

**VI TELEFILTER****Filter Specification****TFS 70 Y****1/5****1. Measurement condition :**

Ambient temperature $T_A$ :	23	°C.
Input power level:	0	dBm.
Terminating impedances in $f_C$ * ) :		
for input:	2,9 kOhm	-3,8 pF
for output:	2,9 kOhm	-3,8 pF
External coil:	820 nH	

**2. Characteristics :**

Remark: Reference level for the relative attenuation  $a_{rel}$  of the TFS70Y 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 3 dB filter attenuation level relative to the insertion loss  $a_e$ . The temperature coefficient of frequency  $T_C$  is valid both for the reference frequency  $f_C$  and the frequency response of the filter in the operating temperature range. The frequency shift of the filter in the operating temperature range is not included in the production tolerance scheme.

Data		typ. value	Variation / Limitation
<b>Insertion Loss</b> (Reference Level)	$a_e$	3,7 dB	max 6,0 dB
<b>Centre frequency</b> (at ambient temperature $T_A$ )	$f_C$	70,002 MHz	70,0 ± 0,015 MHz
<b>Relative Attenuation</b>	$a_{rel}$		
$f_N - 35$ kHz ... $f_N + 35$ kHz		0,5 dB	max. 1 dB
$f_N ± 35$ kHz ... $f_N ± 47$ kHz		2 dB	max. 3 dB
$f_N ± 60$ kHz ... $f_N ± 90$ kHz		2,5 dB	min. 1 dB
$f_N ± 90$ kHz ... $f_N ± 450$ kHz		10 dB	min. 3 dB
$f_N ± 450$ kHz ... $f_N ± 500$ kHz		45 dB	min. 35 dB
$f_N ± 500$ kHz ... $f_N ± 10$ MHz		43 dB	min. 40 dB
<b>Temperature Coefficient</b>	$T_C$ 2nd order **)	- 0,043 ppm/K	-
<b>Turn over temperature</b>	$T_0$	25 °C	-
<b>Operating Temperature Range</b>		-	- 5 °C ... + 70 °C
<b>Storage Temperature Range</b>		-	- 30 °C ... + 90 °C

\*) 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.

\*\* )  $\Delta f_C(\text{Hz}) = T_C(\text{ppm/K}) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$

**generated:** \_\_\_\_\_

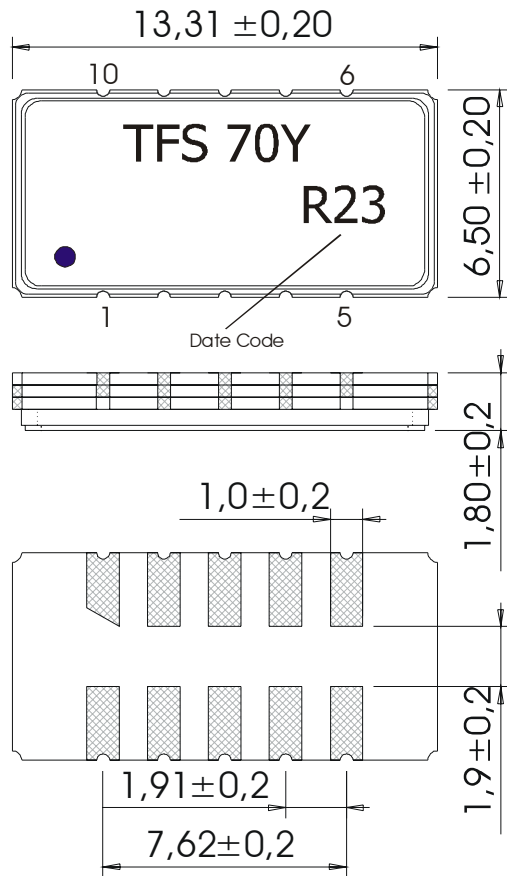
**checked / approved:** \_\_\_\_\_

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**3. Construction and Pin Configuration**

(All Dimensions in mm)

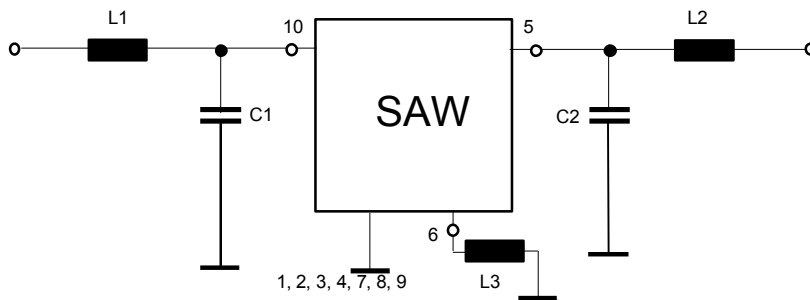


- 1 Input RF-Return
- 2 Ground
- 3 Ground
- 4 Ground
- 5 Output
- 6 External Coil
- 7 Ground
- 8 Ground
- 9 Ground
- 10 Input

Datecode Year+week

- N 2001
- P 2002
- R 2003
- ...

**4. 50 Ω Matching Network**



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**5. 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;

**6. 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:  
reel of empty components at start:  
reel of empty components at start including leader:  
trailer

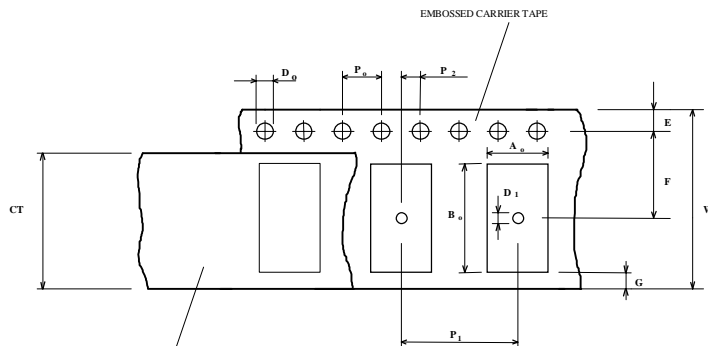
1700  
min 300 mm  
min 500 mm

mm

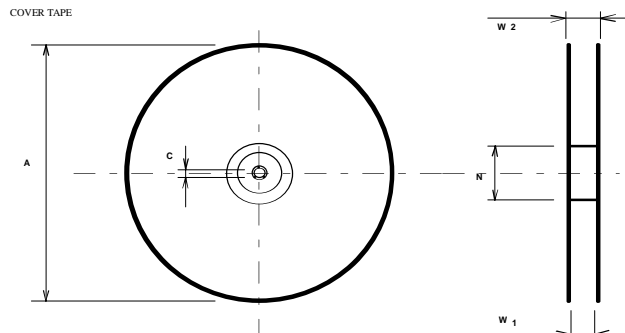
min 300

**Tape (all dimensions in mm)**

W	: 24	+0,3/ -0,1
Po	: 4	±0,1
Do	: 1,5	+0,1
E	: 1,75	±0,1
F	: 11,5	±0,1
G (min)	: 0,6	
P2	: 2	±0,1
P1	: 12	±0,1
D1(min)	: 1,5	
Ao	: 7,1	±0,1
Bo	: 13,9	±0,
CT	: 21,5	±0,1

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

A	: 330
W1	: 24,4 +2
W2 (max)	: 30,4
N (min)	: 60
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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**7. Air reflow temperature conditions**1<sup>st</sup> and 2<sup>nd</sup> 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.	

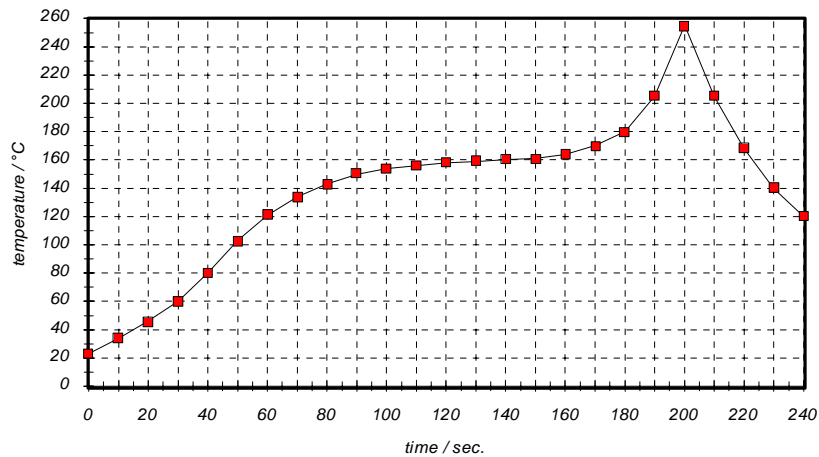
**Chip-mount air reflow profile**

Table for temperature vs. Time during the air reflow process

Tolerance of temperatures: ± 5 °C

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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**8. History**

<b>Version</b>	<b>Reason of Changes</b>	<b>Name</b>	<b>Date</b>
1.0	- Generate development specification	Steiner	30.07.2002
1.1	- Change package to 15*6,5 mm. - Add second package option (11*5 mm) - Change pass band width. - Correct typo for stop band definition. - Remove group delay limits. - Introduce centre frequency limits. - Change remark for characteristic.	Dr. Wall	20.12.2002
2.0	- Change from development specification to preliminary specification. - Remove package version 1. - Change 1 dB bandwidth from $\pm 40$ kHz to $\pm 35$ kHz minimum. - Change 3 dB bandwidth from $\pm 60$ kHz to $\pm 47$ kHz minimum. - Change insertion loss from 10 dB to 6 dB maximum. - Add typical values. - Add termination impedances. - Add packing information.	Dr. Wall	13.05.2003
3.0	- Change from preliminary specification to filter specification. - Change from 11*5 to 13*6,5 mm package. - Change pinning. - Change packing information. - Change termination impedances. - Add typical values.	Dr. Wall	06.06.2003