

**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		
<b>Insertion loss in PB1</b>	$a_{e1}$	1,5	dB	max.	4,0	dB
<b>Insertion loss in PB2</b>	$a_{e2}$	1,5	dB	max.	2,5	dB
<b>Nominal frequency</b>	$f_N$	-			1542,5	MHz
<b>Passband 1</b>	PB1	-		$f_N$	±	17,5 MHz
<b>Passband 2</b>	PB2	-		1557	±	2,0 MHz
<b>Passband ripple within PB1</b>	p-p	1,0	dB	max.	2,0	dB
<b>Absolute attenuation</b>	$a_{abs}$					
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
<b>Group delay ripple</b>						
1555 MHz ... 1559 MHz		4		max.	8	ns
1525 MHz ... 1560 MHz		10		max.	15	ns
<b>VSWR within PB1</b>		2,0 : 1		max.	2,3 : 1	
<b>Input power level in PB1</b>		-		max.	15	dBm
<b>Operating temperature range</b>	OTR	-			- 40 °C ... + 85 °C	
<b>Storage temperature range</b>		-			- 45 °C ... + 85 °C	
<b>Temperature coefficient of frequency</b>	$TC_f^*$	-44	ppm/K			

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

**Generated:**

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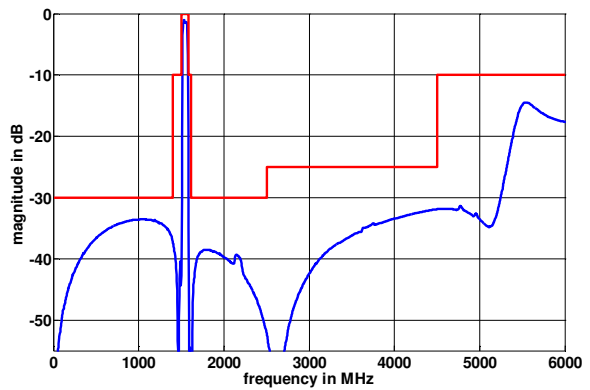
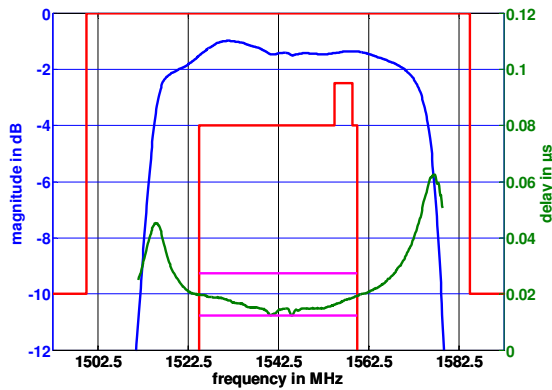
**Checked / Approved:**

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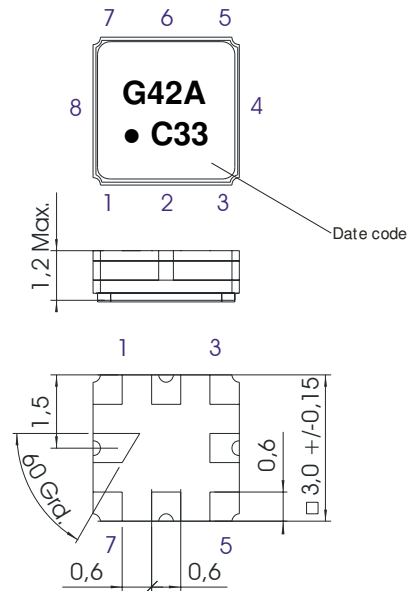
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**Filter characteristic**



**Construction and pin connection**

(All dimensions in mm)

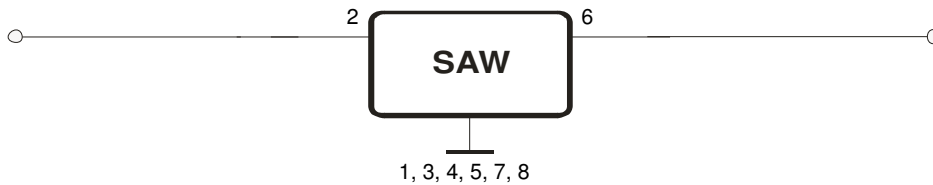


1	Ground
2	Input
3	Ground
4	Ground
5	Ground
6	Output
7	Ground
8	Ground

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)

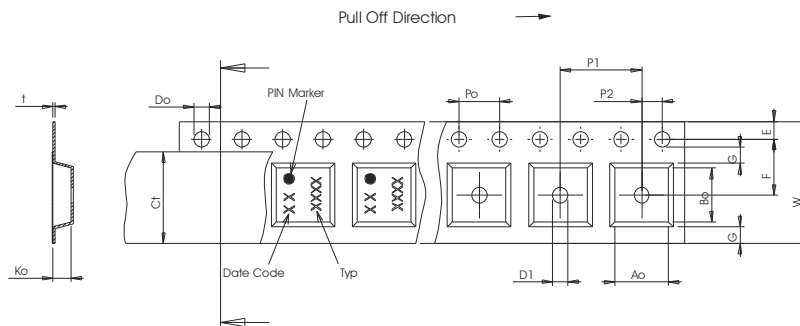
**Packing**

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

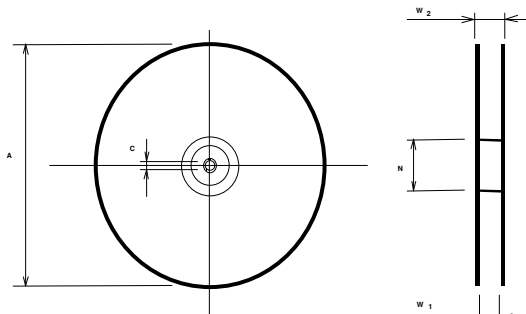
**Tape (all dimensions in mm)**

- 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.

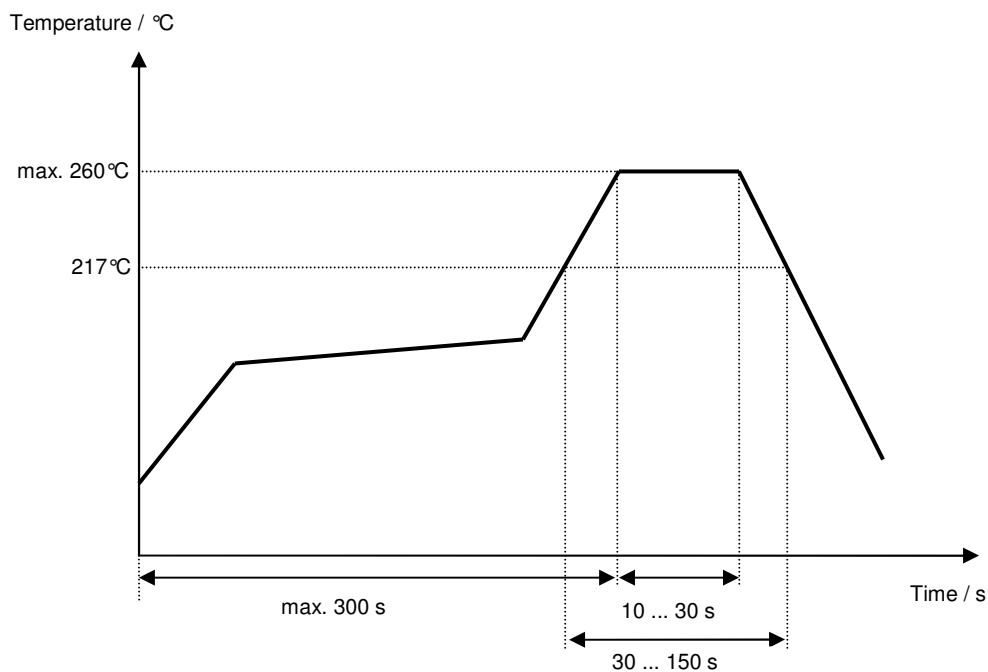
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## Air reflow temperature conditions

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**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
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