

Microchip	Filter specification	TFS1090F	1/5
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Measurement condition

Ambient temperature T_A : 23 °C
 Input power level: 0 dBm

Terminating impedance:

Input: 50 Ω
 Output: 50 Ω

Characteristics

Remark:

The maximum attenuation in the passband is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 1090 MHz without any tolerance or limit. The values of 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		
Nominal frequency	f_N	-		1090.0	MHz
Passband 1	PB1	-		$f_N \pm 5.0$	MHz
Insertion loss within PB1	a_e	1.8	dB	max. 3.0	dB
Passband variation within PB1		0.4	dB	max. 1.2	dB
Passband 2	PB2	-		$f_N \pm 7.0$	MHz
Insertion loss within PB2		1.9	dB	max. 3.5	dB
Absolute attenuation	a_{abs}	-			
10 MHz ... 1020 MHz		45	dB	min. 40	dB
1020 MHz ... 1040 MHz		54	dB	min. 45	dB
1040 MHz ... 1060 MHz		43	dB	min. 40	dB
1060 MHz ... 1065 MHz		43	dB	min. 30	dB
1115 MHz ... 1120 MHz		58	dB	min. 30	dB
1120 MHz ... 1700 MHz		46	dB	min. 40	dB
1700 MHz ... 2000 MHz		40	dB	min. 37	dB
2000 MHz ... 3000 MHz		34	dB	min. 32	dB
Return loss within PB1		17	dB	min. 12	dB
Return loss within PB2		17	dB	min. 10	dB
Group delay ripple within PB1		6	ns	max. 25	ns
Input power level		-		max. 10	dBm
Operating temperature range	OTR	-		- 55 °C ... + 95 °C	
Storage temperature range		-		- 55 °C ... + 125 °C	
Temperature coefficient of frequency	TC_f *)	-35	ppm/K		

*) $\Delta f = TC_f(T - T_A)f_N$

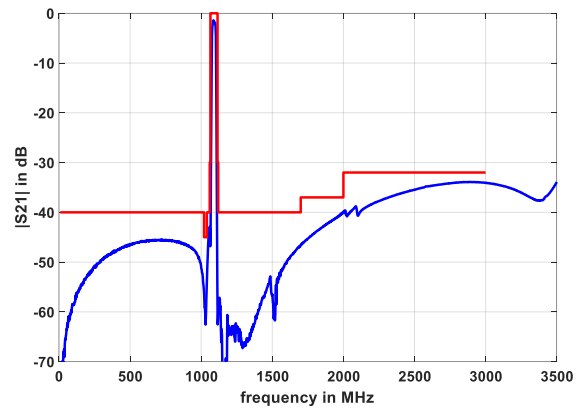
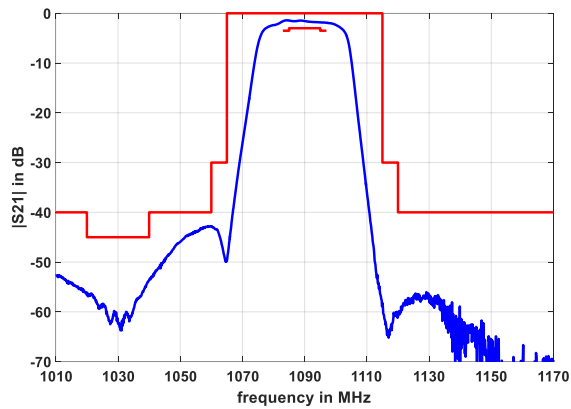
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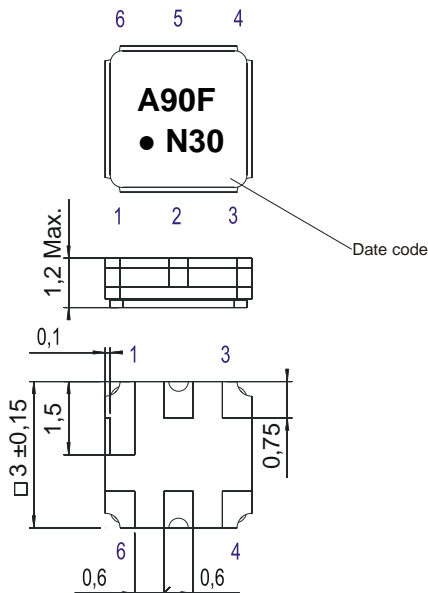
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Filter characteristic



Construction and pin connection

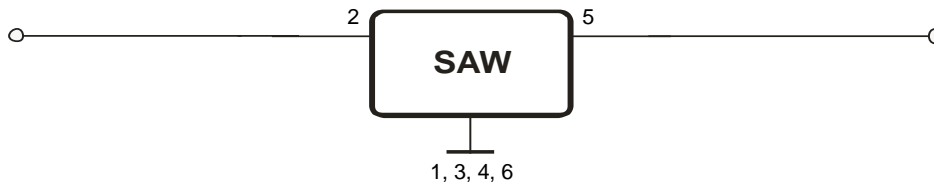
(All dimensions in mm)



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

Date code: Year + week
 N 2021
 P 2022
 R 2023
 ...

50 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 refer to the attached "Air reflow temperature conditions" on page 4;
5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

This filter is RoHS compliant (2011/65/EU+2015/863/EU)

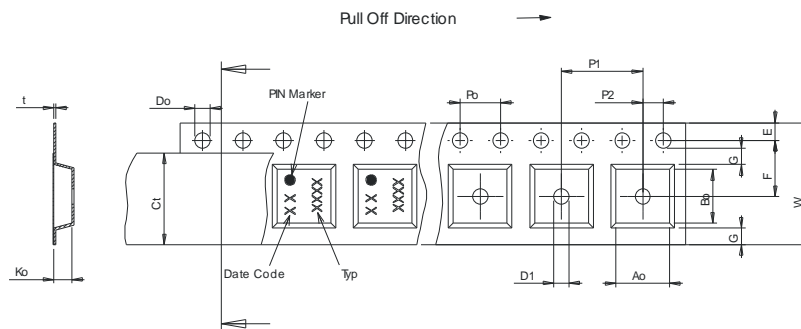
Packing

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

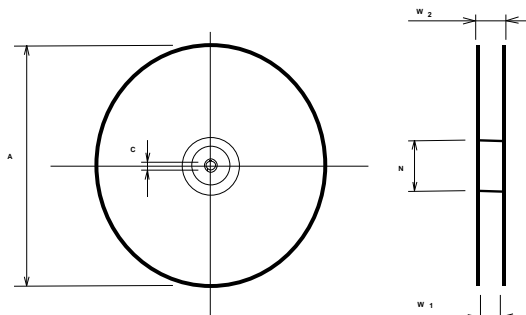
Tape (all dimensions in mm)

- 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



Microchip**Filter specification****TFS1090F****5/5**

History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	A. Molke	05.11.2019
1.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	28.07.2021

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