

VI TELEFILTER**Filter Specification****TFS 208L****1 / 5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance's : 50 Ω

Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the TFS 208L is the maximum attenuation in the pass band. The maximum attenuation in the pass band is defined as the insertion loss a_e . The nominal frequency f_N is fixed at 208 MHz without tolerance or limit. The values of relative attenuation a_{rel} are guaranteed in the whole operating temperature range. The frequency 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	a_e	2,20 dB	2,5 ± 1,0 dB
(Reference level)			
Nominal frequency	f_N	-	208 MHz
1 dB band width	BW	4,95 MHz	min. 800 kHz
Amplitude ripple within $f_N \pm 100$ kHz		0,05 dB	max. 0,20 dB
Relative attenuation	a_{rel}		
$f_N \pm 400$ kHz		-	max. 1 dB
$f_{N-} - 14$ MHz... $f_{N-} - 23$ MHz		60 dB	min. 30 dB
$f_{N-} - 23$ MHz... $f_{N-} - 33$ MHz		52 dB	min. 44 dB
$f_{N-} - 33$ MHz... $f_{N-} - 207$ MHz		60 dB	min. 38 dB
$f_{N+} + 14$ MHz... $f_{N+} + 28$ MHz		38 dB	min. 5 dB
$f_{N+} + 28$ MHz... $f_{N+} + 242$ MHz		51 dB	min. 12 dB
VSWR			
$f_N - 400$ kHz ... $f_N + 400$ kHz		1,5:1	max. 2 : 1
Absolute group delay	GD*)		
$f_N - 400$ kHz ... $f_N + 400$ kHz		170 ns	max. 300 ns
Group delay ripple	GDR *)		
$f_N - 400$ kHz ... $f_N + 400$ kHz		12 ns	max. 100 ns
Intermodulation	**)		
IP_3		54 dB	min. 45 dB
Input power level			max. 10 dBm
Temperature coefficient of frequency	TC_f ***)	- 33 ppm/K	-
Operating temperature range		-	- 10 °C ... + 85 °C
Storage temperature range			- 30 °C ... + 85 °C

*) measured with smoothing; smoothing aperture ≤ 50 kHz**) modulation signals: f_N and $f_N + 14$ MHz, each of 10 dBm; measured signal: $f_N - 14$ MHz***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (\Delta T) \times f_{T0}(\text{MHz})$

generated: _____

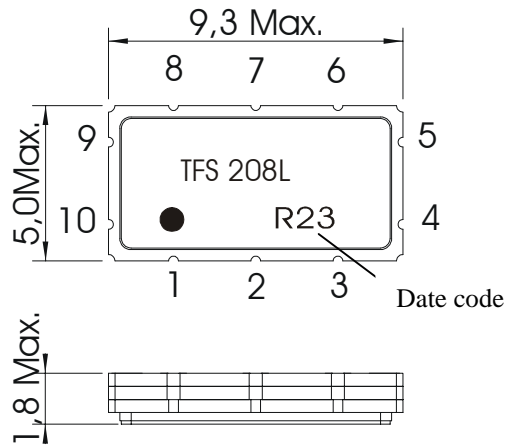
checked / approved: _____

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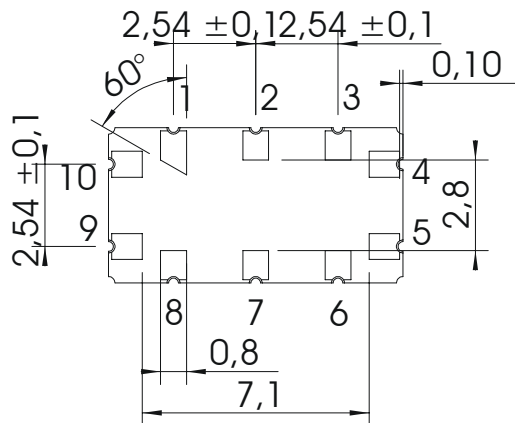
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Construction and pin connection

(All dimensions in mm)



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



Date code: Year+week

N	2001
P	2002
R	2003
...	

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Stability Characteristics

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

1. Shock: 500g, 18 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;

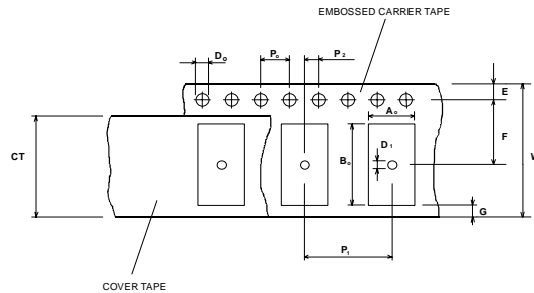
Packing

Tape & Reel: 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;

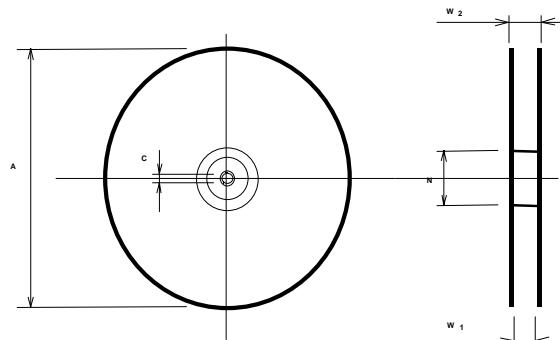
max. pieces of filters per reel:	3000
Reel of empty components at start:	min 300 mm
Reel of empty components at start including leader:	min 500 mm
Trailer	min 300 mm

Tape (all dimensions in mm)

W : 16 ± 0,3
 Po : 4 ± 0,1
 Do : 1,5 ± 0,1
 E : 1,75 ± 0,1
 F : 7,5 ± 0,1
 G (min) : 0,6
 P2 : 2 ± 0,1
 P1 : 8 ± 0,1
 D1(min) : 1,5
 Ao : 5,3 ± 0,1
 Bo : 9,7 ± 0,1
 CT : 13,5 ± 0,1

**Reel (all dimensions in mm):**

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



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. Markings on the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on its right.

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Air reflow temperature conditions

1st and 2nd air reflow profile

Name:	pre-heating periods	main-heating periods	peak temperature
Temperature:	150 °C - 170 °C	over 200 °C	255 °C ± 5 °C
Time:	60 sec. - 90 sec.	20 sec. - 25 sec.	

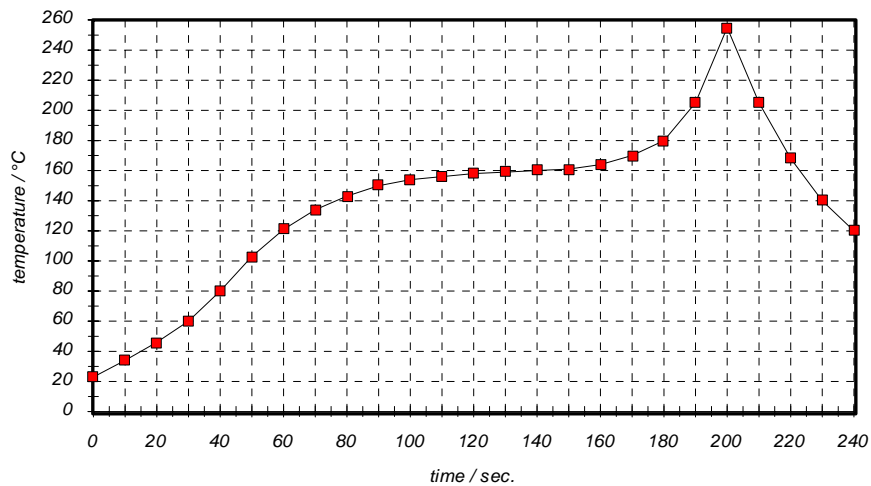
Chip-mount air reflow profile

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

<u>time / sec.</u>	<u>temperature / °C</u>	<u>time / sec.</u>	<u>temperature / °C</u>
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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History

Version	Reason of Changes	Name	Date
1.0	- generation of development specification according to the customer specification (V-1.0.0; 15 Jan 03)	Dr. Sabah	07.03.03
1.1	- updated according to customer specification, version 2.0 (20 th may 2003) - add of typical values and generation of filter specification	Dr. Sabah	03.06.03

2.0 Missing