

Microchip

Filter specification

TFS 1542A

1/5

Measurement condition

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

Characteristics

The maximum attenuation in the passband is defined as the insertion loss a_{e1} . The nominal frequency f_N is fixed at 1542,5MHz 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 PB1	a_{e1}	1,5	dB	max.	4,0	dB
Insertion loss in PB2	a_{e2}	1,5	dB	max.	2,5	dB
Nominal frequency	f_N	-			1542,5	MHz
Passband 1	PB1	-		f_N	±	17,5 MHz
Passband 2	PB2	-		1557	±	2,0 MHz
Passband ripple within PB1	p-p	1,0	dB	max.	2,0	dB
Absolute attenuation	a_{abs}					
0,3 MHz ... 1400 MHz		33	dB	min.	30	dB
1400 MHz ... 1500 MHz		35	dB	min.	10	dB
1585 MHz ... 1610 MHz		25	dB	min.	10	dB
1610 MHz ... 2500 MHz		38	dB	min.	30	dB
2500 MHz ... 4500 MHz		32	dB	min.	25	dB
4500 MHz ... 6000 MHz		15	dB	min.	10	dB
Group delay ripple						
1555 MHz ... 1559 MHz		4		max.	8	ns
1525 MHz ... 1560 MHz		10		max.	15	ns
VSWR within PB1		2,0 : 1		max.	2,3 : 1	
Input power level in PB1		-		max.	15	dBm
Operating temperature range	OTR	-			- 40 °C ... + 85°C	
Storage temperature range		-			- 45 °C ... + 85°C	
Temperature coefficient of frequency	TC_f^*	-44	ppm/K			

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

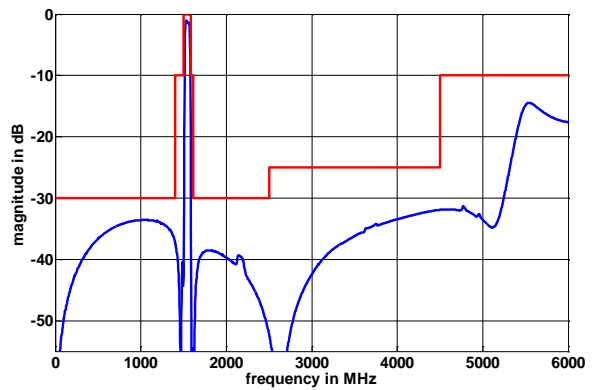
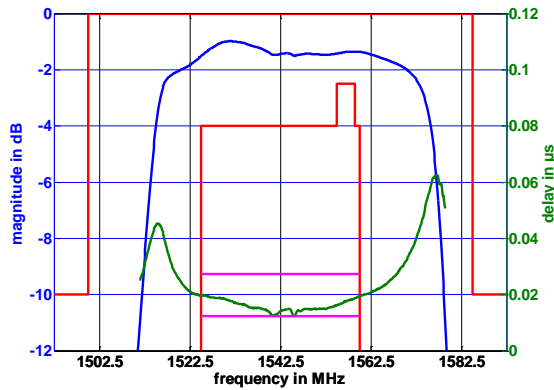
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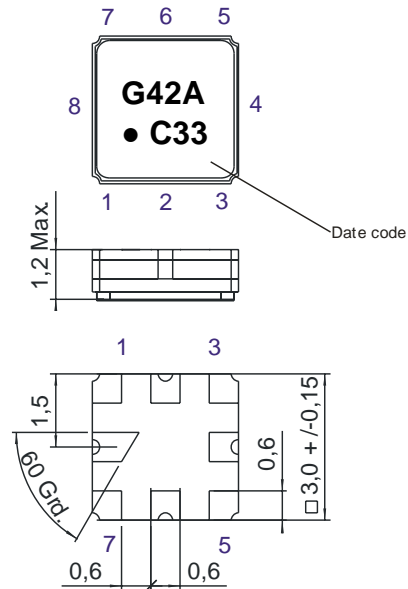
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Filter characteristic



Construction and pin connection

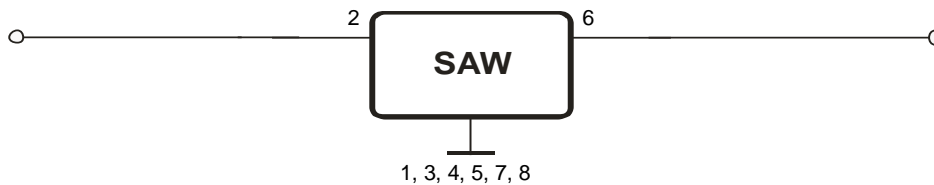
(All dimensions in mm)



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

- Date code: Year + week
- C 2012
 - D 2013
 - E 2014
 - ...

50 Ohm 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 5 g 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 / 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, see page 4: "Air reflow temperature conditions"
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

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

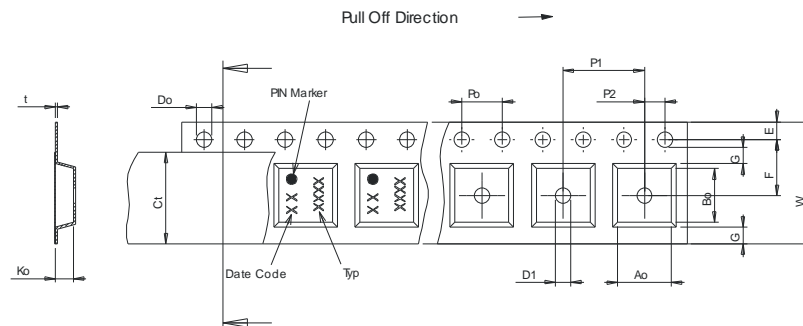
Packing

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: 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

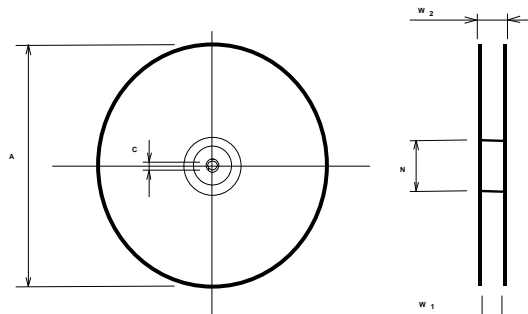
Tape (all dimensions in mm)

- 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 : 5,3 ± 0,1



Reel (all dimensions in mm)

- A : 180
- W1 : 8,4 +1,5/-0
- W2(max) : 14,4
- N(min) : 60
- C : 13,0 ± 0,2



The minimum bending radius is 45 mm.

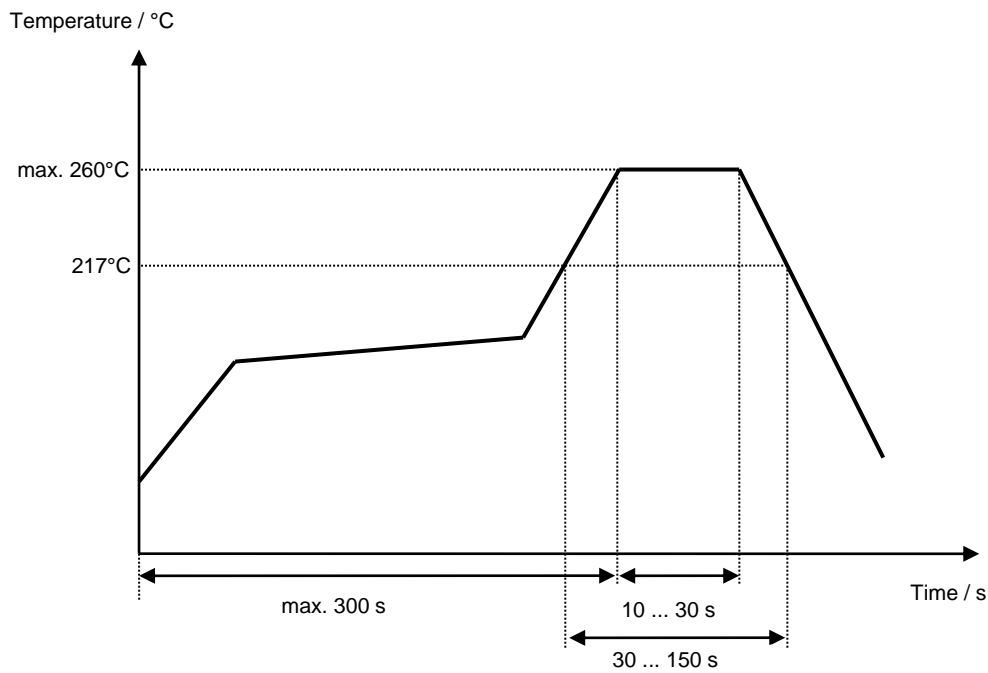
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Air reflow temperature conditions

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



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History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	S. Springfeldt	20.09.2011
2.0	- Absolute attenuation updated (2500 – 6000 MHz)	A. Molke	08.12.2011
2.1	- Change from development spec to filter spec - Typical values added - Filter characteristic added	A. Molke	16.08.2012

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