

VI TELEFILTER**Filter specification****TFS 160K****1/5****Measurement condition**

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	244 Ω	-7,7 pF
Output:	244 Ω	-7,7 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 160K 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 160,0 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	16,5	dB	max.	18,0 dB
Nominal frequency	f_N				160,0 MHz
Passband	PB	44,5	MHz	$f_N \pm$	21,0 MHz
Pass band ripple		1,3	dB	max.	2,0 dB
Amplitude ripple in any 200kHz segment within PB		0,2	dB		-
Relative attenuation	a_{rel}				
f_N	... $f_N \pm$	21,0	MHz	1,3	dB
$f_N -$	50,0 MHz ... $f_N -$	44,0	MHz	45	dB
$f_N +$	44,0 MHz ... $f_N +$	50,0	MHz	43	dB
Absolute group delay within PB		390	ns	max.	750 ns
IIP3	**	32	dBm		-
Input power level				max.	10 dBm
Operating temperature range	OTR				-10 °C ... + 80 °C
Storage temperature range					- 55 °C ... + 85 °C
Temperature coefficient of frequency	TC_f ***	- 75	ppm/K		-

*) The terminating impedances depend on parasites 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.

***) $f_{in1} = 156$ MHz; $f_{in2} = 158$ MHz; $P_{in} = 0$ dBm $f_{measurement} = 160$ MHz

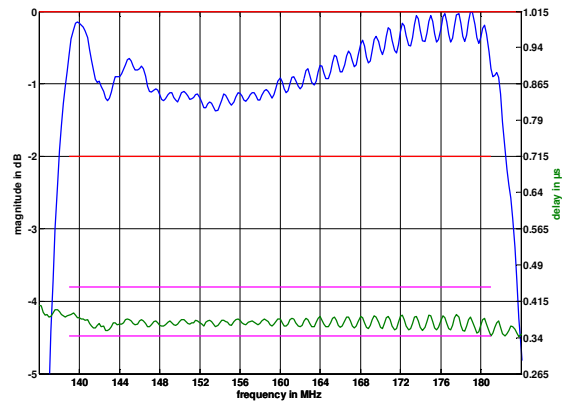
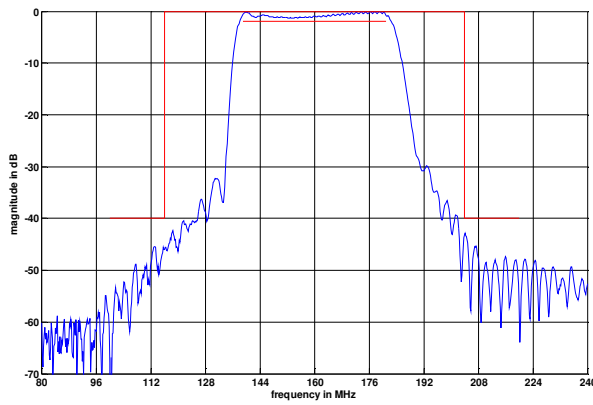
****) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$

Generated:**Checked / Approved:**

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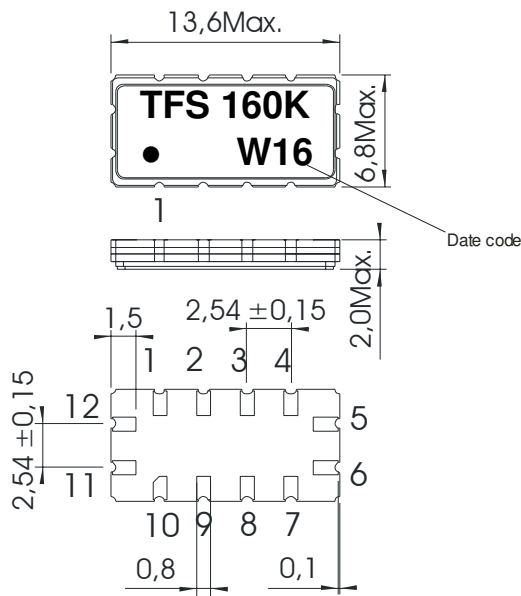
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Filter characteristic



Construction and pin connection

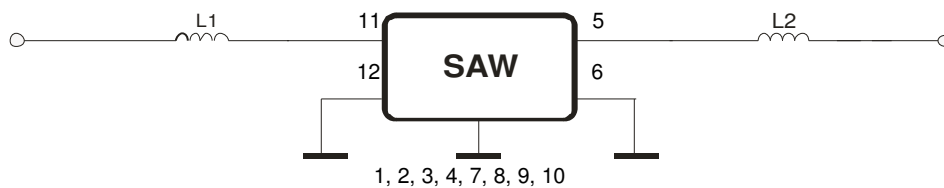
(All dimensions in mm)



- 1 Ground
- 2 Ground
- 3 Ground
- 4 Ground
- 5 Output
- 6 Output RF Return
- 7 Ground
- 8 Ground
- 9 Ground
- 10 Ground
- 11 Input
- 12 Input RF Return

Date code: Year + week
 W 2008
 X 2009
 A 2010
 ...

50 Ohm 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 plan, 3 plans;
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;

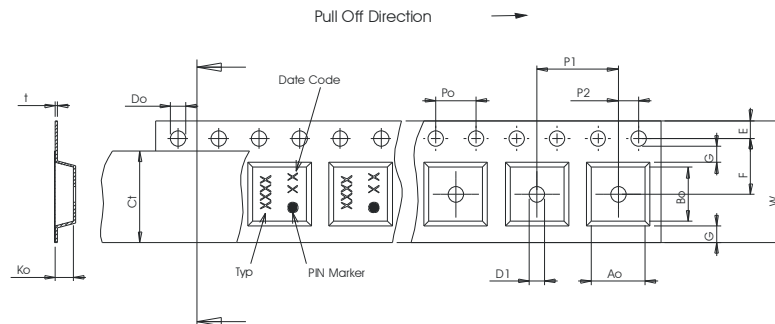
This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

Packing

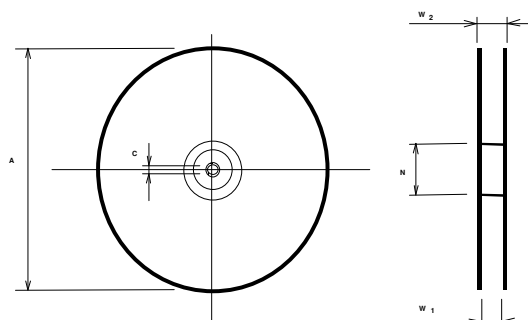
Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel: 1700
 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 : 24,00 +0,30/-0,10
 - Po : 4,00 ± 0,1
 - Do : 1,50 +0,1/-0
 - E : 1,75 ± 0,10
 - F : 11,50 ± 0,10
 - G(min) : 0,60
 - P2 : 2,00 ± 0,1
 - P1 : 12,00 ± 0,1
 - D1(min) : 1,50
 - Ao : 7,10 ± 0,10
 - Bo : 13,90 ± 0,10
 - Ct : 21,5 ± 0,1



- Reel (all dimensions in mm)**
- A : 330
 - W1 : 24,4 +2/-0
 - W2(max) : 30,4
 - N(min) : 60
 - C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

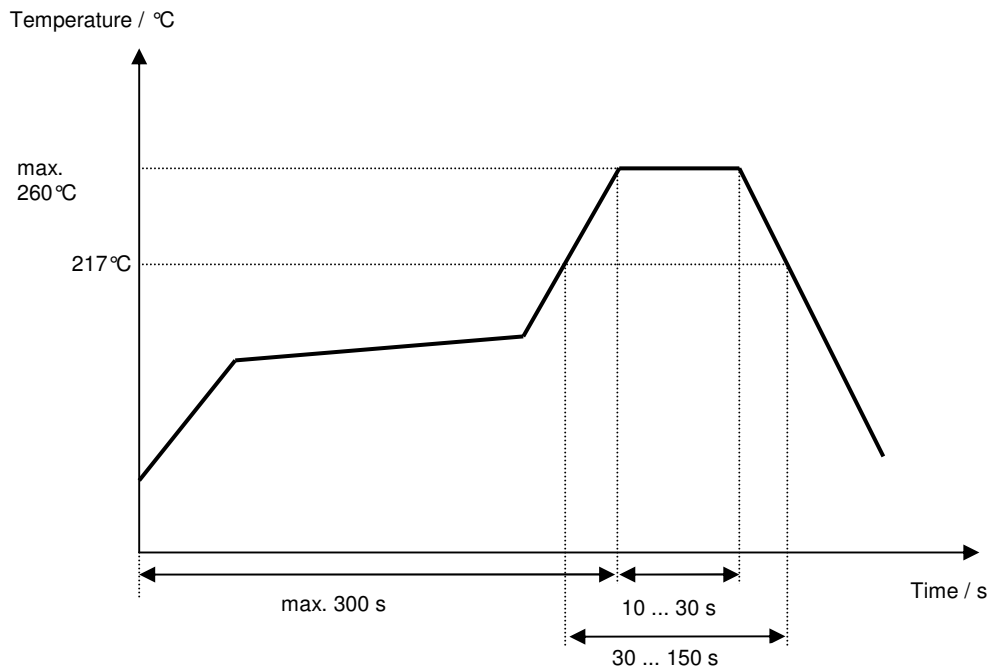
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Air reflow temperature conditions

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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VI TELEFILTER**Filter specification****TFS 160K****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Strehl	15.11.2007
1.1	- Changed data	Strehl	03.12.2007
1.2	- Created filter specification - Added terminating impedances - Added typical values - Added temperature coefficient of frequency - Added filter characteristic - Added test circuit	Chilla	18.04.2007

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