

Microchip**Filter specification****TFS915Z****1/5****Measurement condition**

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	128 Ω -2.5 pF	
Output:	128 Ω -2.5 pF	

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS915Z is the minimum attenuation in the passband. The minimum attenuation in the passband is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 915 MHz without any tolerance or limit. 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	3.2	dB	max.	5.5	dB
Nominal frequency	f_N	-			915.0	MHz
Passband	PB	-		$f_N \pm$	0.15	MHz
Passband variation	PBV	0.2	dB	max.	3.5	dB
Relative attenuation	a_{rel}					
@ $f_N - 10.7$ MHz		38	dB	min.	20	dB
@ $f_N + 10.7$ MHz		38	dB	min.	20	dB
@ $f_N - 21.4$ MHz		40	dB	min.	30	dB
@ $f_N + 21.4$ MHz		40	dB	min.	30	dB
Group delay ripple within PB	GDR	200	ns	max.	500	ns
Input power level		-		max.	0	dBm
Operating temperature range	OTR	-			-40 °C ... +85 °C	
Storage temperature range		-			-55 °C ... +125 °C	
Frequency inversion temperature		33	°C		-	
Temperature coefficient of frequency	TC_f *)	-0.032	ppm/K ²		-	

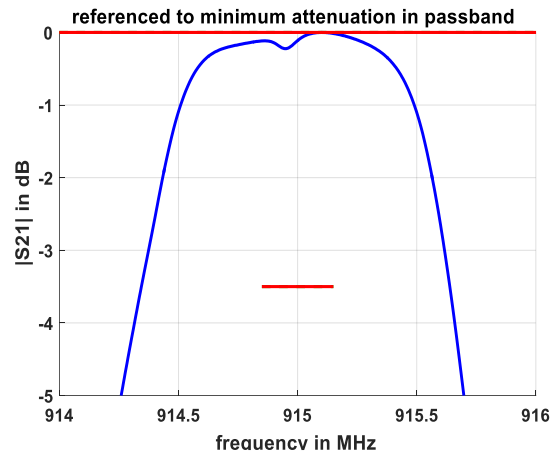
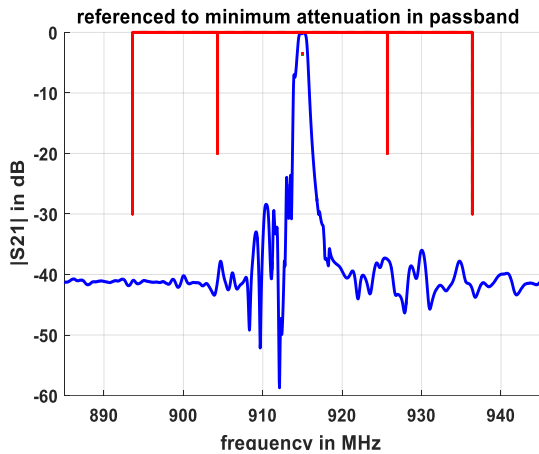
$$*) \Delta f = TC_f (T - T_A)^2 f_N$$

Generated:**Checked / Approved:**

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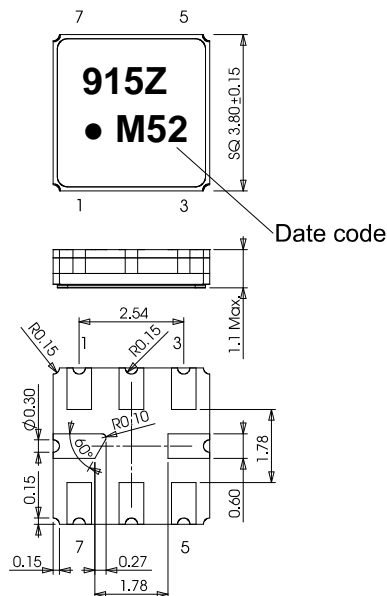
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Filter characteristic



Construction and pin connection

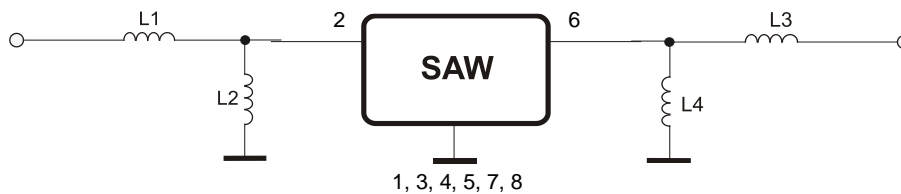
(All dimensions in mm)



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

Date code: Year + week
 M 2020
 N 2021
 P 2022
 ...

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+2015/863/EU)

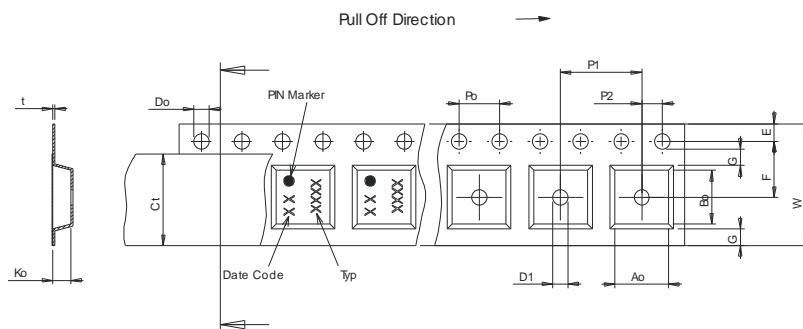
Packing

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

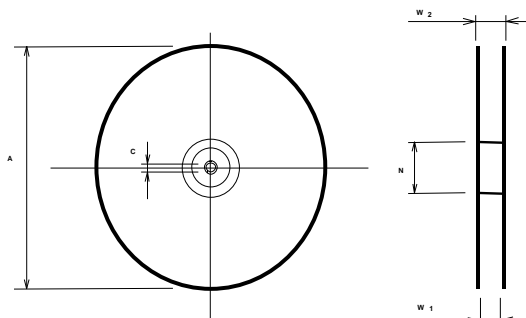
Tape (all dimensions in mm)

- 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.

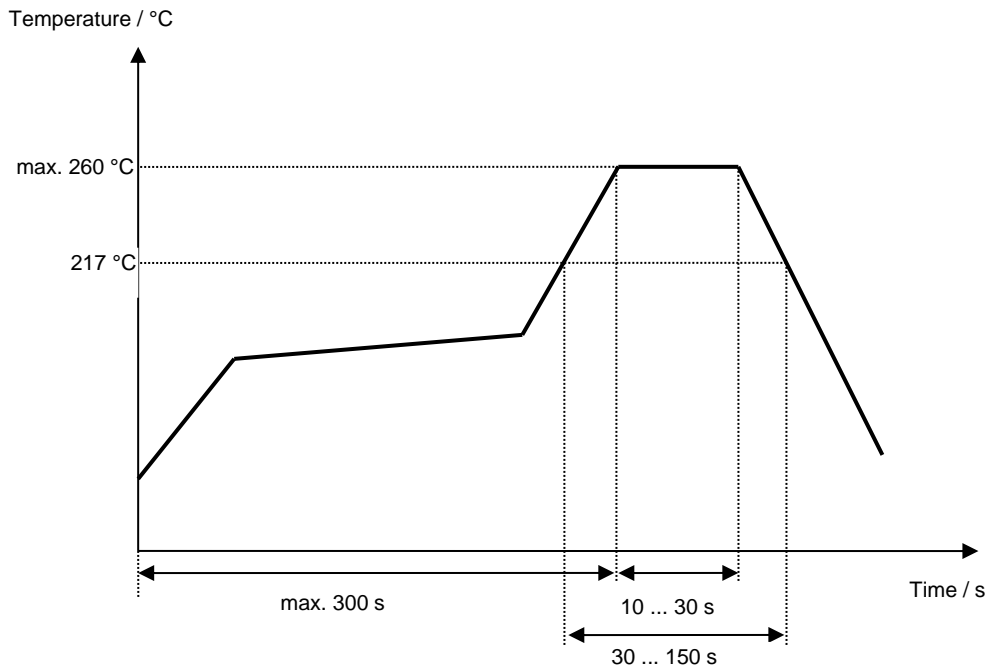
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Air reflow temperature conditions

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



Microchip**Filter specification****TFS915Z****5/5**

History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	P. Jaster	27.08.2020
1.1	- Added typical values and generated filter specification	P. Jaster	10.09.2020
2.0	- Updated data table (typical values, frequency inversion temperature, temperature coefficient of frequency) - Updated filter characteristic	P. Jaster	21.12.2020

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