

VI TELEFILTER

Filter specification

TFS 160G

1/5

Measurement condition

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	29 Ω -6,0 pF	
Output:	78 Ω 0 pF	

Characteristics

Remark:

The nominal frequency f_N is fixed at 160 MHz. The insertion loss a_e is defined as loss value determined at f_N . Reference level for the relative attenuation a_{rel} of the TFS 160G is the insertion loss a_e . The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 35 dB filter attenuation level relative to the insertion loss a_e . All specified data are met within the operating temperature range.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	a_e	22,8	dB	max.	24	dB
Nominal frequency	f_N	-			160,0	MHz
Centre frequency	f_C^{**}	160,0	MHz	max.	± 120	kHz
Passband	PB	-		f_C	± 9,4	MHz
Pass band ripple (p-p)		0,5	dB	max.	1	dB
Bandwidth	BW					
1 dB		19,2	MHz	min.	18,8	MHz
3 dB		19,7	MHz	min.	19,5	MHz
35 dB		21,6	MHz	max.	21,7	MHz
50 dB		21,9	MHz	max.	22,0	MHz
Relative attenuation	a_{rel}					
f_C	$f_C \pm 9,4$ MHz	0,5	dB	max.	1	dB
$f_C \pm 9,4$ MHz	$f_C \pm 9,7$ MHz	2	dB	max.	3	dB
$f_C \pm 10,8$ MHz	$f_C \pm 11$ MHz	38	dB	min.	35	dB
$f_C - 140$ MHz	$f_C - 11$ MHz	54	dB	min.	50	dB
$f_C + 11$ MHz	$f_C + 400$ MHz	52	dB	min.	48	dB
Group delay ripple within PB (p-p)		40	ns	max.	200	ns
Operating temperature range	OTR	-			- 25 °C ... + 80 °C	
Storage temperature range		-			- 40 °C ... + 85 °C	
Temperature coefficient of frequency	TC_f^{***}	-75	ppm/K		-	

*) 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.

**) at ambient temperature

***) $\Delta f_C(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_A) \times f_{CAT}(\text{MHz})$

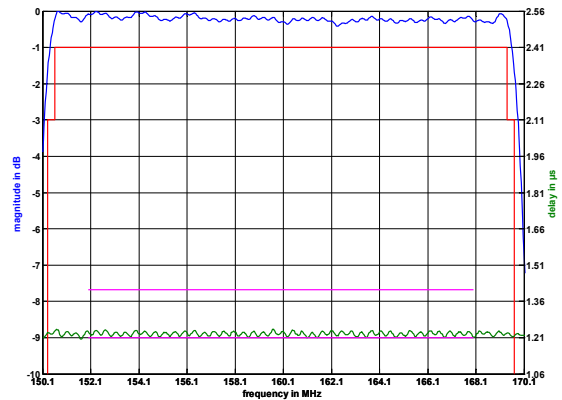
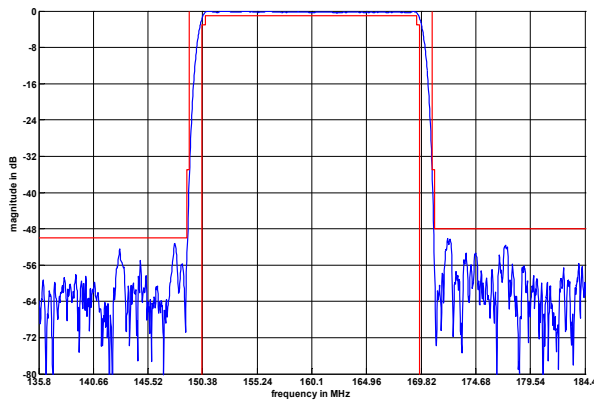
Generated:

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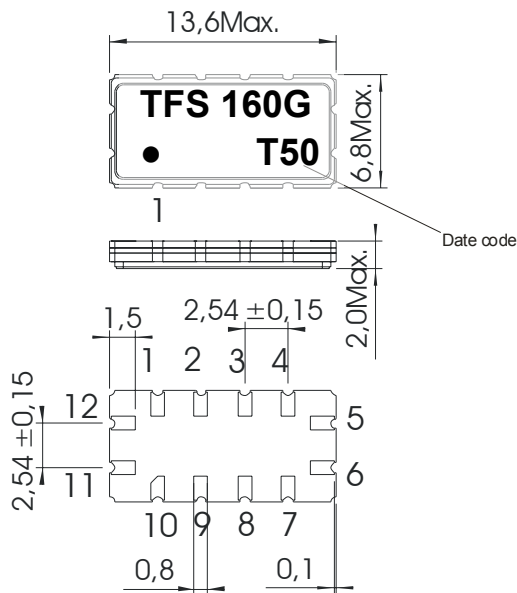
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Filter characteristic



Construction and pin connection

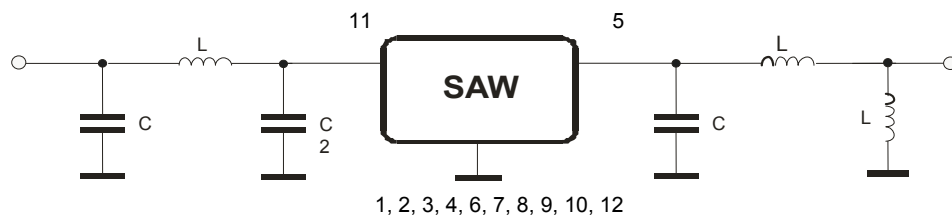
(All dimensions in mm)



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
 T 2005
 U 2006
 V 2007
 ...

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 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: twice max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

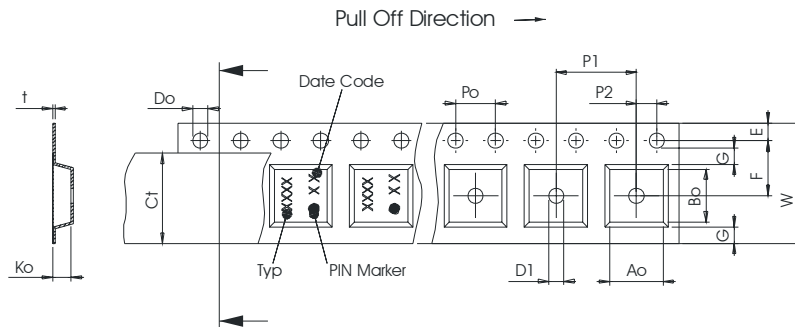
This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

Packing

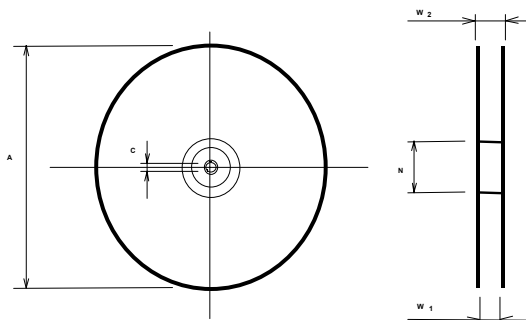
Tape & Reel: IEC 286 – 3, with exeption of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer 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 160G****5/5****History**

Version	Reason of changes	Name	Date
1.0	- Generation of development specification	Strehl	24.05.2005
1.1	- terminating impedance, typical values, filter characteristic and matching configuration added - limits for relative attenuation in $f_c + 11$ MHz... $f_c + 400$ MHz changed to 48dB	Pfeiffer	28.10.2005
1.2	- limits of insertion loss, centre frequency and relative attenuation changed - stability characteristics modified	Pfeiffer	09.12.2005

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