Measurement condition

Ambient temperature T_A:	23	°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 412.5 MHz without any tolerance or limit. The values of absolute attenuation a_{abs} are guaranteed for the whole operating temperature range OTR_1. 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	1.3	dB	max.	2.5	dB
Insertion loss at T_A		1.3	dB	max.	1.7	dB
Nominal frequency	f_N	-			412.5	MHz
Passband	PB	-		f_N ±	2.5	MHz
Passband variation		0.4	dB	max.	1.5	dB
Passband variation at T_A		0.4	dB	max.	0.8	dB
Absolute attenuation	a_{abs}					
10.0 MHz … f_N - 212.5 MHz		32	dB	min.	28	dB
f_N - 212.5 MHz … f_N - 12.5 MHz		28	dB	min.	25	dB
f_N + 7.5 MHz … f_N + 12.5 MHz in OTR_2		60	dB	min.	30	dB
f_N + 7.5 MHz … f_N + 12.5 MHz		60	dB	min.	20	dB
f_N + 57.5 MHz … f_N + 102.5 MHz		32	dB	min.	25	dB
f_N + 102.5 MHz … f_N + 417.5 MHz		31	dB	min.	25	dB
f_N + 417.5 MHz … 1200.0 MHz		32	dB	min.	30	dB
VSWR within PB		1.4 : 1		max.	2 : 1	
Input power level		-		max.	20 *	dBm
Operating temperature range 1	OTR_1			-40 °C ... +85 °C		
Operating temperature range 2	OTR_2			T_A ... +85 °C		
Storage temperature range				-55 °C ... +125 °C		
Temperature coefficient of frequency	TC_f **	-43	ppm/K			

*) 20 dBm over 1000 h
**) $\Delta f = TC_f(T - T_A)f_N$

Generated:

Checked / Approved:

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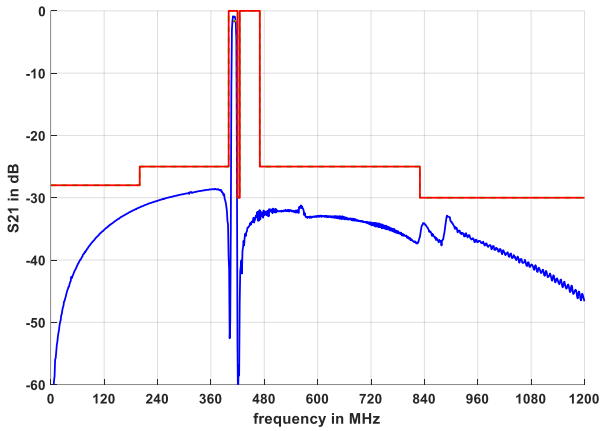
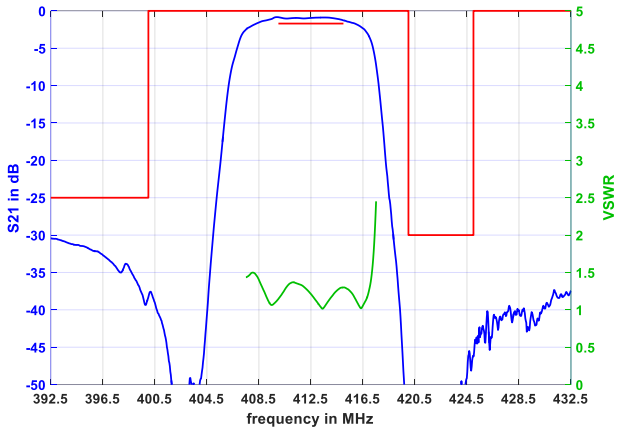
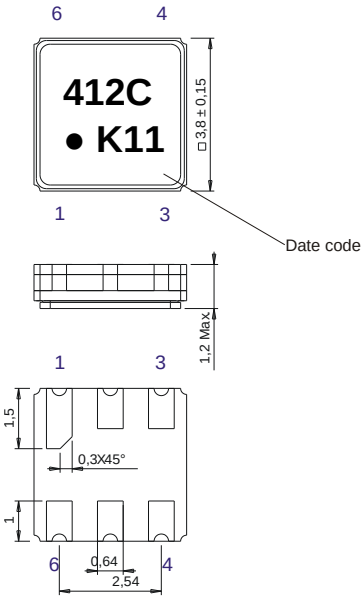
Filter characteristic





Construction and pin connection

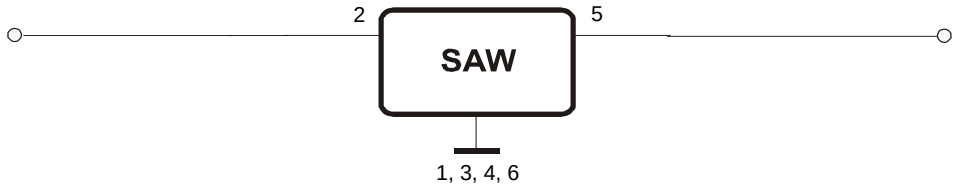
(All dimensions in mm)



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

Date code:	Year + week
K	2018
L	2019
M	2020
...	

50 Ω Test circuit



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Stability characteristics, reliability

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

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;
   DIN IEC 60068 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 60068 T2 - 6

3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
   DIN IEC 60068 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 exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

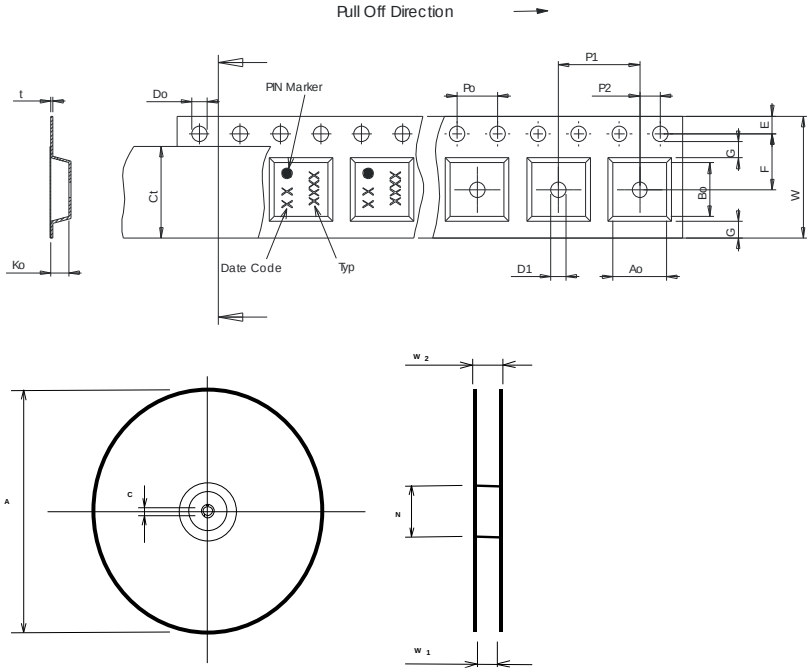
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

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	:	4.30	±0.1
Bo	:	4.30	±0.1
Ct	:	9.2	±0.1
Ko	:	1.80	±0.1
t	:	0.30	±0.05

Reel (all dimensions in mm)

A	:	330	or 180
W1	:	12.4	+2/-0
W2(max)	:	18.40	
N(min)	:	50.00	
C	:	13.0	+0.5/-0.2



The minimum bending radius is 45 mm.

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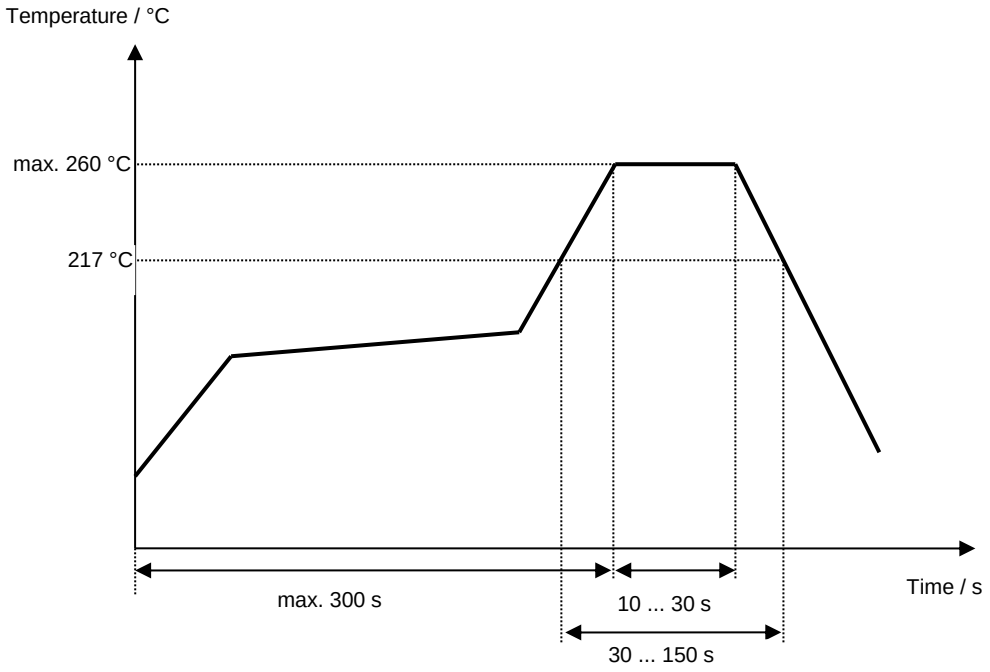
Air reflow temperature conditions

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	– Generation of development specification	S. Springfeldt	21.06.2017
2.0	– Changed data table (adjusted towards filter series 402.5MHz to 457.5MHz)	S. Springfeldt	18.01.2018
3.0	– Update data table (changed TC_f, loss and attenuation goals)	S. Springfeldt	24.01.2018
3.1	- Generation of filter specification	S. Springfeldt	14.03.2018

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