Application

The filter is suitable for GSM, DCS 1800 and dual band receivers. It can especially be used in the first IF in which full channel selectivity is not necessary. Due to the high frequency the filter is small, thus it saves cost and space on the printed circuit board. As it has symmetrical input and output it does not need any transformation networks in state of the art IC transceiver concepts in which symmetrical inputs and outputs are favourable.

Measurement condition

Ambient temperature: 23 °C
Input power level: 0 dBm
Source impedance: balanced 800 Ω II - 0.7 pF
Load impedance: balanced 800 Ω II - 0.7 pF

Construction and pin configuration

see page 2

Characteristics

Remark:
Reference level for the relative attenuation a_{rel} of the TFS 400_1 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_o 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 400,000 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_o 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_o.

D a t a		**typ. value**	**tolerance/limit**
Insertion loss (Reference level)	$a_e = a_{min}$	4,5	max. 6,5 dB
Centre frequency	f_o	400,000 MHz	-
usable signal bandwidth		-	min 140 kHz
3 dB bandwidth	BW	360 kHz	min 280 kHz
Relative attenuation	a_{rel}		
400 MHz ± 400 kHz		25 dB	min 15 dB
400 MHz ± 600 kHz		35 dB	min 27 dB
400 MHz ± >1 MHz ... f ± 13 MHz		44 dB	min 35 dB
Group delay ripple	GD		
400 MHz ± 70 kHz		0,5 µs	max. 2 µs
Operating temperature range		- 20 °C ... + 70 °C	
Temperature coefficient of frequency	TC	ca. - 0.036 ppm/K²	
Frequency inversion temperature		+ 20 °C	

Generated:

Checked / approved:

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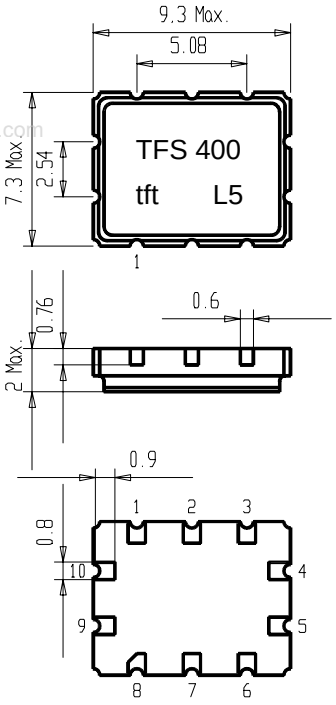
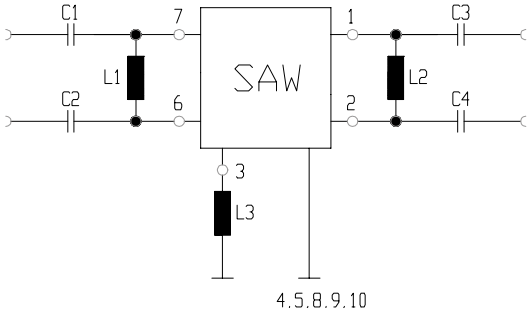
Construction, pin configuration and 50 Ω - matching network



1 Sym. Output 6 Sym. Input
2 Sym. Output 7 Sym. Input
3 External Coil 8 Ground
4 Ground 9 Ground
5 Ground 10 Ground



Stability characteristics

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

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1. Shock: 30g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27

2. Vibration: 10 Hz to 150 Hz, 0.35 mm amplitude, 5g; 2 hours for 3 planes;
DIN IEC 68 T2 - 6

3. Damp heat: 90 % to 95 % rel. humidity, 40 °C, 10 days;
IEC Pub. 68 - 2 - 3

4. Resistance to solder heat (Reflow): 260 °C for 10 sec;

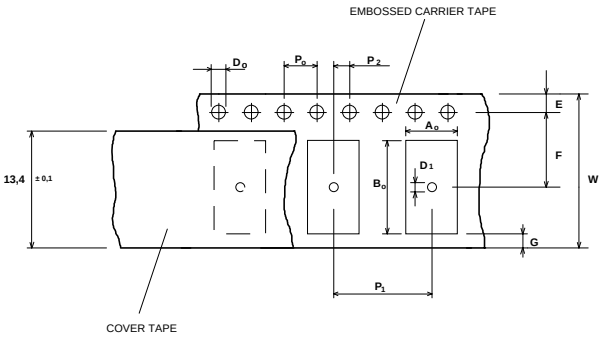
Packing

Tape & Reel: DIN 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: 2300

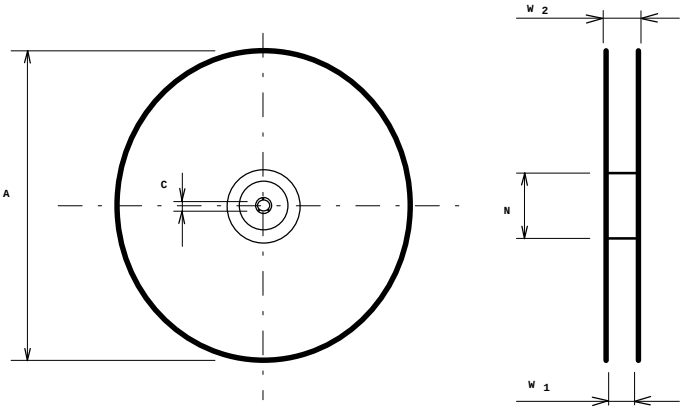
Tape (all dimensions in mm)

W	:	16	± 0,3
Po	:	4	± 0,1
Do	:	1,5	+ 0,5
D1	:	1,5	+ 0,5
E	:	1,75	± 0,1
F	:	7,5	± 0,1
G (min)	:	0,75	
P2	:	2	± 0,1
P1	:	12	± 0,1
D1(min)	:	1,5	
Ao	:	7,6	± 0,1
Bo	:	9,6	± 0,1



Reel (all dimensions in mm):

A	:	330	
W1	:	16,4 +2	
W2 (max)	:	22,4	
N (min)	:	>= 90	
C	:	13	± 0,25



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. The marking of the filters is able to read if the view is directed on the upper side of the carrier tape with the sprocket holes on the right side of the tape.

Air reflow temperature conditions

1st and 2nd air reflow profile

Name: pre-heating periods main-heating periods peak temperature

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Temperature:	150 °C - 170 °C	over 200 °C	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

Chip-mount air reflow profile

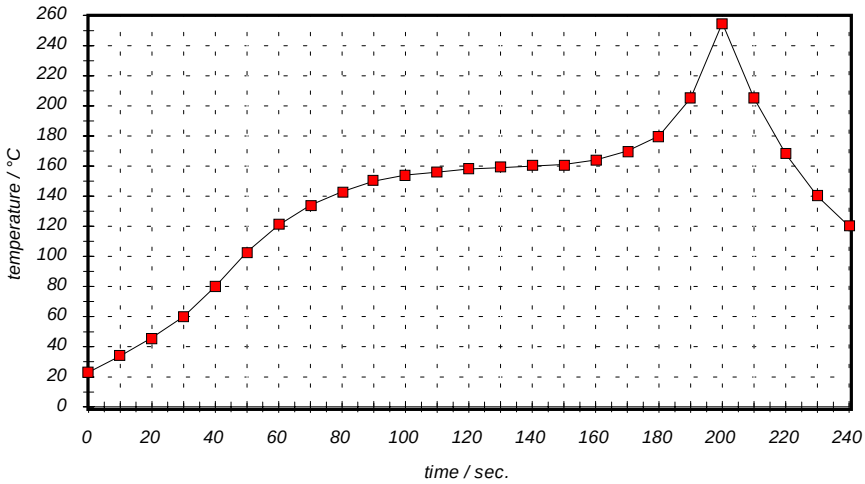

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

time / sec.	temperature / °C	time / sec.	temperature / °C
0	23	140	160
10	34	150	161
20	46	160	164
30	60	170	170
40	80	180	180
50	103	190	205
60	121	195	230
70	134	200	255
80	143	205	230
90	150	210	205
100	154	215	180
110	156	220	165
120	158	230	140
130	159	240	120

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