

VI TELEFILTER

Filter specification

TFS 868

1/5

Measurement condition

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	132 Ω -2,2 pF	
Output:	132 Ω -2,2 pF	

Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the TFS 868 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 centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed on 868,39 MHz without tolerance. The given values for the relative attenuation a_{rel} have to be reached at the frequencies given below also if the centre frequency f_c is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_c .

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)		$a_e = a_{min}$	3,4 dB 3,1 dB	max. max.	4,7 dB 4,2 dB **	
Nominal frequency		f_N			868,39	MHz
Centre frequency		f_c	868,39			MHz
Bandwidth		BW				
3	dB		1,2	MHz	min.	600 kHz
3	dB		1,2	MHz	min.	780 kHz**
6	dB		1,4	MHz	min.	800 kHz
6	dB		1,4	MHz	min.	980 kHz**
Relative attenuation		a_{rel}				
f_N	...	$f_N - 390$ kHz	0,8	dB	max.	3 dB
f_N	...	$f_N + 210$ kHz	0,8	dB	max.	3 dB
f_N	...	$f_N \pm 390$ kHz	0,8	dB	max.	3 dB**
$f_N - 390$	...	$f_N + 310$ kHz	0,8	dB	max.	6 dB
$f_N \pm 390$	...	$f_N \pm 490$ kHz	1,6	dB	max.	6 dB**
$f_N - 3,37$	MHz	$f_N - 18,39$ MHz	33	dB	min.	25 dB
$f_N - 3,19$	MHz	$f_N - 18,39$ MHz	33	dB	min.	25 dB**
$f_N - 18,39$	MHz	$f_N - 38,39$ MHz	59	dB	min.	32 dB
$f_N - 38,39$	MHz	$f_N - 168,39$ MHz	54	dB	min.	35 dB
$f_N - 168,39$	MHz	$f_N - 858,39$ MHz	52	dB	min.	50 dB
$f_N + 2,61$	MHz	$f_N + 6,11$ MHz	39	dB	min.	11 dB
$f_N + 6,11$	MHz	$f_N + 14,61$ MHz	45	dB	min.	22 dB
$f_N + 14,61$	MHz	$f_N + 31,61$ MHz	33	dB	min.	30 dB
$f_N + 31,61$	MHz	$f_N + 131,61$ MHz	48	dB	min.	35 dB
Input power level			-		max.	0 dBm
Operating temperature range		OTR	-		- 45 °C ... + 90 °C	
Storage temperature range			-		- 45 °C ... + 90 °C	
Frequency inversion temperature			5	°C		
Temperature coefficient of frequency		TC_f ***	-0,04	ppm/K ²		

*) 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

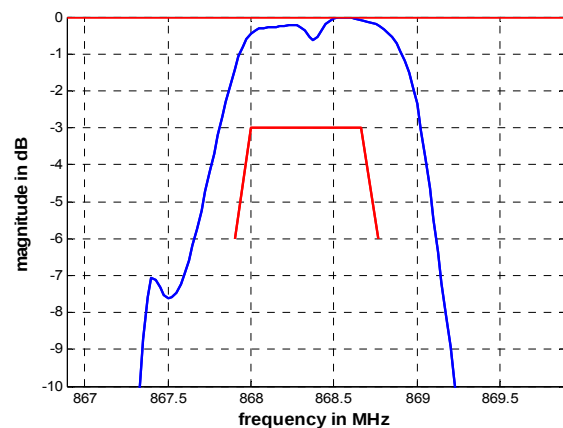
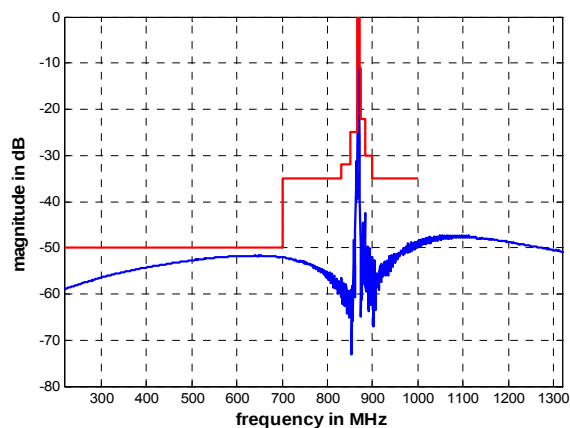
***) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T_o - T_A)^2 \times f_{CAT}(\text{MHz})$

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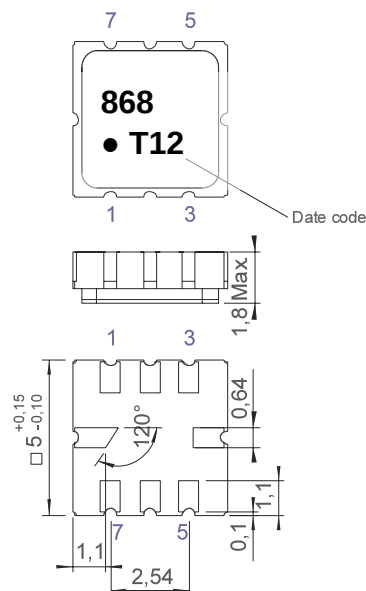
Checked / approved:

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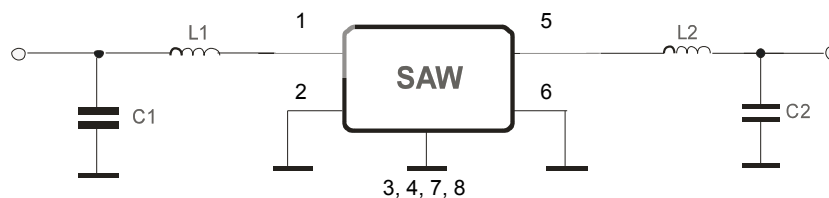
VI TELEFILTER**Filter specification****TFS 868****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



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

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

50 Ohm Test circuit

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VI TELEFILTER**Filter specification****TFS 868****3/5****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 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;

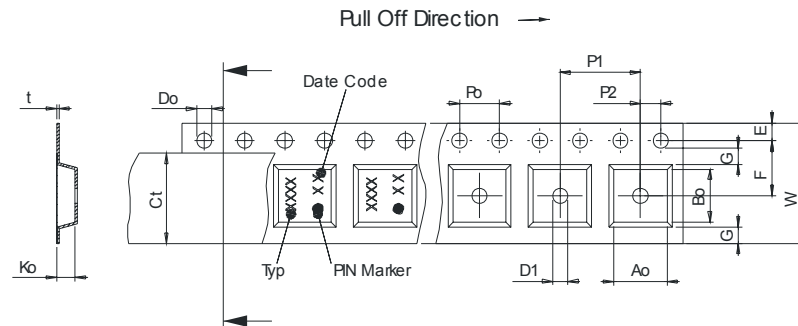
Packing

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;

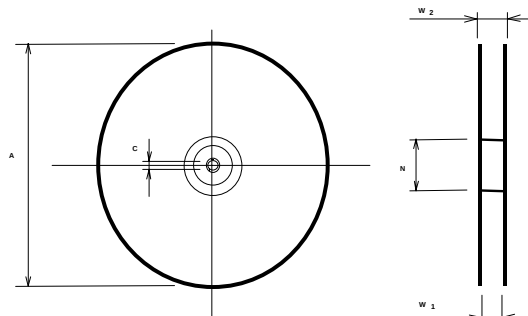
max. pieces of filters peer reel: 3000
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

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	: 5,30 ± 0,1
Bo	: 5,30 ± 0,1
Ct	: 9,5 ± 0,1

**Reel (all dimensions in mm)**

A	: 330
W1	: 12,4 +2/-0
W2(max)	: 18,4
N(min)	: 50
C	: 13,0 +0,5/-0,2



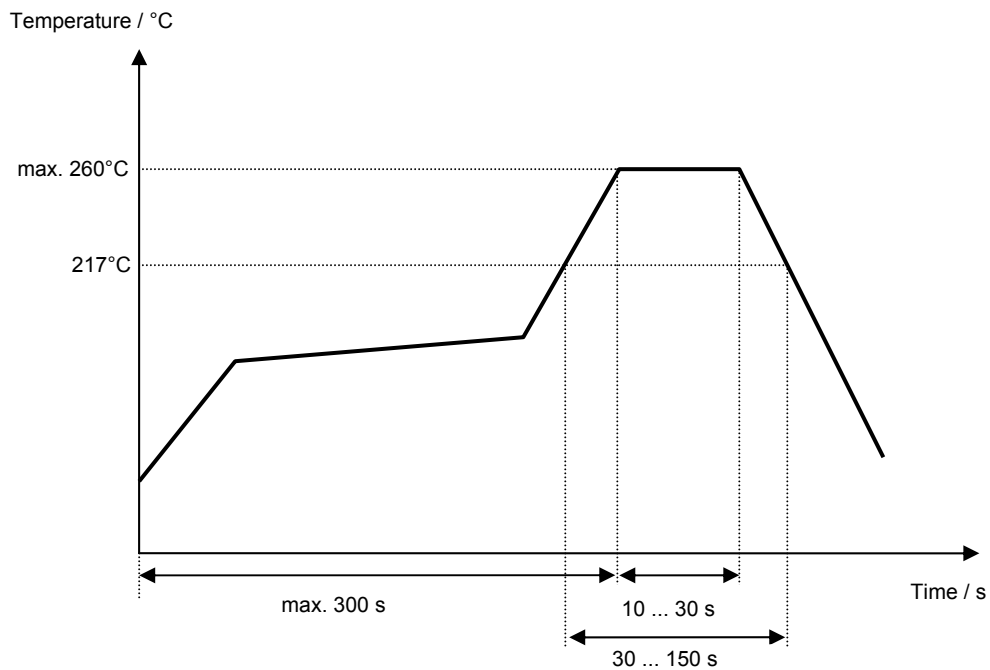
The minimum bending radius is 45 mm.

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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

VI TELEFILTER**Filter specification****TFS 868****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- generated specification according to customer requirement	Dr. Sabah	25.01.2001
1.1	- correct of -3dB bandwidth	Dr. Sabah	20.12.2001
1.2	- generation of filter specification; add typical value add filter characteristic; change air reflow profile	Noack	16.03.2005