Measurement condition

Ambient temperature T_0:	22	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:
The maximum attenuation in the pass band is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 1176.5 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				a_e	2.5	dB		3.0	dB
Nominal frequency				f_N	-			1176.5	MHz
Passband					-		f_N ±	12.5	MHz
Pass band ripple					0.8	dB	max.	1.5	dB
Absolute attenuation				a_{abs}					
1164	MHz	…	1189	MHz	2.5	dB	max.	3.0	dB
850	MHz	…	950	MHz	38	dB	min.	30	dB
950	MHz	…	1110	MHz	36	dB	min.	25	dB
1240	MHz	…	1525	MHz	46	dB	min.	25	dB
1525	MHz	…	1613	MHz	38	dB	min.	30	dB
1850	MHz	…	2200	MHz	32	dB	min.	25	dB
Return loss within PB				**)	14	dB	min.	9	dB
Group delay ripple within PB					6	ns	max.	15	ns
Input power level					-		max.	10	dBm
Permissible DC voltage					-		max.	0	V
Operating temperature range				OTR	-			- 40 °C ... + 85 °C	
Storage temperature range					-			- 40 °C ... + 125 °C	
Temperature coefficient of frequency				TC_f *)	- 73	ppm/K		-	

*) $\Delta f_C(Hz) = Tc_f(ppm/K) \times (T - T_0) \times f_{T0}$ (MHz)
**) at ambient temperature T_0

Generated:

Checked / Approved:

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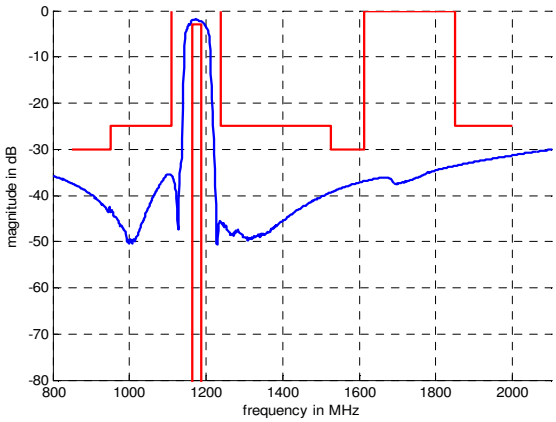
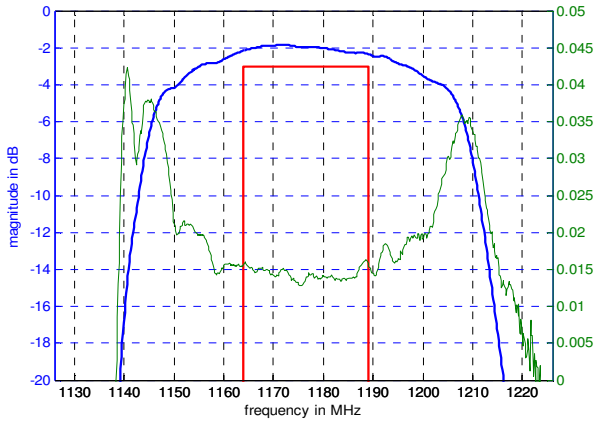
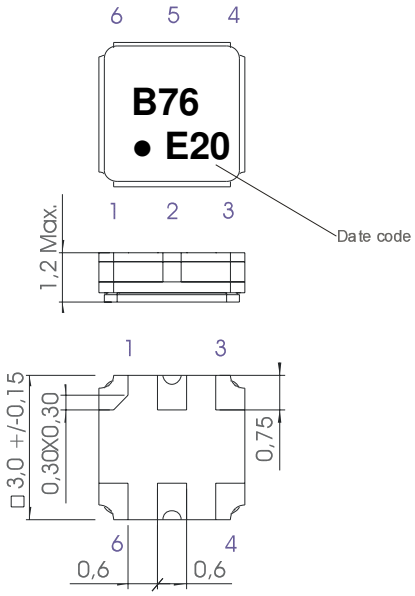
Filter characteristic





Construction and pin connection

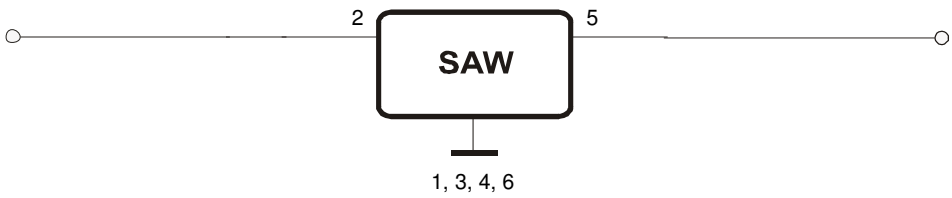
(All dimensions in mm)



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

Date code:	Year + week
E	2014
F	2015
G	2016
...	

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 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;

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

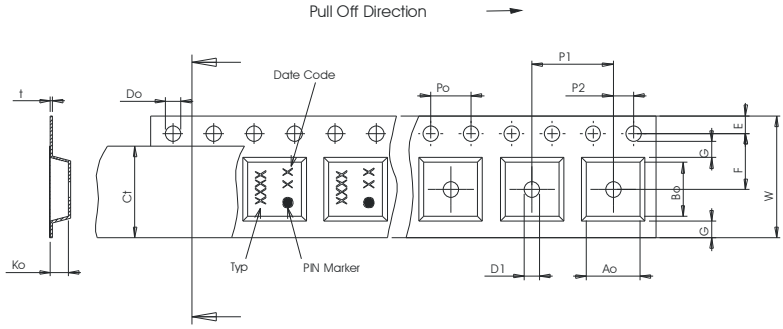
Packing

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;

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

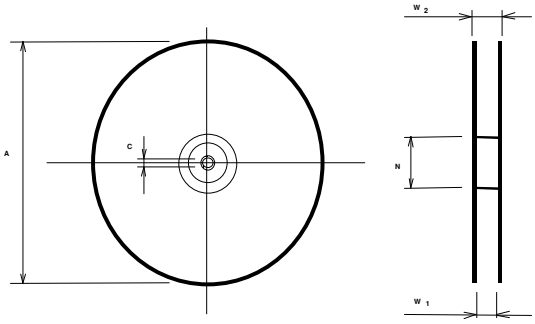
Tape (all dimensions in mm)

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	:	330	or 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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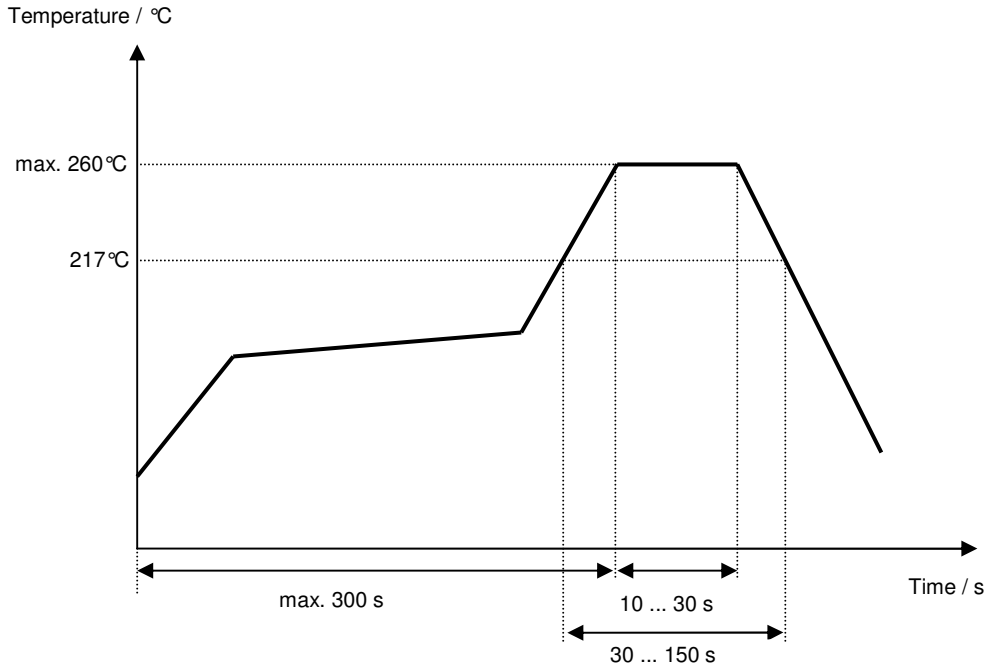
Air reflow temperature conditions

Conditions	**Exposure**
Average ramp-up rate (30℃ to 217℃)	less than 3℃/second
> 100℃	between 300 and 600 seconds
> 150℃	between 240 and 500 seconds
> 217℃	between 30 and 150 seconds
Peak temperature	max. 260℃
Time within 5℃ of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50℃)	less than 6℃/second
Time from 30℃ 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	Martens	18.11.2004
1.1	- Add typical values and filter characteristics - Generation of filter specification	Noack	11.05.2005
1.2	- Change data table (storage temperature range) - Update stability characteristics, reliability and packing	Noack	05.01.2015

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