

Microchip**Filter specification****TFS 1643A****1/5****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 1643.5 MHz without any tolerance or limit. The values of absolute attenuation a_{abs} are guaranteed within the specified temperature ranges. 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 in OTR2	a_e	2.2	dB	max.	3.0	dB
Nominal frequency	f_N				1643.5	MHz
Passband	PB			$f_N - 15.5$ MHz ...	$f_N + 13.0$ MHz	
Passband variation in OTR2		0.7	dB		1.5	dB
Absolute attenuation	a_{abs}					
1525 MHz ... 1559 MHz in OTR		43	dB	min.	35	dB
@ 1670 MHz in OTR2	**	4	dB	min.	3	dB
@ 1675 MHz in OTR2				min.	4	dB
1884 MHz ... 1952 MHz in OTR		63	dB	min.	52	dB
Return loss within PB in OTR2		9	dB	min.	8	dB
Operating temperature range	OTR	-		-40 °C ... +85 °C		
Operating temperature range 2	OTR2	-		-20 °C ... +85 °C		
Storage temperature range		-		-40 °C ... +85 °C		
Temperature coefficient of frequency	TC_f *	-42	ppm/K			

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

**) guaranteed values have to be understood as sloping lines between the given attenuation value and the attenuation value of the following frequency point

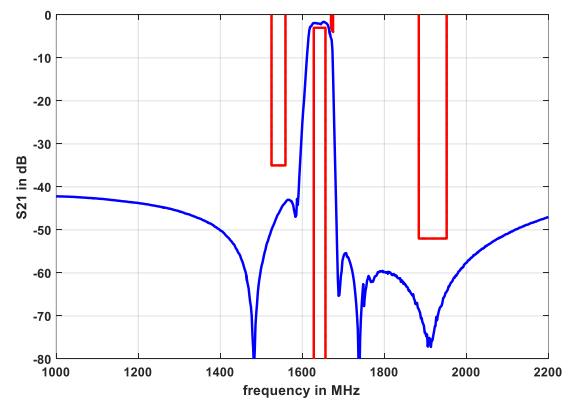
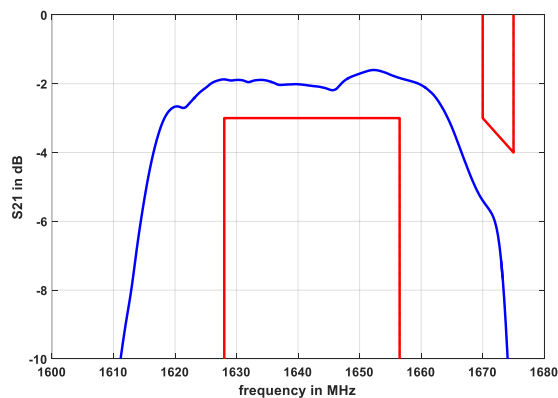
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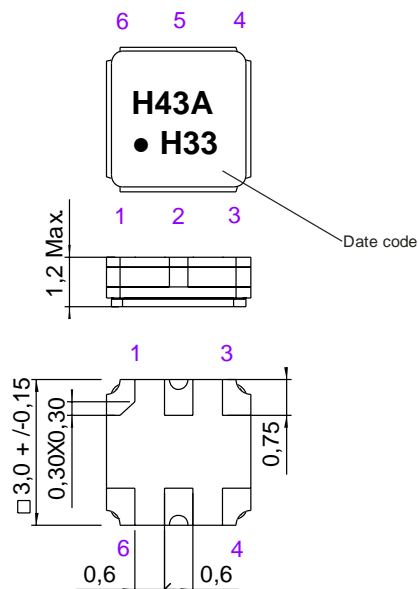
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Filter characteristic



Construction and pin connection

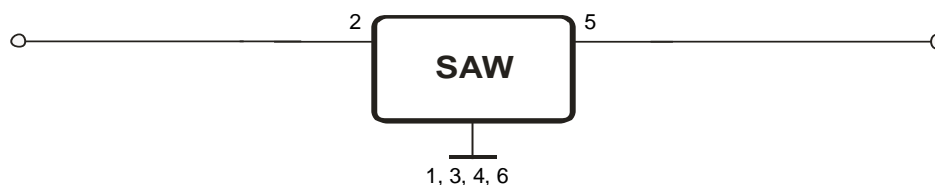
(All dimensions in mm)



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

Date code:	Year + week
H	2016
J	2017
K	2018
...	

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 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)

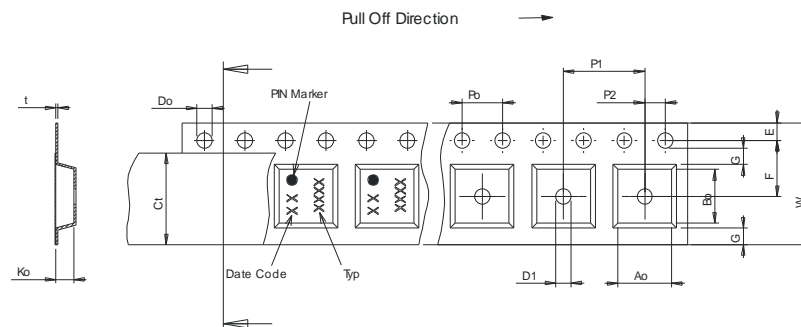
Packing

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;

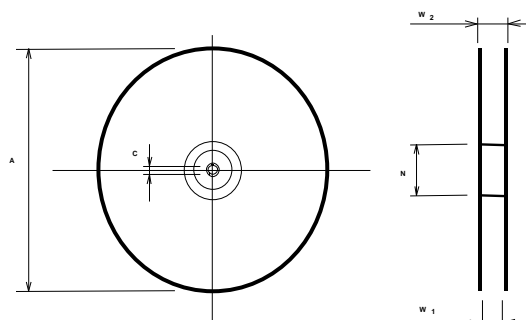
max. pieces of filters per reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

Tape (all dimensions in mm)

W	: 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

**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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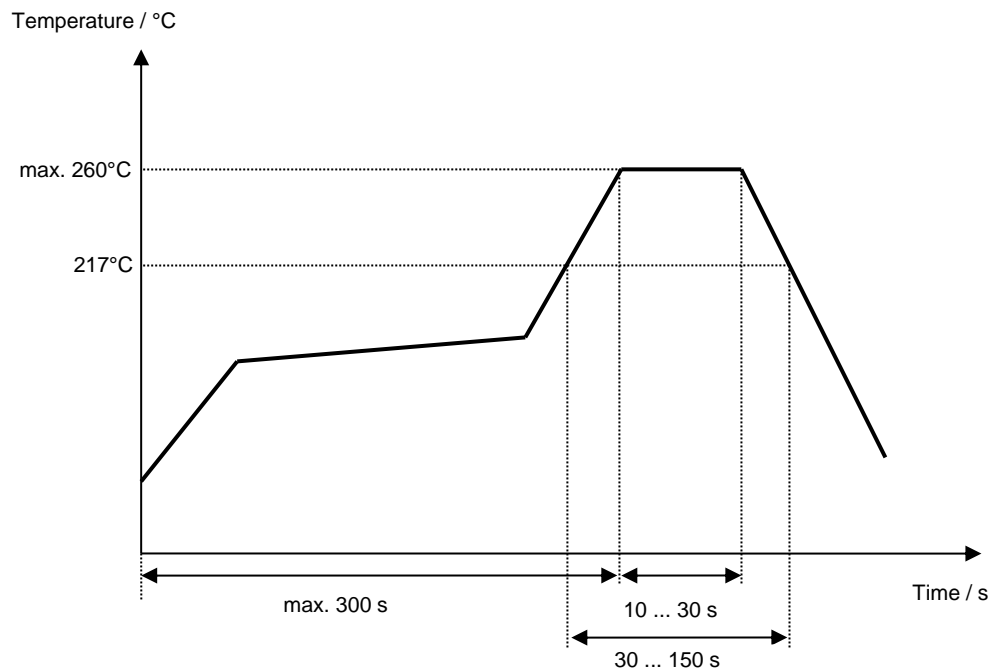
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Air reflow temperature conditions

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

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Microchip**Filter specification****TFS 1643A****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	S.Springfeldt	05.05.2011
2.0	- Frequency limits of passband changed - Limits for absolute attenuation updated (1670 – 1675 MHz)	A. Molke	01.07.2011
3.0	- Second operating temperature range introduced	A. Molke	12.07.2011
3.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	03.08.2011
4.0	- Limits for absolute attenuation updated (1670 – 1675 MHz) - Typical values updated	A. Molke	09.12.2011
5.0	- Limits for absolute attenuation relaxed (1884 – 1952 MHz)	A. Molke	10.08.2016

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