

Microchip**Filter specification****TFS 1227A****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50 Ω 0 pF	
Output:	50 Ω 0 pF	

Characteristics

Remark:

The minimum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 1227,0 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 (reference level)		a_e	1,0 dB	max.	3,0	dB
Nominal frequency		f_N	-		1227,0	MHz
Passband		PB	-	f_N ±	15,0	MHz
Pass band ripple			0,4 dB	max.	2,0	dB
Pass band variation			1,2 dB	max.	3,0	dB
Absolute attenuation		a_{abs}				
0,3 MHz ... 1172 MHz			42 dB	min.	40	dB
1172 MHz ... 1197 MHz			18 dB	min.	10	dB
1257 MHz ... 1282 MHz			18 dB	min.	10	dB
1282 MHz ... 2000 MHz			49 dB	min.	40	dB
Group delay ripple within PB		p-p	70 ns	max.	100	ns
Phase ripple within PB		p-p	75 °	max.	100	°
Return loss			10 dB	min.	6	dB
Input power level			-	max.	20 *	dBm
Operating temperature range		OTR	-	- 54 °C ... + 85 °C		
Storage temperature range			-	- 54 °C ... + 85 °C		
Temperature coefficient of frequency		TC_f **	-41 ppm/K	-		

*) This power level is only allowed for short term operation (cycle time 1:1000), the max. input power for continuous operation is max.10dBm only

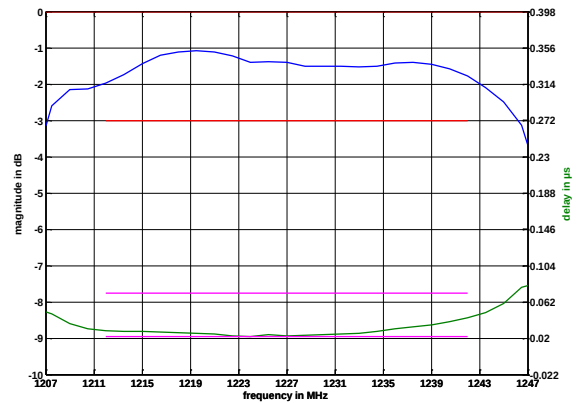
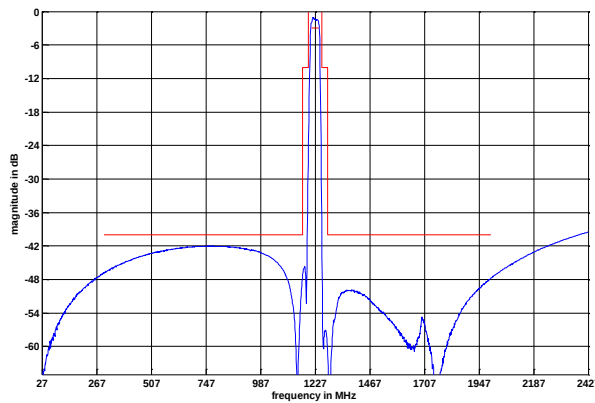
**) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$, f_{T0} : frequency at room temperature

Generated:**Checked / Approved:**

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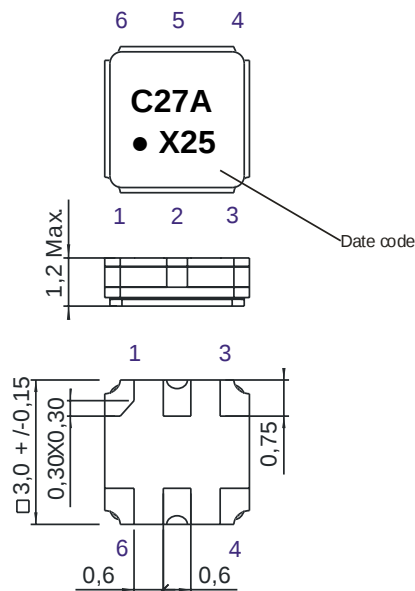
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Filter characteristic



Construction and pin connection

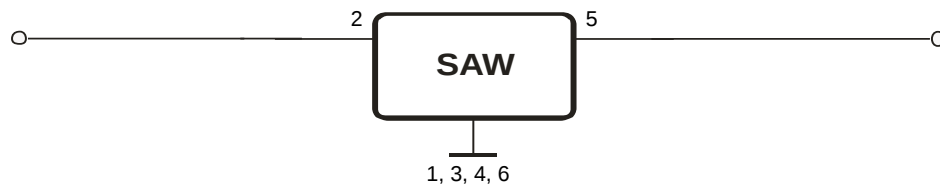
(All dimensions in mm)



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

Date code: Year + week
 X 2009
 A 2010
 B 2011
 ...

50 Ω Test circuit



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Stability characteristics, reliability

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

1. Shock: 500g, 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 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 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;
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

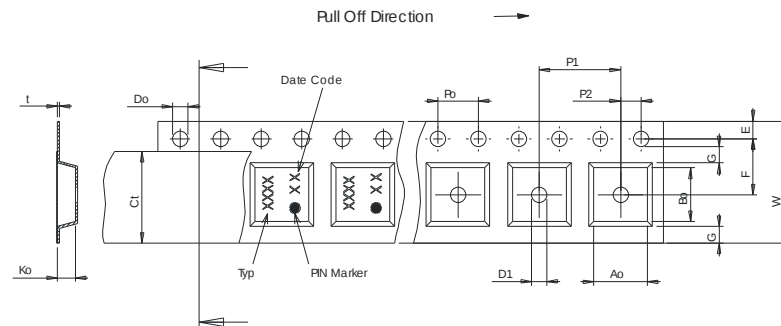
Packing

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;

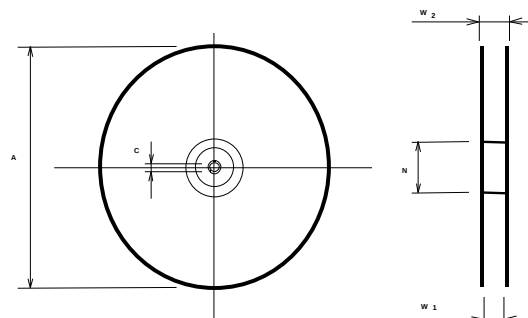
max. pieces of filters per reel: 9000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

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	: 5,5 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 8,4 +1,5/-0
W2(max)	: 14,4
N(min)	: 50
C	: 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

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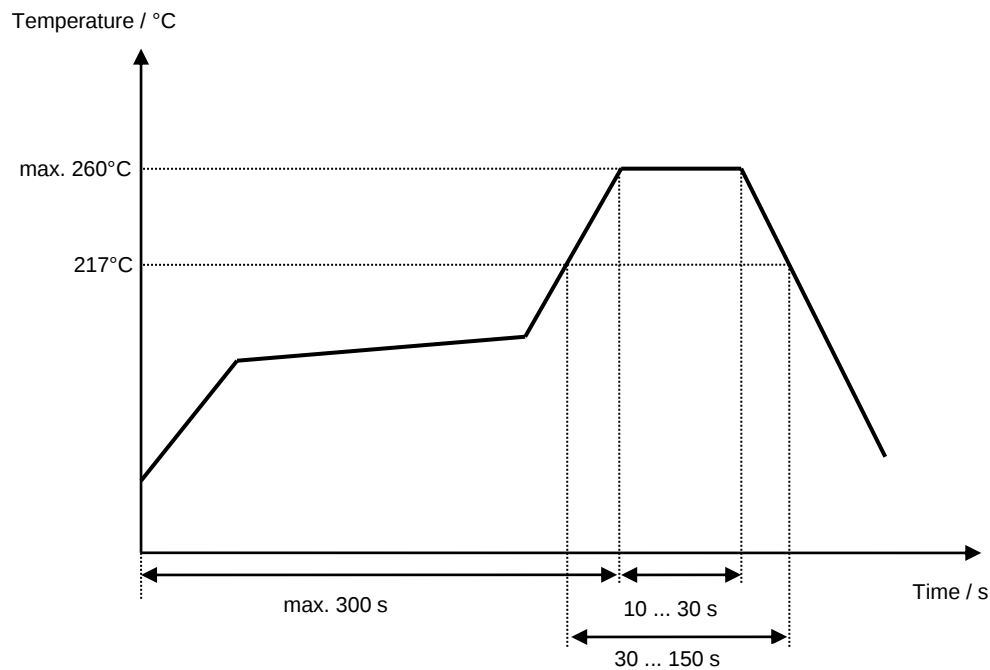
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Air reflow temperature conditions

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 1227A****5/5****History**

Version	Reason of changes	Name	Date
1.0	- Generation of development specification	Strehl	07.02.2008
1.1	- typing error of absolute attenuation corrected, matching configuration added	Pfeiffer	18.07.2008
1.2	- add of typical values and filter characteristics	Pfeiffer	05.12.2008
2.0	- f_{T0} defined - group delay ripple and phase ripple added	Pfeiffer	15.06.2009

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