Measurement condition

Ambient temperature T_A:	23	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS940C is the maximum attenuation in the pass band. The maximum attenuation in the pass band is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 940 MHz without any tolerance or limit. The values of relative attenuation a_{rel} 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	3.7	dB	max.	5	dB
Nominal frequency	f_N	-			940	MHz
Passband	PB	-		f_N ±	22.5	MHz
Passband variation		1.0	dB	max.	1.5	dB
Relative attenuation	a_{rel}					
@1010.1 MHz		50	dB	min.	30	dB
@1057.5 MHz		54	dB	min.	50	dB
@1102.5 MHz		49	dB	min.	45	dB
Group delay ripple within PB p-p		12	ns	max.	25	ns
Return loss		17	dB	min.	10	dB
Input power level		-		max.	0	dBm
Operating temperature range	OTR	-		-10 °C ... +75 °C		
Storage temperature range		-		-20 °C ... +80 °C		
Temperature coefficient of frequency	TC_f *	-72	ppm/K		-	

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

Generated:

Checked / Approved:

Microchip Frequency Technology GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30

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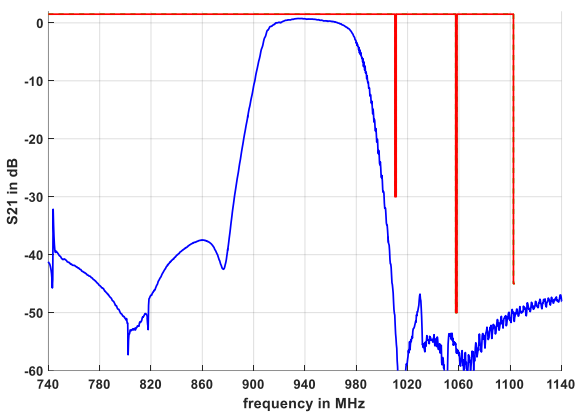
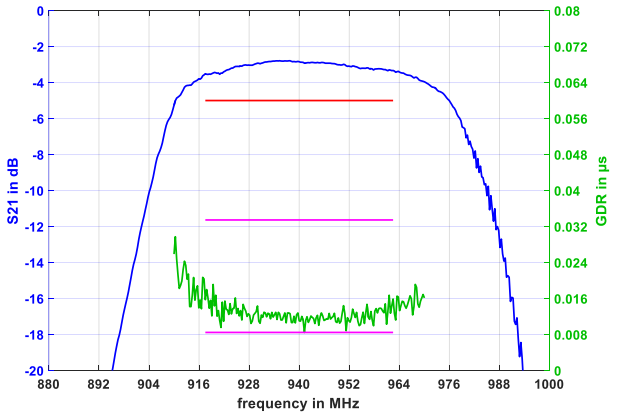
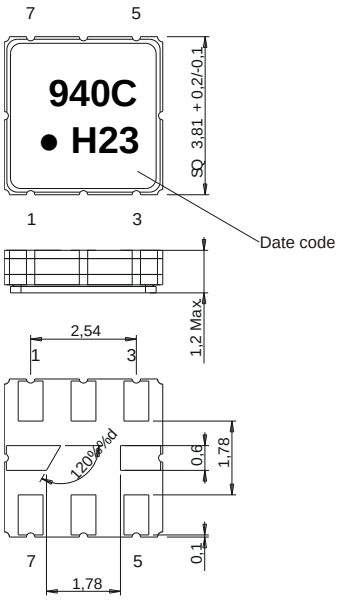
Filter characteristic





Construction and pin connection

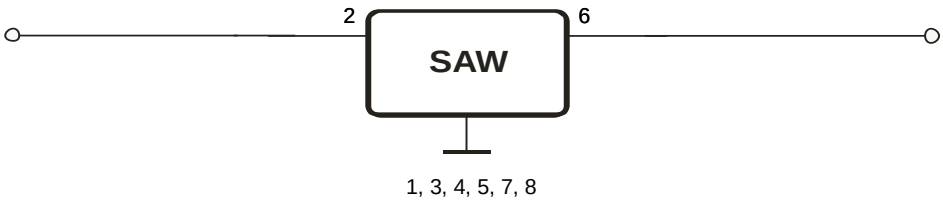
(All dimensions in mm)



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

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

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;

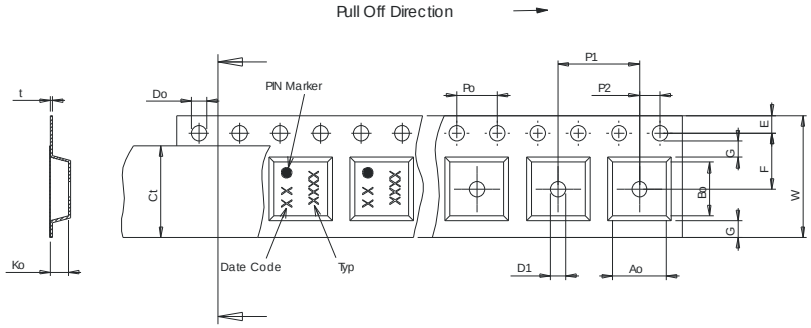
5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

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

Packing

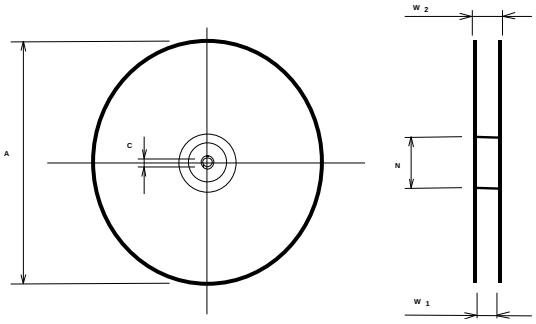
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

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	± 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



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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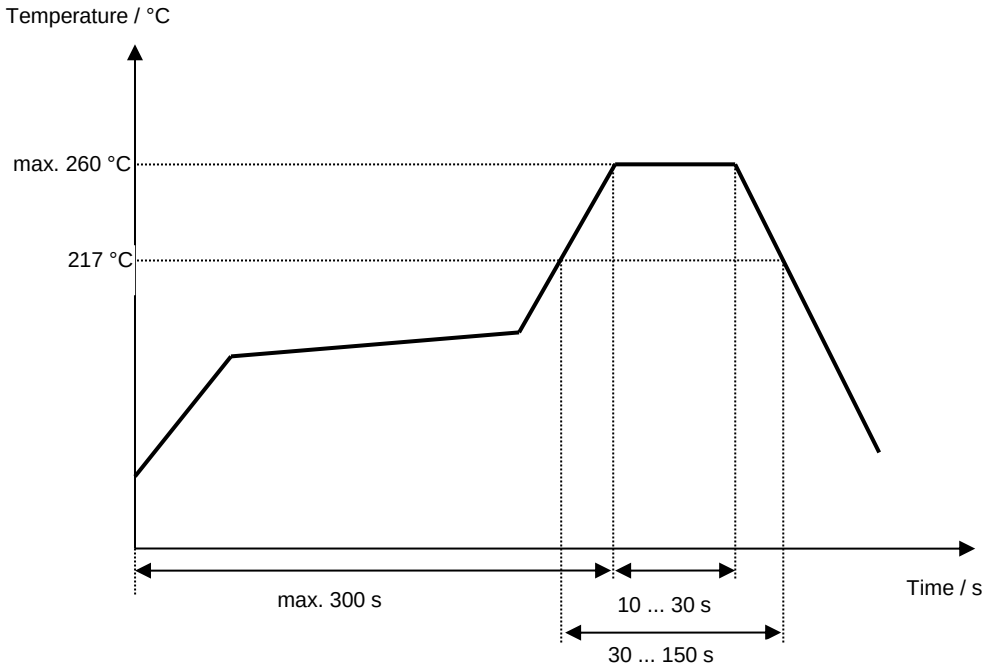
Air reflow temperature conditions

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	- Generation of development specification	Strehl	22.05.2007
1.1	- Add group delay ripple within PB	Strehl	16.07.2007
1.2	- Change characteristic, improve stopband attenuation values	Strehl	11.12.2007
1.3	- Change data	Strehl	05.02.2008
1.4	- Changed Data and generation of filter specification	S. Springfeldt	25.02.2008
2.0	- Update data table (format) - Change of tape and reel direction	S. Springfeldt	09.06.2016

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