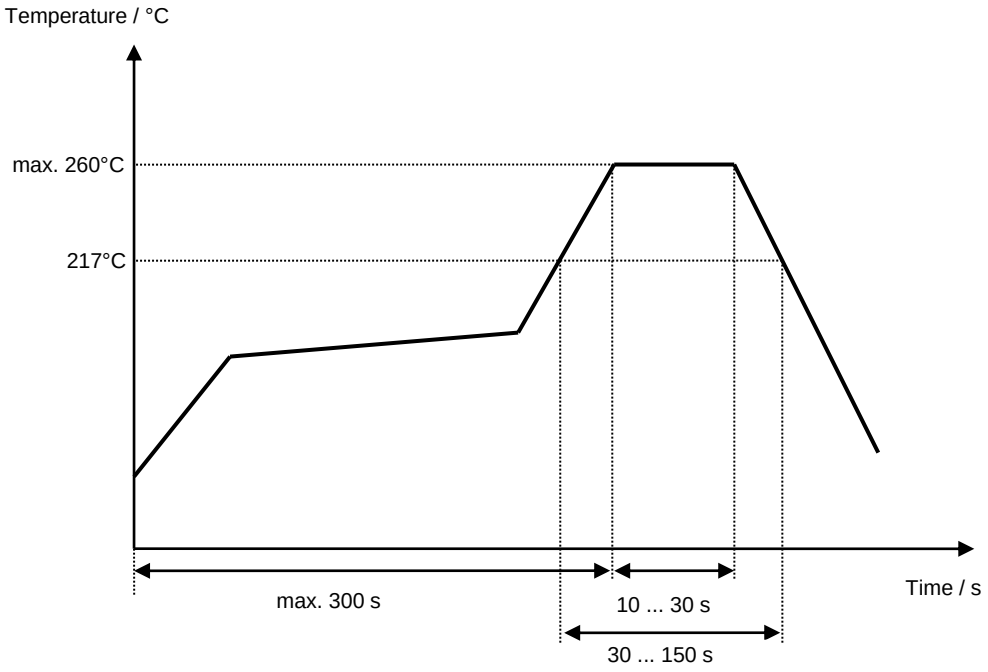
Air reflow temperature conditions

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	- Generation of development specification	Strehl	16.05.2007
1.1	- Change construction	Strehl	18.06.2007
1.2	- Change input power level	Strehl	27.08.2007
1.3	- Generation of filter specification - Add typical values - Add filter characteristic	Noack	02.11.2007
1.4	- Change relative attenuation	Strehl	02.12.2008
1.5	- Maximum input power updated	Kortenbeutel	04.02.2014

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