Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 251 Ω || -12.7 pF
Output: 203 Ω || -16.6 pF

Characteristics

Remark:
The reference level for the relative attenuation a_{rel} of the TFS175K is the minimum of the pass band attenuation. This value is defined as the insertion loss a_e. The nominal frequency f_N is fixed at 175 MHz without any tolerance. 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 (reference level)	a_e	14,8	dB	max.	16	dB
Nominal frequency	f_N				175	MHz
Passband	PB			f_N ±	18,5	MHz
Pass band ripple		0,4	dB	max.	2	dB
Bandwidth						
3 dB		41,6	MHz	min.	37	MHz
Relative attenuation	a_{rel}					
f_N - 18,5 MHz … f_N + 18,5 MHz		1,6	dB	max.	3	dB
f_N - 60 MHz … f_N - 50 MHz		55	dB	min.	35	dB
f_N - 50 MHz … f_N - 31 MHz		46	dB	min.	30	dB
f_N - 31 MHz … f_N - 24 MHz		9	dB	min.	5	dB
f_N + 24 MHz … f_N + 31 MHz		6	dB	min.	5	dB
f_N + 31 MHz … f_N + 50 MHz		37	dB	min.	30	dB
f_N + 50 MHz … f_N + 60 MHz		39	dB	min.	35	dB
Group delay ripple in PB *)	GDR	7	ns	max.	±9	ns
Group delay variation (unit to unit) *), **)				max.	±2,5	ns
Return loss within PB		7.5	dB	min.	6	dB
Input power level				max.	15	dBm
Operating temperature range	OTR			- 40 °C ... + 85 °C		
Storage temperature range				- 45 °C ... + 85 °C		
Temperature coefficient of frequency	TC_f ****)	-99	ppm/K			

*) time gating window 0 … 0.5µs
**) Measured at centre frequency, and averaged value to account for unit to unit variation and different bandwidth variants
***) $\Delta f_C(Hz) = Tc_f(ppm/K) \times (T - T_o) \times f_{CAT}$ (MHz).

Generated:

Checked / Approved:

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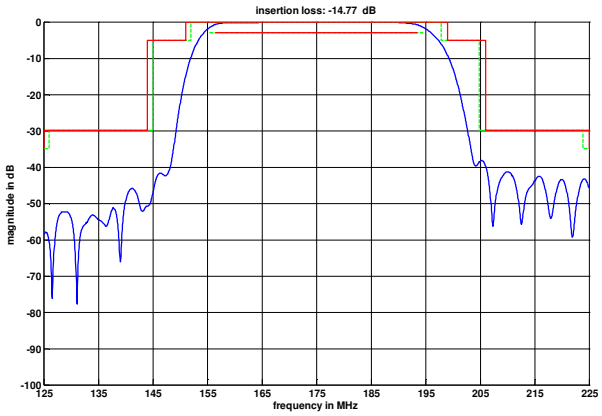
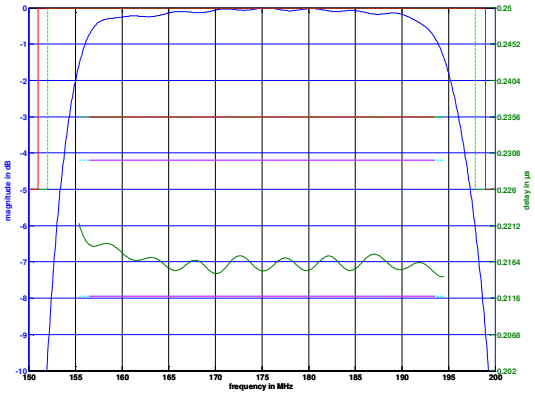
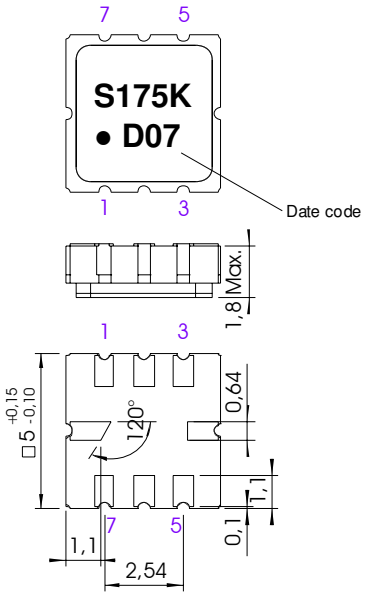
Filter characteristic





Construction and pin connection

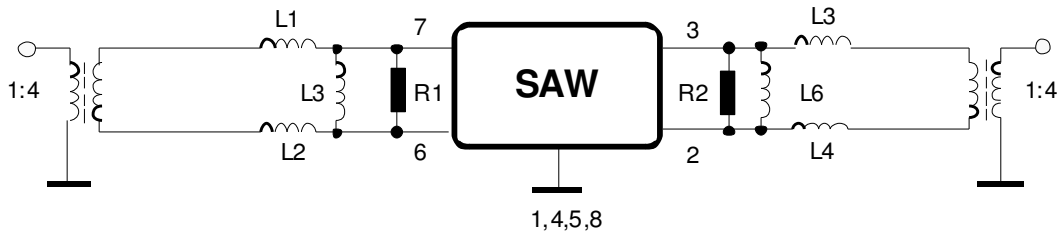
(All dimensions in mm)



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

Date code:	Year + week
D	2013
E	2014
F	2015
...	

50 Ω Test circuit



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Stability characteristics, reliability

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

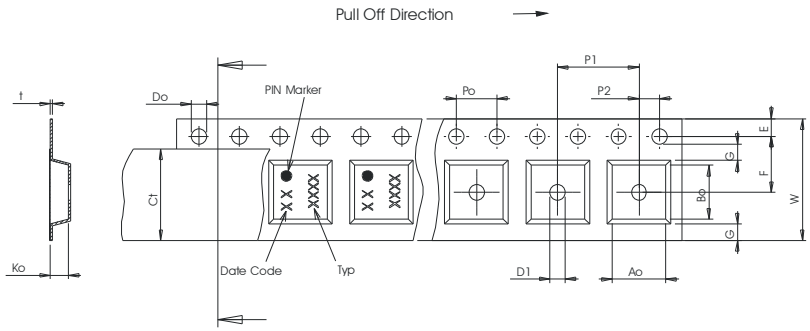
1. Shock:	500g, 1 ms, half sine wave, 3 shocks each plane; DIN IEC 68 T2 - 27
2. Vibration:	10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 68 T2 - 6
3. Change of temperature:	-55 °C to 125°C / 30 min. each / 10 cycles DIN IEC 68 part 2 – 14 Test 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	MIL-STD-883E using coupling network of ISO 10605 and EN 6100-4-2 HBM:250V;

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

Packing

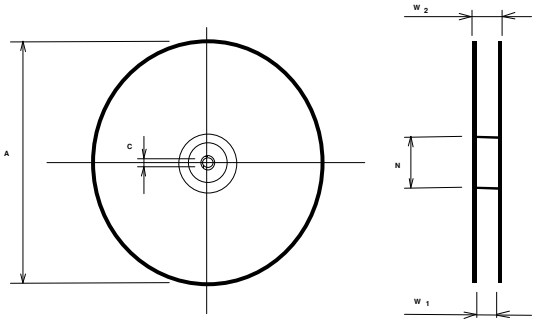
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

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
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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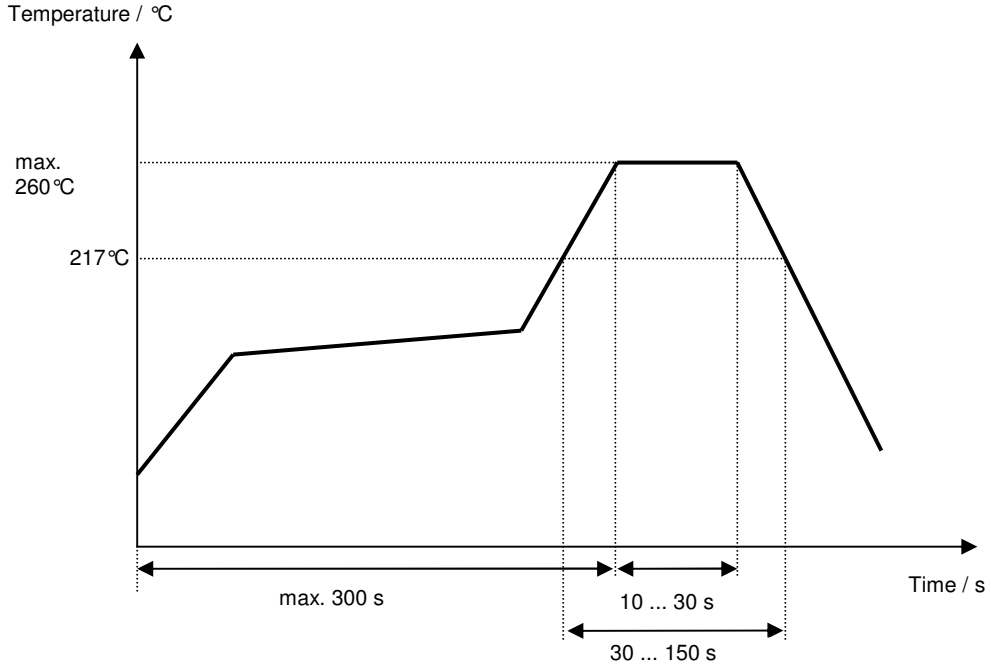
Air reflow temperature conditions

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	Chilla	09.07.2011
2.0	- Added time gating window - Removed triple transit level and triple transit delay	Chilla	02.11.2012
3.0	- Created filter specification - Added terminating impedance - Added typical values - Added filter characteristic - Added test circuit - Changed packing	Chilla	13.02.2013

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