

Microchip**Filter specification****TFS63F****1/5****Measurement condition**

Ambient temperature T ₀ :	23	°C
Input power level:	0	dBm
Source impedance:	50	Ω
Load impedance:	50	Ω
Terminating impedance:		
Input:	225.8 Ω - 8.5 pF	
Output:	225.8 Ω - 8.5 pF	

Characteristics**Remark:**

The maximum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 63.86MHz 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		
Insertion loss	a_e	2.2	dB	max.	2.5	dB
Nominal frequency	f_N				63.86	MHz
Passband	PB			f_N	± 400	kHz
Passband variation		0.05	dB	max.	0.2 **	dB
Absolute attenuation	a_{abs}					
0.3 MHz ... 40 MHz		65	dB	min.	45	dB
40 MHz ... 55 MHz		53	dB	min.	40	dB
55 MHz ... 59 MHz		48	dB	min.	25	dB
70 MHz ... 75 MHz		45	dB	min.	25	dB
75 MHz ... 120 MHz		50	dB	min.	40	dB
Power durability		-		max.	10	dBm
Operating temperature range	OTR	-			+ 23 °C	
Storage temperature range		-			- 40 °C ... + 85 °C	
Temperature coefficient of frequency	TC_f *	-78	ppm/K		-	

*) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{CT0}(\text{MHz})$.

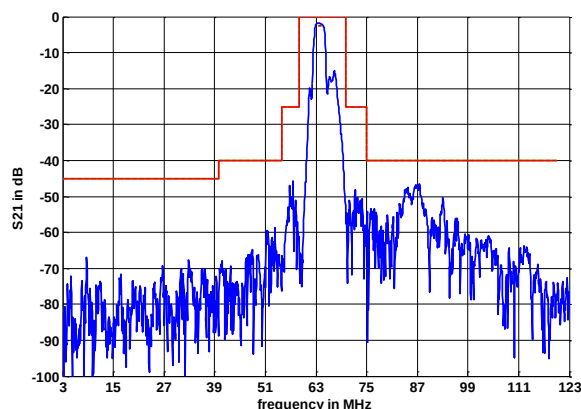
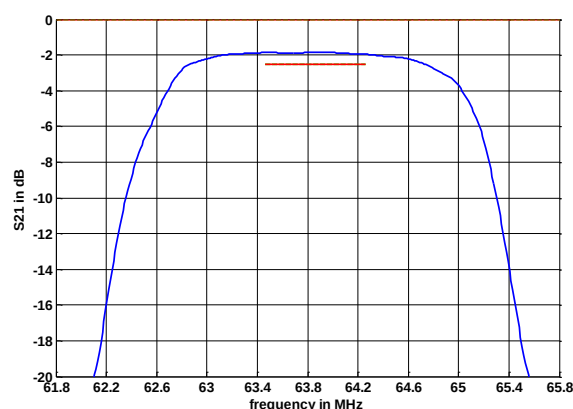
**) detrend 3rd order

Generated:**Checked / Approved:**

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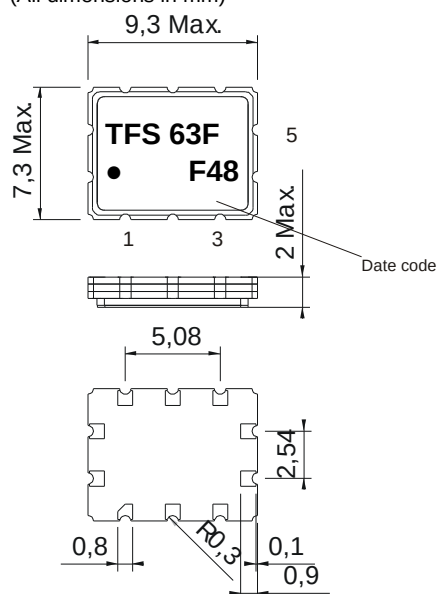
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Filter characteristic



Construction and pin connection

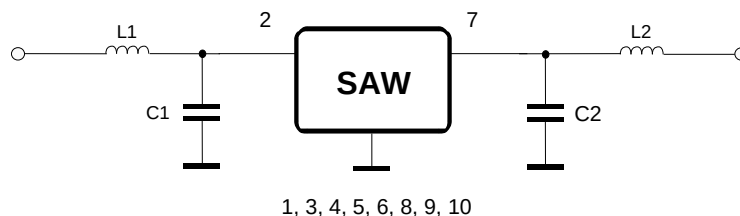
(All dimensions in mm)



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

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

Test circuit



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Stability characteristics, reliability

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

1. Shock: 500g, 1ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10Hz to 2000Hz, 0.35mm or 5g 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"

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 0B	1 positive + 1 negative pulse 125 ... 250 Volts

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

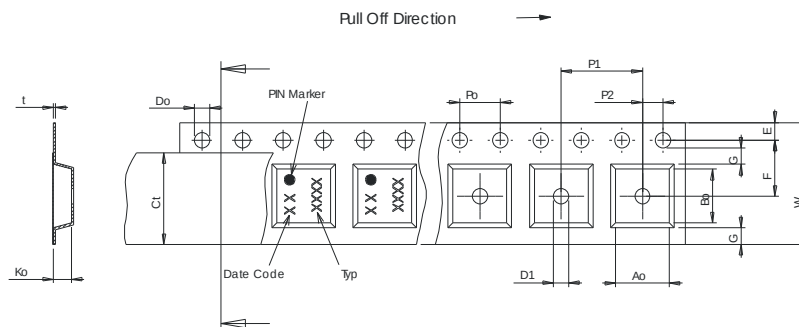
Packing

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;

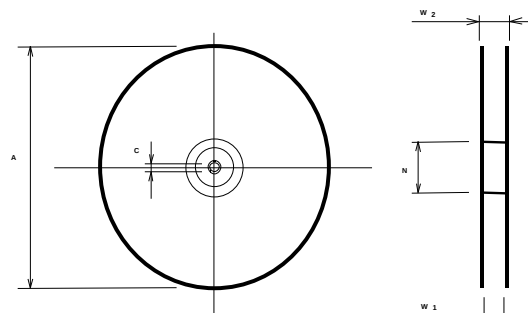
max. pieces of filters per reel: 2000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

Tape (all dimensions in mm)

W	: 16.00 ± 0.3
Po	: 4.00 ± 0.1
Do	: 1.50 +0.1/-0
E	: 1.75 ± 0.10
F	: 7.50 ± 0.10
G(min)	: 0.60
P2	: 2.00 ± 0.1
P1	: 12.00 ± 0.1
D1(min)	: 1.50
Ao	: 7.60 ± 0.10
Bo	: 9.60 ± 0.10
Ct	: 13.3

**Reel (all dimensions in mm)**

A	: 330 or 180
W1	: 16.4
W2(max)	: 22.4
N(min)	: 50
C	: 13.0



The minimum bending radius is 45 mm.

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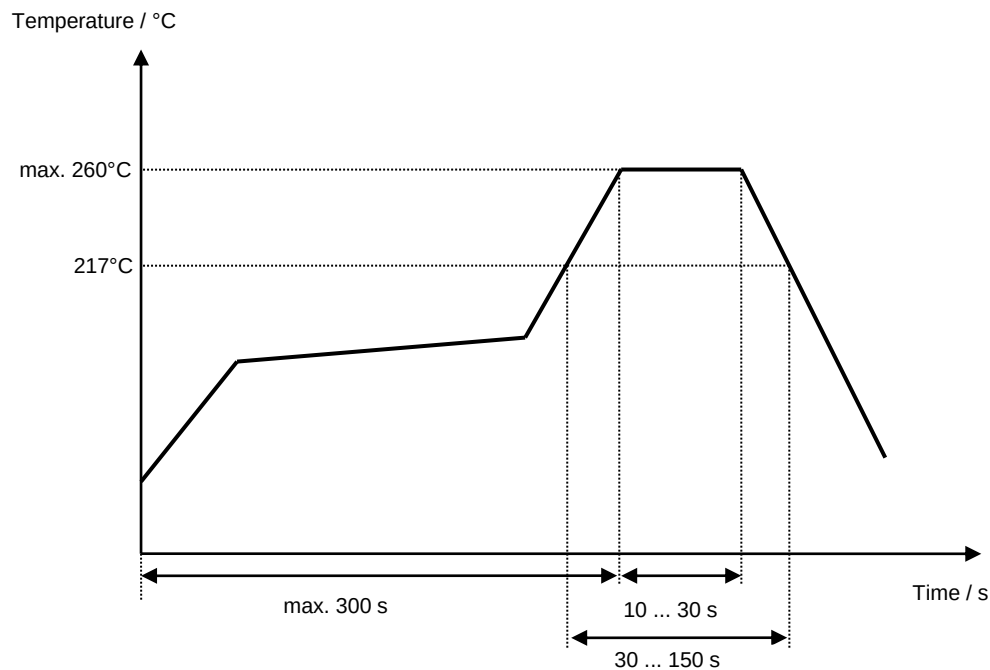
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Air reflow temperature conditions

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****TFS63F****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Noack	28.06.2011
2.0	- Change date table because of new customer request - Add typical values	Noack	23.09.2011
2.1	- Generation of filter specification - Add power durability and filter characteristic	Noack	02.03.2012
2.2	- Update of filter characteristic	Abutaimah	20.03.2012
2.3	- Change stability characteristics and typos corrected	Noack	25.11.2015