

Microchip**Filter specification****TFS 924K****1/5****Measurement condition**

Ambient temperature T_0 :	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} is the minimum attenuation in the pass band PB2. The maximum attenuation in the pass band PB1 and PB2 is defined as the insertion loss a_{e1} and a_{e2} . The nominal frequencies f_{N1} and f_{N2} are fixed at 920.95MHz and 927.00MHz, respectively 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 within the operating temperature range is included in the production tolerance scheme.

D a t a		typ. value	tolerance / limit
Nominal frequency 1	f_{N1}	-	920.95 MHz
Passband 1	PB1	-	$f_{N1} \pm 12.50$ kHz
Insertion loss within PB1	a_{e1}	2.8 dB	max. 3.50 dB
Nominal frequency 2	f_{N2}	-	927.00 MHz
Passband 2	PB2	-	$f_{N2} \pm 812.50$ kHz
Insertion loss within PB2 (reference level)	a_{e2}	2.4 dB	max. 3.00 dB
Relative attenuation	a_{rel}		
880.0 MHz ... 914.8 MHz		29 dB	min. 14 dB
Input power level	*)	-	max. 20 dBm
Operating temperature range	OTR	-	0 °C ... + 40 °C
Operational temperature range		-	- 10 °C ... + 55 °C
Storage temperature range		-	- 40 °C ... + 85 °C
Temperature coefficient of frequency	TC_f **)	-36 ppm/K	

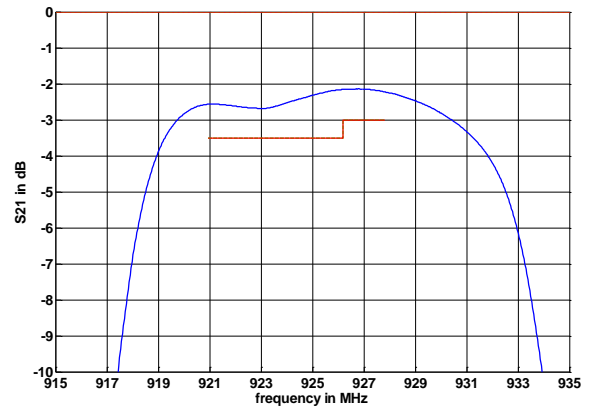
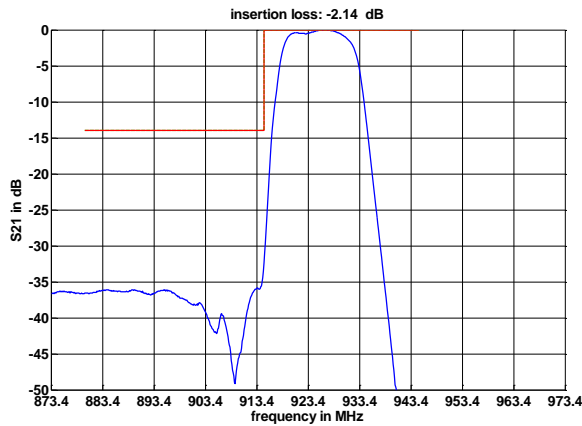
*) @914.8MHz with duty cycle 1:8

) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{CAT}(\text{MHz})$ **Generated:**Checked / Approved:**

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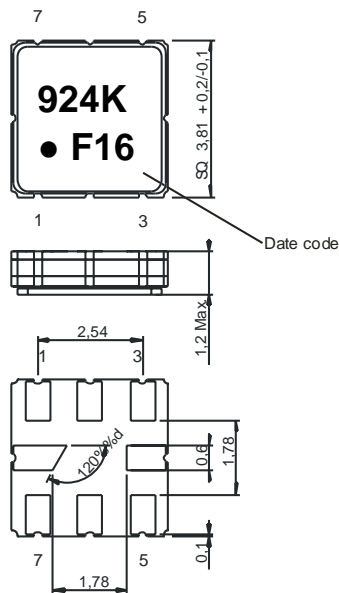
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Filter characteristic



Construction and pin connection

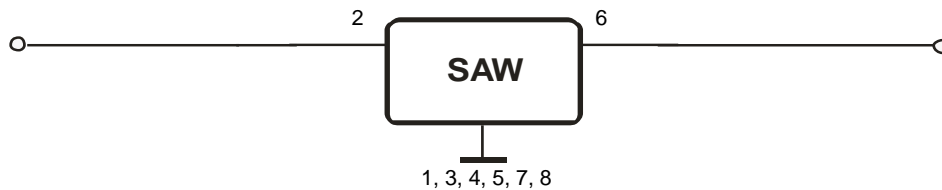
(All dimensions in mm)



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

Date code: Year + week
 F 2015
 G 2016
 H 2017
 ...

50 Ohm 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 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0.35 mm or 5 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 refer to the attached "Air reflow temperature conditions" on page 4;

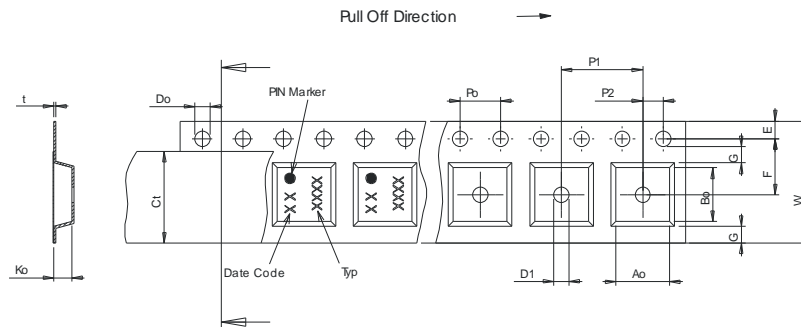
This filter is RoHS compliant (2011/65/EU)

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: | 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 |

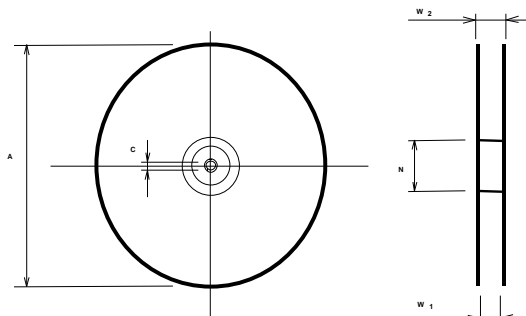
Tape (all dimensions in mm)

- W : 12.00 ± 0.3
- Po : 4.00 ± 0.1
- Do : 1.50 + 0.1/-0
- E : 1.75 ± 0.1
- F : 5.50 ± 0.05
- G(min) : 0.75
- P2 : 2.00 ± 0.05
- P1 : 8.00 ± 0.1
- D1(min) : 1.50
- Ao : 4.30 ± 0.1
- Bo : 4.30 ± 0.1
- Ct : 9.2 ± 0.1



Reel (all dimensions in mm)

- A : 330 or 180
- W1 : 12.4 +2/-0
- W2(max) : 18.4
- N(min) : 50
- C : 13.0 +0.5/-0.2



The minimum bending radius is 45 mm.

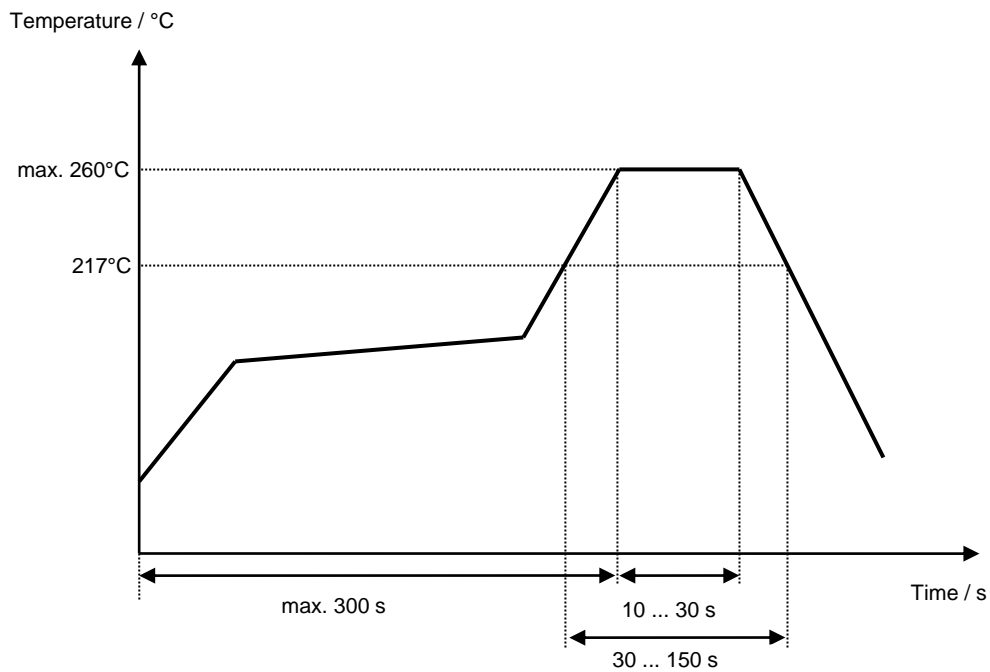
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Air reflow temperature conditions

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	S.Springfeldt	06.02.2015
2.0	Change to 3.8x3.8 package due to customer's request	S.Springfeldt	02.03.2015
2.1	Generation of filter specification	S.Springfeldt	16.04.2015

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