

VI TELEFILTER

Filter specification

TFS 149C

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0. dBm
 Terminating impedance: *
 Input: 18 Ω || -4,5 pF
 Output: 33 Ω || -6,3 pF

Characteristics

Remark: Reference level for the relative attenuation a_{rel} of the TFS149C is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The reference frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 28 dB filter attenuation level relative to the insertion loss a_e . The temperature coefficient of frequency T_{Cf} is valid both for the reference frequency f_c and the frequency response of the filter in the operating temperature range. The bandwidth 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)	$a_e = a_{min}$	25	dB	max.	26 dB
Centre frequency at ambient temperature T_A	f_c	149,9	MHz	$149,9 \pm 0,1$	MHz
Pass band	PB	-		$f_c \pm 7,1$	MHz
Pass band ripple (p-p) :		0,7	dB	max.	1,2 dB
Bandwidth within operating temperature range					
1,2 dB		-		min.	14,1 MHz
3 dB		-		min.	14,4 MHz
28 dB		-		max.	15,2 MHz
43 dB		-		max.	15,3 MHz
48 dB		-		max.	17 MHz
Relative attenuation	a_{rel}				
f_c	$f_c \pm 7,05$ MHz	0,7	dB	max.	1,2 dB
$f_c \pm 7,05$ MHz	$f_c \pm 7,2$ MHz	2,5	dB	max.	3 dB
$f_c + 7,6$ MHz	$f_c + 7,9$ MHz	38	dB	min.	28 dB
$f_c + 7,9$ MHz	$f_c + 8,5$ MHz	50	dB	min.	43 dB
$f_c + 8,5$ MHz	$f_c + 11$ MHz	45	dB	min.	40 dB
$f_c + 11$ MHz	$f_c + 22,9$ MHz	51	dB	min.	48 dB
$f_c - 22,9$ MHz	$f_c - 14$ MHz	53	dB	min.	48 dB
$f_c - 14$ MHz	$f_c - 13$ MHz	44	dB	min.	42 dB
$f_c - 13$ MHz	$f_c - 8,5$ MHz	50	dB	min.	48 dB
$f_c - 8,5$ MHz	$f_c - 7,8$ MHz	45	dB	min.	43 dB
$f_c - 7,8$ MHz	$f_c - 7,6$ MHz	35	dB	min.	28 dB
$f_c \pm 22,9$ MHz	$f_c \pm 95$ MHz	60	dB	min.	50 dB
Group delay (mean value in PB)		2,9	µs	max.	4 µs
Group delay ripple in PB:		150	ns	max.	200 ns
Temperature coefficient of frequency	T_{Cf}	- 81	ppm/K	-	
Frequency deviation of f_c over temperature		$\Delta f_c(\text{Hz}) = T_{Cf}(\text{ppm/K}) \times (T - T_A) \times f_{cTA} (\text{MHz})$			
Operating temperature range		-		- 25 °C ... + 80 °C	
Storage temperature range		-		- 40 °C ... + 85 °C	

*) 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.

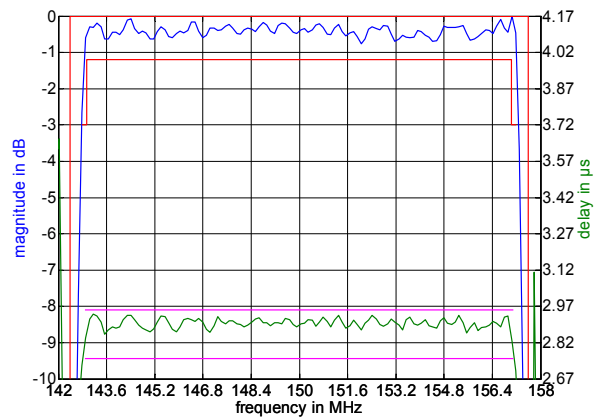
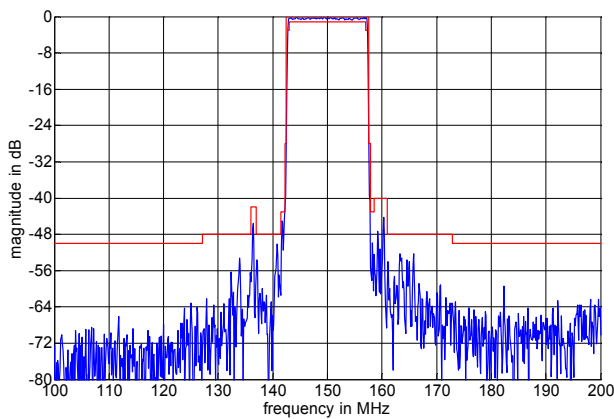
generated: _____

checked / approved: _____

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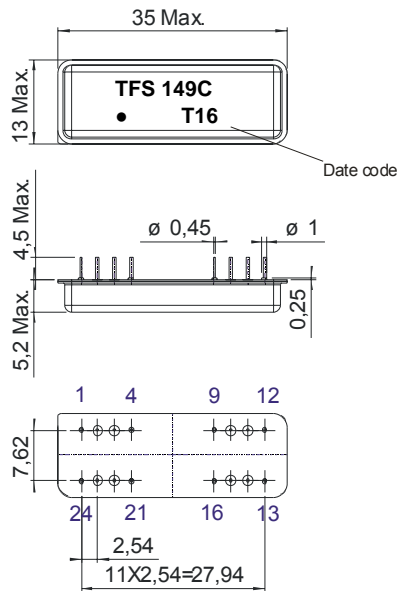
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Filter characteristic



Construction and pin connection

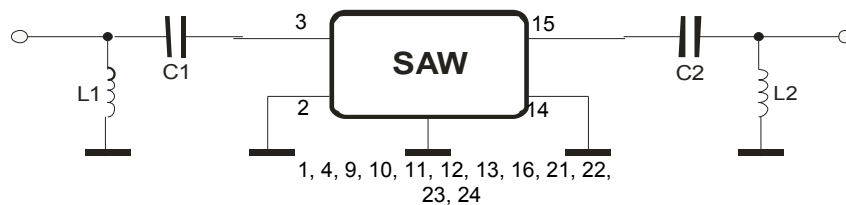
(All dimensions in mm)



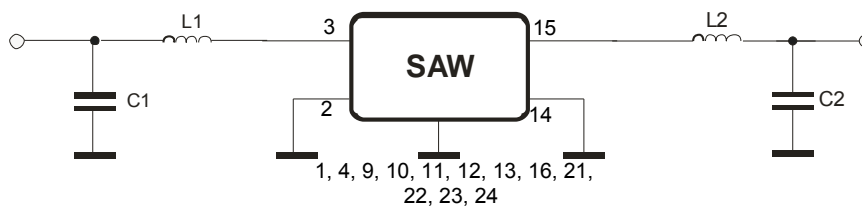
- 1 Ground
- 2 Input RF Return
- 3 Input
- 4 Ground
- 9,10,11,12 Ground
- 13 Ground
- 14 Output RF Return
- 15 Output
- 16 Ground
- 21,22,23,24 Ground

Date code: Year + week
 T 2005
 U 2006
 V 2007
 ...

50 Ohm Test circuit



alternative:



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Stability characteristics :

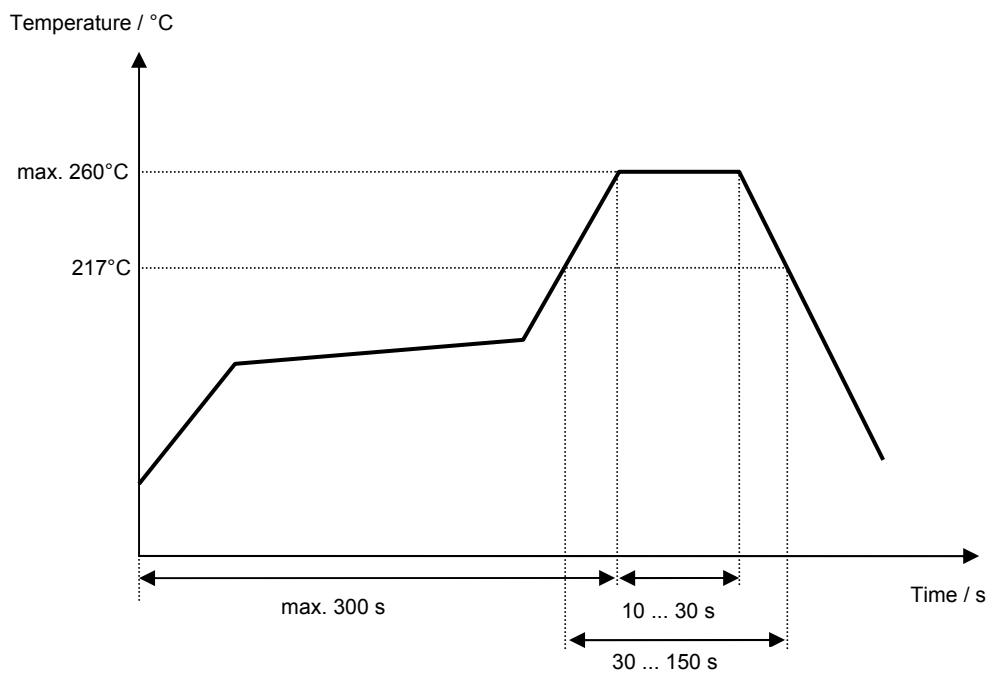
After the following tests the filter shall meet the whole specification:

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 5g 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;

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	- generate development specification	Steiner	21.02.2005
1.1	- correct attenuation according to customer request	Steiner	22.02.2005
1.2	- terminating impedance, typical values and filter characteristic added - matching configuration modified	Pfeiffer	06.04.2005