Measurement condition

Ambient temperature T_A:	23	°C
Input power level:	0	dBm
Source impedance	75	Ω
Load impedance	75	Ω
Terminating impedance: *)		
Input:	205 Ω || -2.5 pF	
Output:	205 Ω || -2.5 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 451.25 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	a_e	1.8	dB	max.	3.0	dB
Nominal frequency	f_N	-			451.25	MHz
Pass band	PB	-		f_N ±	45.5	kHz
Amplitude ripple	p-p	0.3	dB	max.	1.0	dB
Absolute attenuation	a_{abs}					
f_N - 441.00 MHz ... f_N - 4.25 MHz		49	dB	min.	40	dB
f_N - 4.25 MHz ... f_N - 1.25 MHz		40	dB	min.	35	dB
f_N + 1.75 MHz ... f_N + 4.75 MHz		41	dB	min.	20	dB
f_N + 4.75 MHz ... f_N + 10.75 MHz		38	dB	min.	33	dB
f_N + 10.75 MHz ... f_N + 548.00 MHz		42	dB	min.	40	dB
Input power level		-		max.	0	dBm
Operating temperature range	OTR	-		-20 °C ... +70 °C		
Storage temperature range (Absolute maximum rating)		-		-55 °C ... +125 °C		
Frequency inversion temperature	T_0	28	°C		-	
Temperature coefficient of frequency	TC_f **)	-0.034	ppm/K^2		-	

*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.
**) $\Delta f = TC_f(T - T_0)^2 f_N$

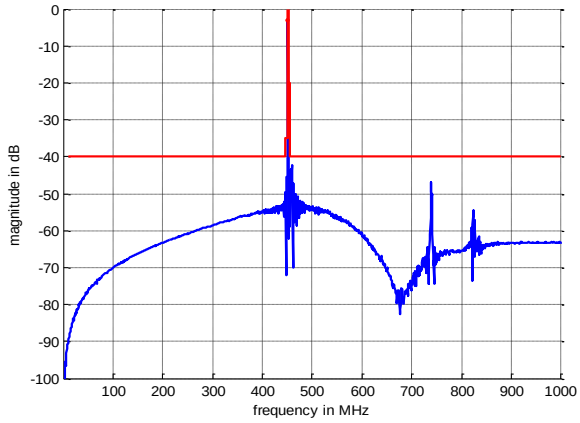
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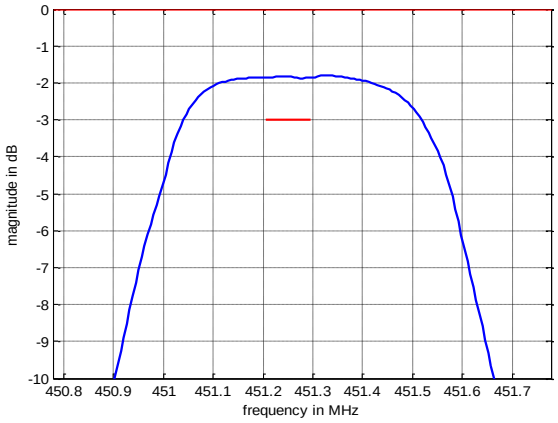
Checked / Approved:

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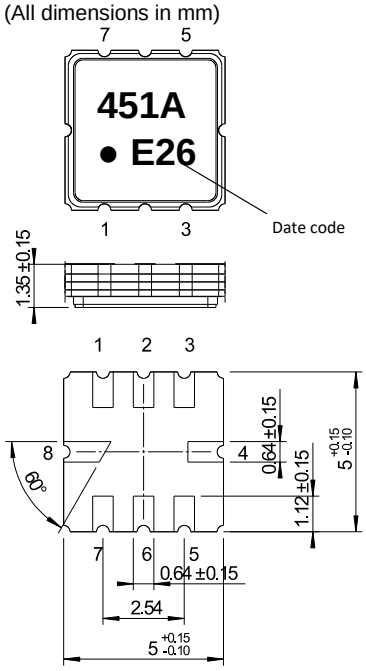
Filter characteristic





Construction and pin connection

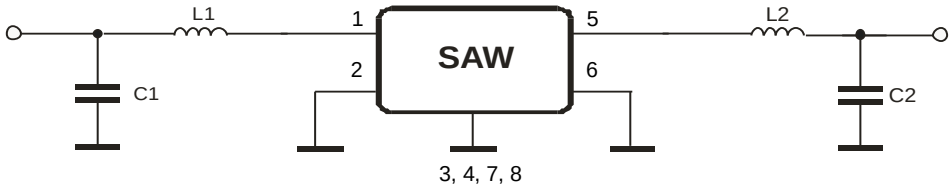
(All dimensions in mm)



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

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

75 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 2000 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 / 15 min. each / 100 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. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

This filter is RoHS compliant (2011/65/EU)

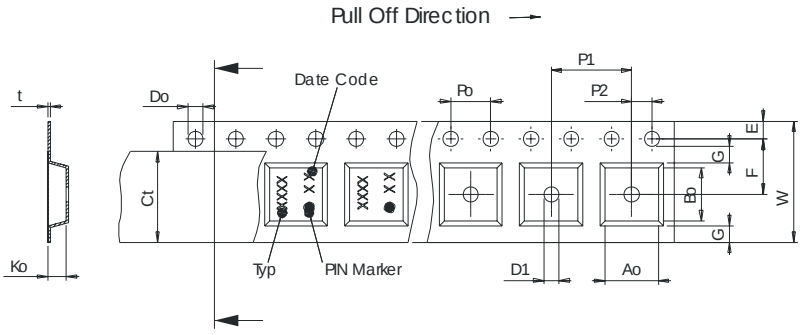
Packing

Tape & Reel: IEC 286 – 3, with exeption 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

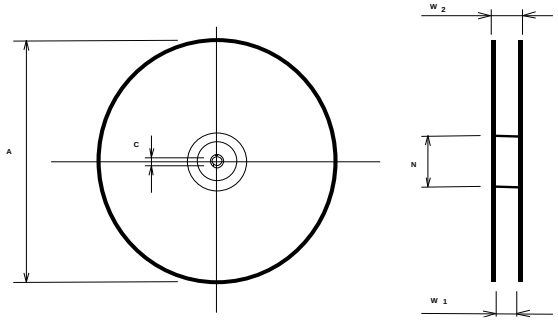
Tape (all dimensions in mm)

W	:	12.00 ± 0.3
Po	:	4.00 ± 0.1
Do	:	1.50 + 0.1/-0
E	:	1.75 ± 0.1
F	:	5.50 ± 0.05
G(min)	:	0.75
P2	:	2.00 ± 0.05
P1	:	8.00 ± 0.1
D1(min)	:	1.50
Ao	:	5.30 ± 0.1
Bo	:	5.30 ± 0.1
Ct	:	9.50 ± 0.1



Reel (all dimensions in mm)

A	:	330 or 180
W1	:	12.4 +2/-0
W2(max)	:	18.4
N(min)	:	50
C	:	13.0 +0.5/-0.2



The minimum bending radius is 45 mm.

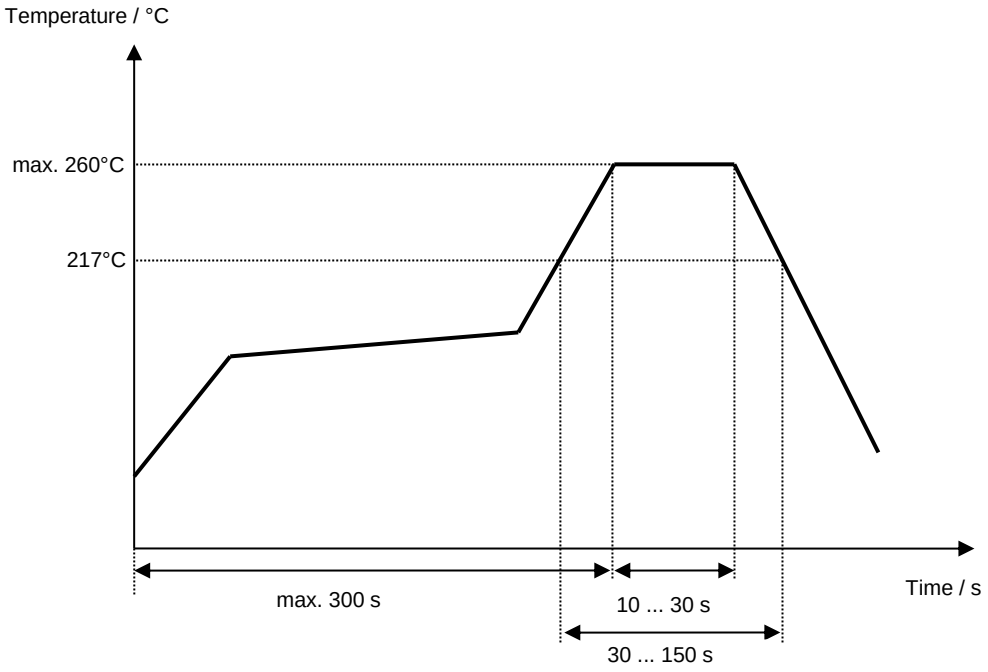
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Air reflow temperature conditions

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	- generate development specification	Steiner	23.12.2004
1.1	- change of absolute attenuation according customer requirement	Sabah	13.01.2005
1.2	-change of rejection in stop band	Sabah	01.02.2005
1.3	- change remark and stability characteristics - add typical values and filter characteristic	Noack	04.05.2005
1.4	- add inversion temperature and temperature coefficient - correct packing (tape and reel) - add filter specification	Noack	10.08.2005
1.5	- add input power level - update format (commas exchanged) - update section 'stability characteristics, reliability'	S.Springfeldt	24.06.2014
1.6	- update section 'stability characteristics, reliability'	Noack	21.10.2015
2.0	- change data table	Noack	22.12.2016
3.0	- change date table - update construction and pin connection	Noack	13.09.2017

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