Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Terminating impedance: *
Input: 670 Ω || -4,0 pF
Output: 800 Ω || -3,4 pF

Characteristics

Remark:
Reference level for the relative attenuation a_{rel} of the TFS 464B 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 1dB filter attenuation level relative to the insertion loss a_e. The nominal frequency f_N is fixed on 464,0 MHz without tolerance. The given values for the relative attenuation a_{rel} and for the group delay ripple 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)	$a_e = a_{min}$	9,0	dB	max.	13,0	dB
Nominal frequency	f_N	-			464,00	MHz
Centre frequency	f_C	464,050	MHz		-	
Passband		-			f_N ± 1,575	MHz
Pass band ripple		0,5		max.	1,0	dB
1dB bandwidth		3,38	MHz	min.	3,15	MHz
				max.	3,75	MHz
Relative attenuation	a_{rel}					
f_N - 200 MHz … f_N - 96 MHz		70	dB	min.	40	dB
f_N - 96 MHz … f_N - 47 MHz		60	dB	min.	50	dB
f_N - 47 MHz … f_N - 3,5 MHz		45	dB	min.	40	dB
f_N + 3,5 MHz … f_N + 192 MHz		44	dB	min.	40	dB
f_N + 192 MHz … f_N + 200 MHz		60	dB	min.	30	dB
Return loss within PB		13	dB	min.	10	dB
Group delay ripple		95	ns	max.	200	ns
Operating temperature range	OTR	-		- 40 °C ... + 85°C		
Storage temperature range		-		- 45 °C ... + 85°C		
Frequency inversion temperature		30	°C			
Temperature coefficient of frequency	TC_f **	-0,036	ppm/K²			

*) - 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.
- Goal is to have a terminating impedance near 200Ω II C

**) $\Delta f(Hz) = TC_f(ppm/K^2) \times (T-T_0)^2 \times f_{cat}(MHz)$.

Generated:

Checked / Approved:

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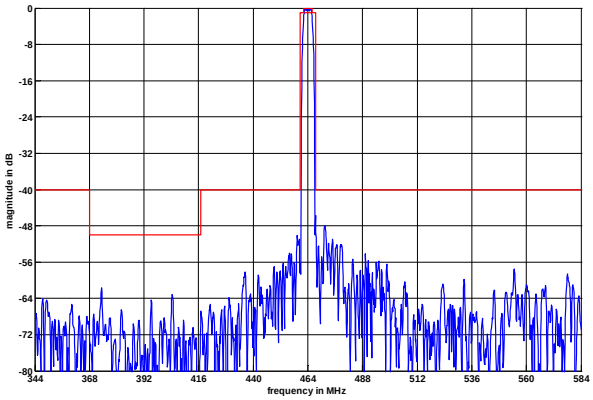
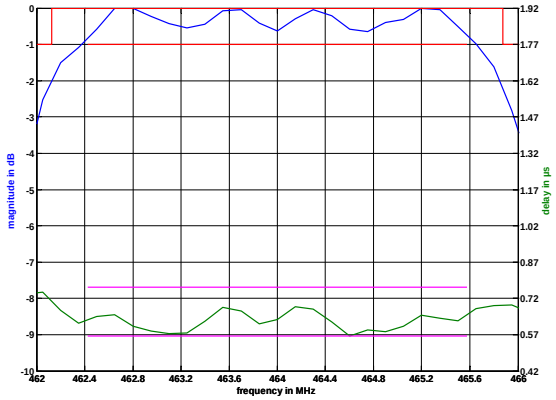
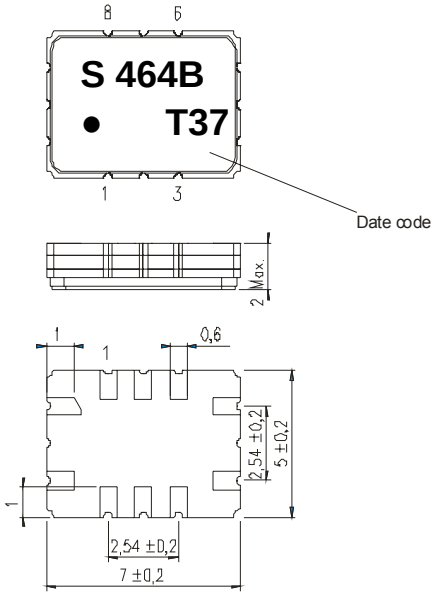
Filter characteristic





Construction and pin connection

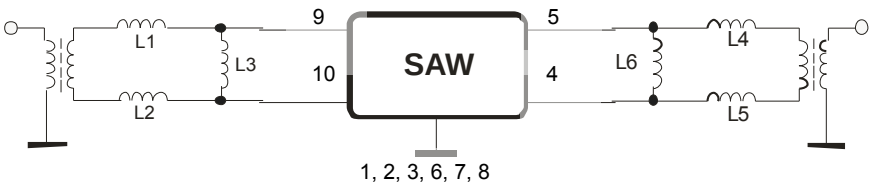
(All dimensions in mm)



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

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

50 Ohm Test circuit



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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 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;

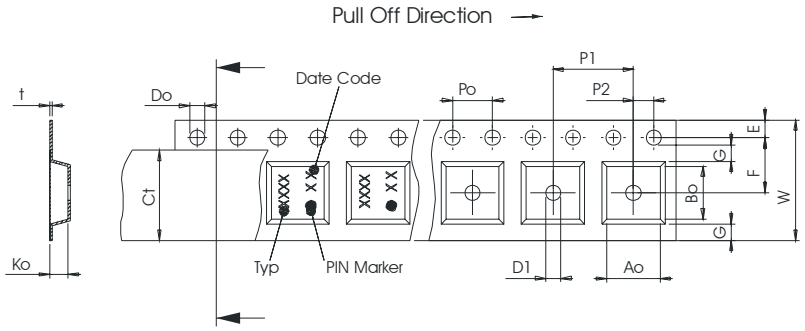
Packing

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

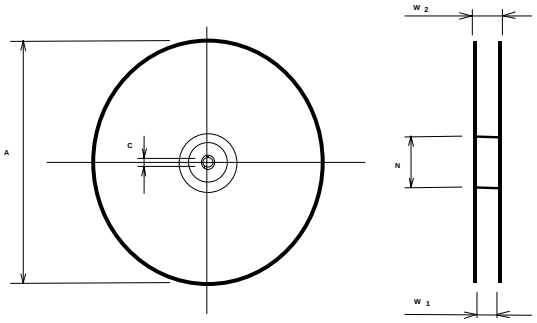
Tape (all dimensions in mm)

W	: 16,00	± 0,3
Po	: 4,00	± 0,1
Do	: 1,50	+0,1/-0
E	: 1,75	± 0,1
F	: 7,50	± 0,1
G(min)	: 0,60	
P2	: 2,00	± 0,1
P1	: 8,00	± 0,1
D1(min)	: 1,50	
Ao	: 5,50	± 0,1
Bo	: 7,50	± 0,1
Ct	: 13,5	± 0,1



Reel (all dimensions in mm)

A	:330	
W1	: 16,4	+2/-0
W2(max)	: 22,4	
N(min)	: 50	
C	: 13,0	+0,5/-0,2



The minimum bending radius is 45 mm.

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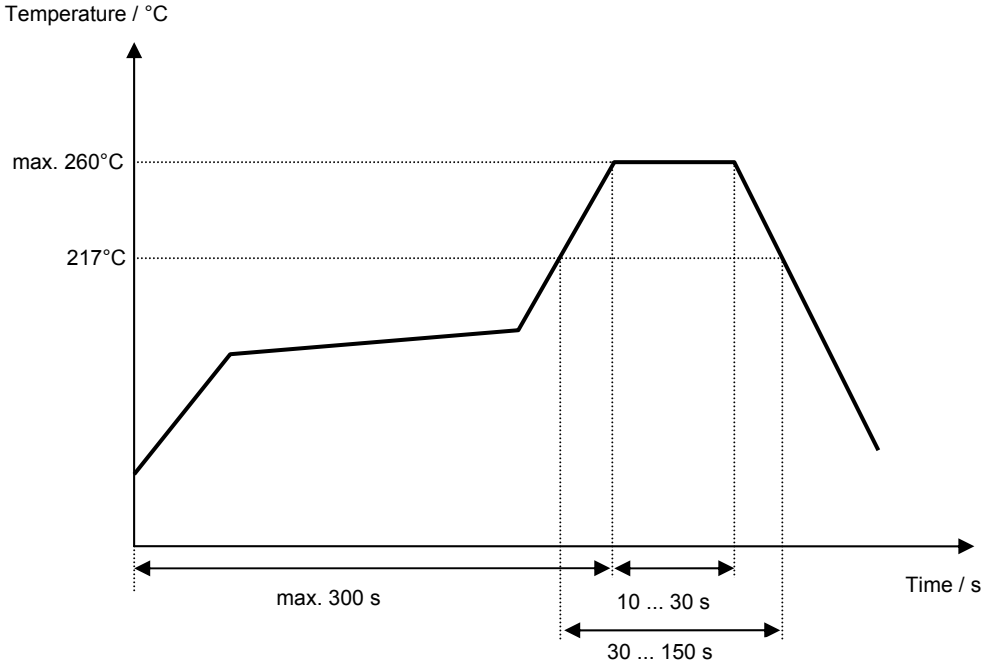
Air reflow temperature conditions

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



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History

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Strehl	11.08.2005
1.1	- terminating impedance, typical values and filter characteristic added	Pfeiffer	09.09.2005

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