

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Source and load impedance: 75 Ω
 Terminating impedances*
 Input: 238 Ω || -4.3pF
 Output: 238 Ω || -4.3pF

Characteristics

Remark:

The maximum attenuation in the pass band PB1 is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 246MHz 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	max.	3.5	dB
Nominal frequency	f_N				246.0	MHz
Pass band I	PB1			f_N	± 45.5	kHz
Pass band II	PB2			f_N	± 20.0	kHz
Pass band ripple in PB1		0.4	dB	max.	1.0	dB
Pass band variation in PB2		0.1	dB	max.	0.5	dB
Absolute attenuation	a_{abs}					
$f_N - 241.00$ MHz ... $f_N - 4.25$ MHz		50	dB	min.	40	dB
$f_N - 4.25$ MHz ... $f_N - 1.25$ MHz		32	dB	min.	25	dB
$f_N + 1.75$ MHz ... $f_N + 4.75$ MHz		35	dB	min.	20	dB
$f_N + 4.75$ MHz ... $f_N + 241.00$ MHz		46	dB	min.	40	dB
Input power level				max.	0	dBm
Operating temperature range	OTR				-20 °C ... + 80 °C	
Storage temperature range					-40 °C ... + 85 °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.

** $\Delta f_c(\text{Hz}) = TC_f (\text{ppm/K}^2) \times (T - T_0)^2 \times f_{cT_0} (\text{MHz})$

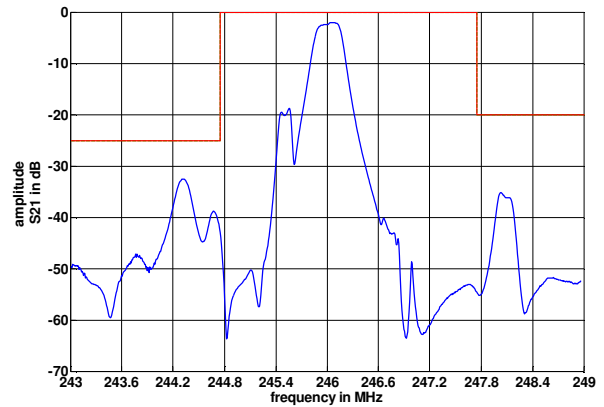
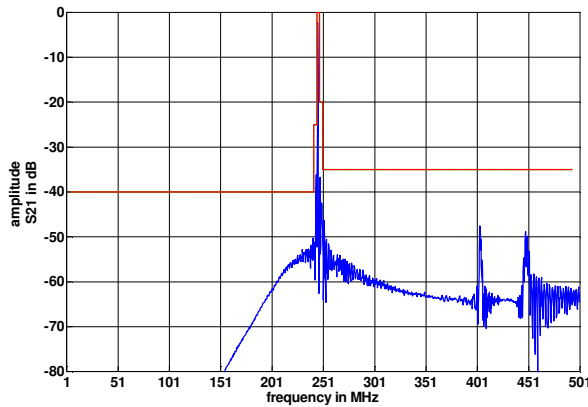
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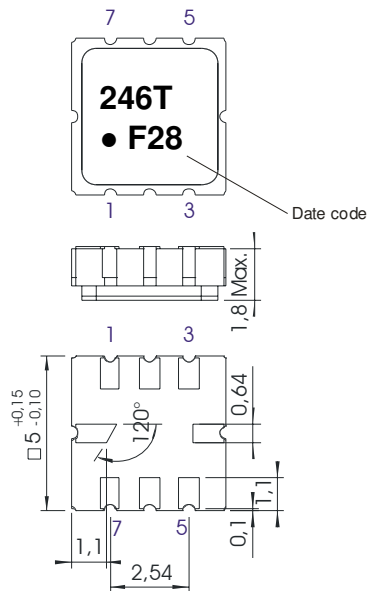
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Filter characteristic



Construction and pin connection

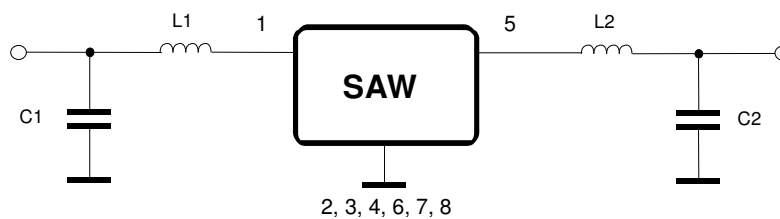
(All dimensions in mm)



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

Date code: Year + week
 F 2015
 G 2016
 H 2017
 ...

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, 1ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10Hz to 500Hz, 0.35 mm or 5g 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. ESD ANSI/ESD S20.20-1999, class 0 for HBM

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

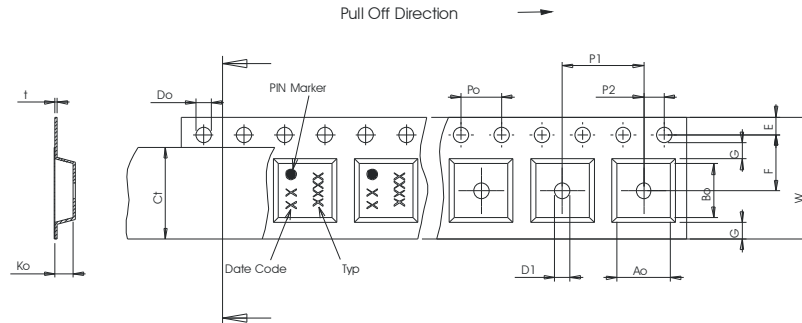
Packing

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

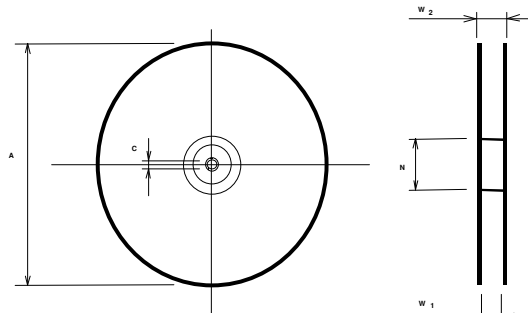
Tape (all dimensions in mm)

- W : 12.00
- Po : 4.00
- Do : 1.50
- E : 1.75
- F : 5.50
- G(min) : 0.75
- P2 : 2.00
- P1 : 8.00
- D1(min) : 1.50
- Ao : 5.30
- Bo : 5.30
- Ct : 9.2 ± 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



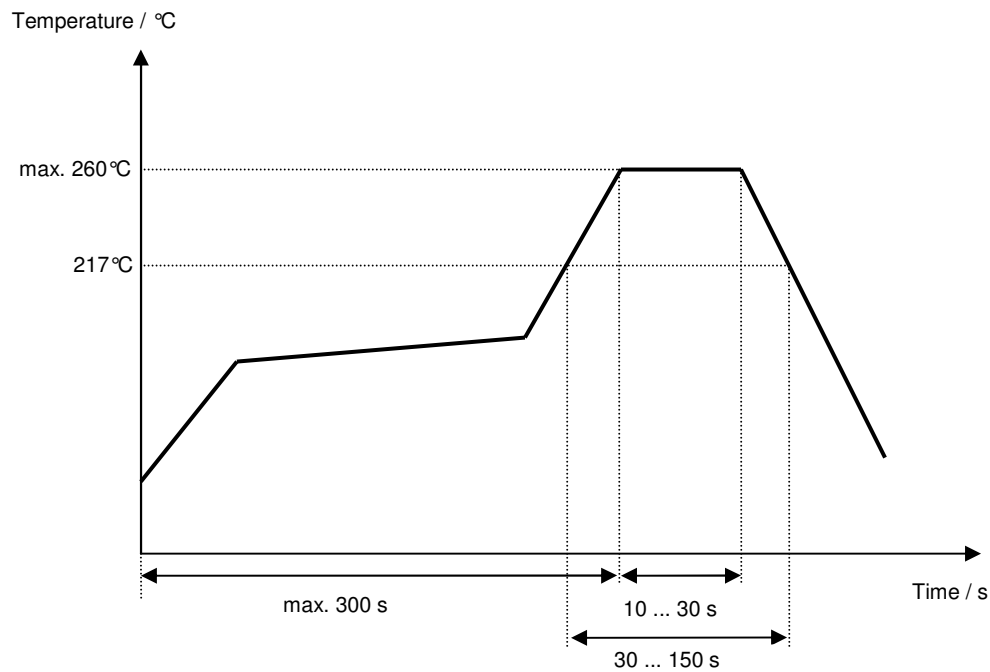
The minimum bending radius is 45 mm.

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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	19.06.2014
2.0	- Change of input power level down to 0 dBm	S.Springfeldt	09.02.2015
3.0	- Tightening far stop band attenuation - Relaxing range from 244.75 MHz to 241.75 MHz (customer relaxation) - Extending temperature range (customer request) - Changing pinning (customer request) - Generating filter specification	S.Springfeldt	07.04.3015
4.0	- Changing matching network due to customer requirement	S.Springfeldt	09.06.2015
5.0	- Change to maximal loss over pass band - Introduction of additional pass band with stricter conditions	S.Springfeldt	07.07.2015
6.0	- Re-entering amplitude ripple requirement from version 4.0 (customer request)	S.Springfeldt	09.07.2015
7.0	- typo- change variation to ripple in PB1	S. Springfeldt	10.07.2015