

Microchip

Filter specification

TFS1225D

Measurement condition

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	200	Ω
Output:	200	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 1225.5 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		
Insertion loss in PB		a_e	3.4 dB	max.	5.0	dB
Nominal frequency		f_N	-		1225.5	MHz
Passband		PB	-	$f_N \pm$	28.5	MHz
Passband variation			1.3 dB	max.	2.5	dB
Absolute attenuation		a_{abs}				
0.3	MHz ... 1145 MHz		32 dB	min.	30	dB
1145	MHz ... 1150 MHz		35 dB	min.	25	dB
1150	MHz ... 1160 MHz		25 dB	min.	10	dB
1160	MHz ... 1170 MHz		12 dB	min.	5	dB
1290	MHz ... 1298 MHz		14 dB	min.	5	dB
1298	MHz ... 1306 MHz		30 dB	min.	10	dB
1306	MHz ... 1310 MHz		42 dB	min.	25	dB
1310	MHz ... 3000 MHz		34 dB	min.	30	dB
Group delay ripple						
1197	MHz ... 1228 MHz		6 ns	max.	10	ns
1237	MHz ... 1254 MHz		5 ns	max.	10	ns
Group delay variation (unit to unit)		*)				
1197	MHz ... 1228 MHz		+/-4 ns	max.	+/-6	ns
1237	MHz ... 1254 MHz		+/-3 ns	max.	+/-6	ns
Return loss within PB			13 dB	min.	7	dB
Input power level in PB			-	max.	10	dBm
Operating temperature range		OTR	-		-40 °C ... +85 °C	
Storage temperature range			-		-55 °C ... +125 °C	
Temperature coefficient of frequency		TC_f **)	-73 ppm/K			

*) measured at: f_N , $f_N + 28.5$ MHz, $f_N - 28.5$ MHz

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

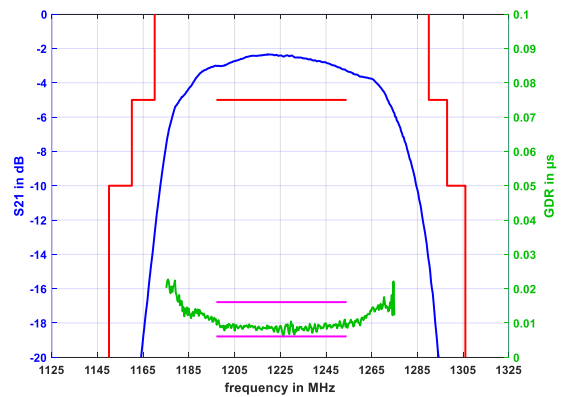
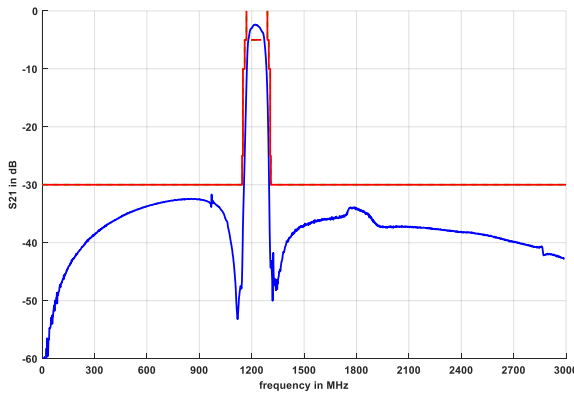
Generated:

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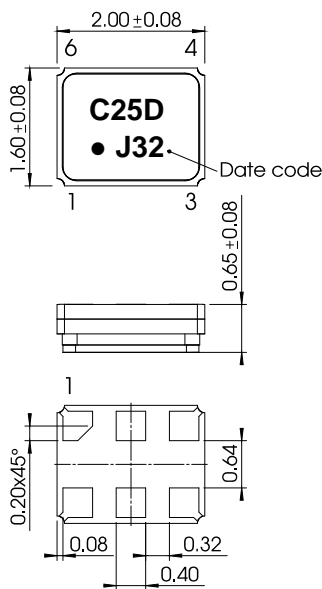
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Filter characteristic



Construction and pin connection

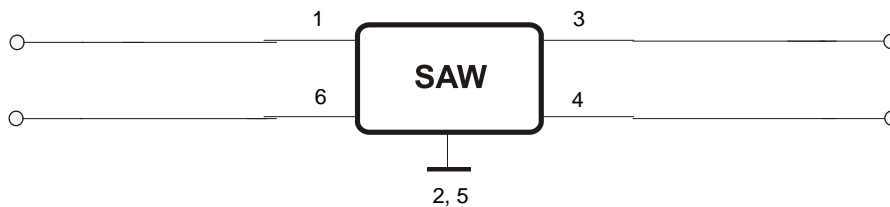
(All dimensions in mm)



- 1 Input1
- 2 Ground
- 3 Output1
- 4 Output2
- 5 Ground
- 6 Input2

Date code: Year + week
 J 2017
 K 2018
 L 2019
 ...

200 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)

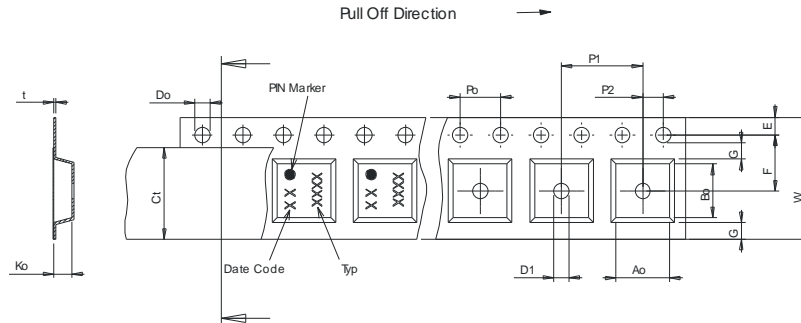
Packing

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

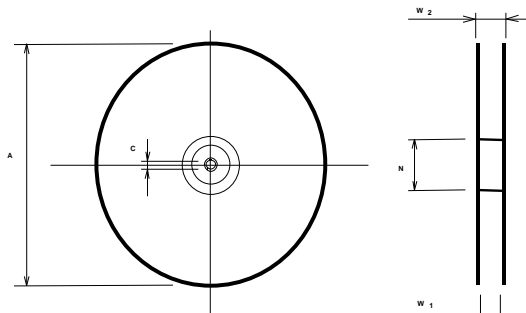
Tape (all dimensions in mm)

- W : 8.00 +0.3/-0.1
- Po : 4.00 ±0.1
- Do : 1.55 ±0.05
- 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) : 1.00
- Ao : 1.80 ±0.05
- Bo : 2.25 ±0.05
- Ct : 5.30 ±0.1
- Ko : 0.90 ±0.05
- t : 0.30 ±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.

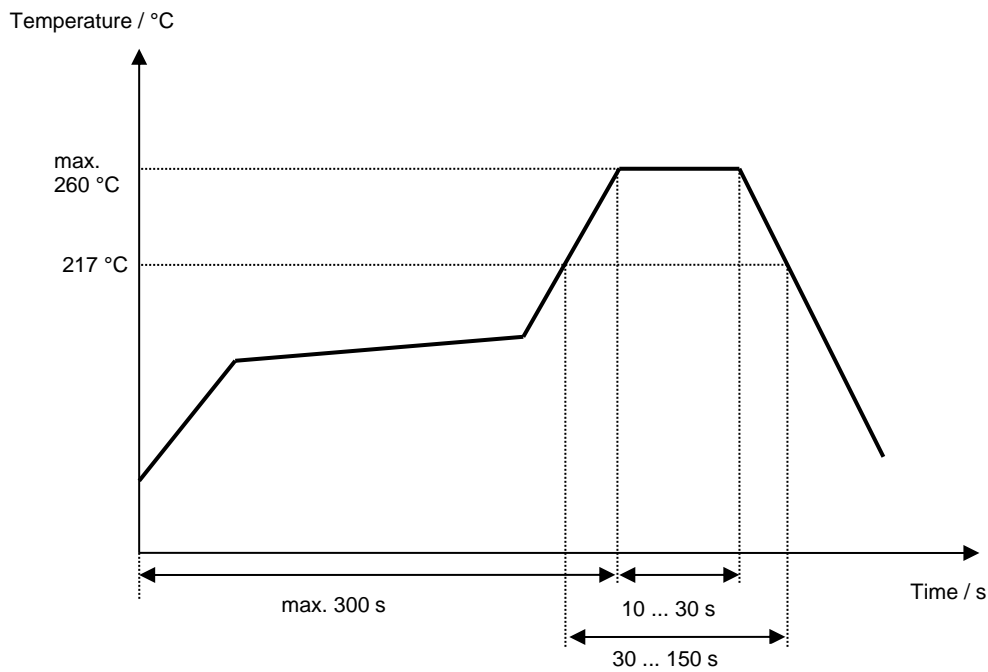
Air reflow temperature conditions

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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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Microchip**Filter specification****TFS1225D****5/5**

History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	C. Noack	09.11.2015
1.1	- Generation of filter specification - Add filter characteristic and typical values - Update storage temperature range, construction and Tape & reel	C. Noack	08.08.2017

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