

VI TELEFILTER**SAW Resonator Specification****TFR 868A 1/5****Measurement condition**

Ambient temperature: 23 °C
 Input power level: 10 dBm
 Terminating Impedances :
 for input: 50 Ω || 0 pF
 for output: 50 Ω || 0 pF

Characteristics**Remark:**

The minimum of the pass band attenuation a_{\min} is defined as the insertion loss a_e . The centre frequency f_c is the frequency of the minimum of the passband attenuation a_{\min} . The tolerance for the resonant frequency also includes a centre frequency shift due to the temperature coefficient of frequency TC_f in the operating temperature range and a production tolerance for the resonant frequency f_R .

D a t a		typ. value	tolerance / limit
Insertion loss (Reference level)	$a_e = a_{\min}$	1,4 dB	max. 2,2 dB
Resonant frequency	f_R	868,95 MHz	± 150 kHz
Parallel capacitance	C_0	2,6 pF	-
Motional resistance	R_1	17 Ω	-
Motional inductance	L_1	24 μH	-
Motional capacitance	C_1	1,4 fF	-
Unloaded quality factor	Q_u	7580	-
Operating temperature range		-	- 10°C... + 70 °C
Storage temperature range		-	- 30°C... + 85 °C
Temperature coefficient *	TC	- 0,036 ppm/K ²	
Frequency inversion temperature	T_o	25 °C	
Frequency aging **	$ f_{\Delta} $	10 ppm/yr	
Phase	φ		-20 + 20 °

**) Frequency aging is the change in f_R with time. Typically aging is greatest first year after manufacture, decreasing in subsequent years.

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

generated: _____

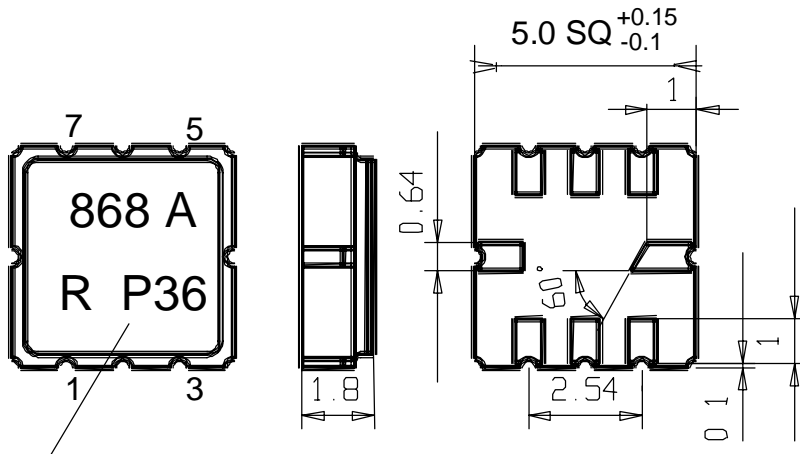
checked / approved: _____

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VI TELEFILTER**SAW Resonator Specification****TFR 868A 2/5****Construction, pin configuration and 50 Ω - matching network**

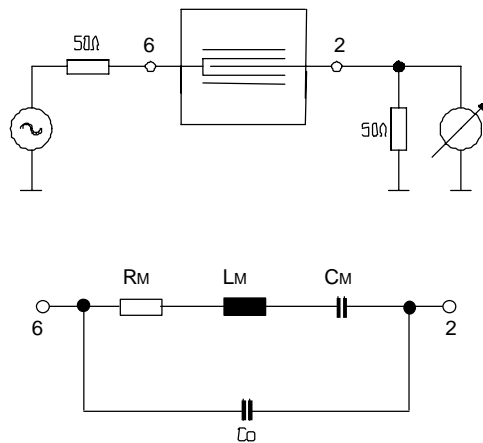
(All dimensions in mm)



Date code

pin 1	ground	pin 5	ground
pin 2	output	pin 6	input
pin 3	ground	pin 7	ground
pin 4	package ground	pin 8	package ground

date code:	year + week
M	2000
N	2001
P	2002
....	

50 Ohm test circuit 1

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VI TELEFILTER**SAW Resonator Specification****TFR 868A 3/5****Stability characteristics**

After the following tests the resonator 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, please refer to the attached "Air reflow temperature conditions" on page 4;

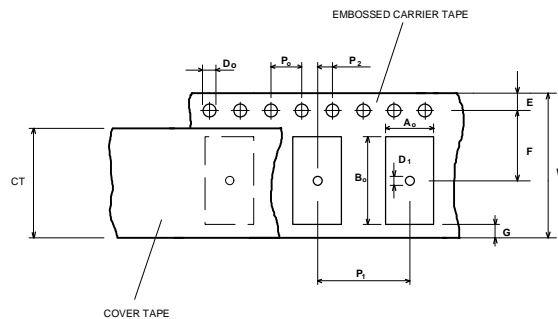
Packing

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;

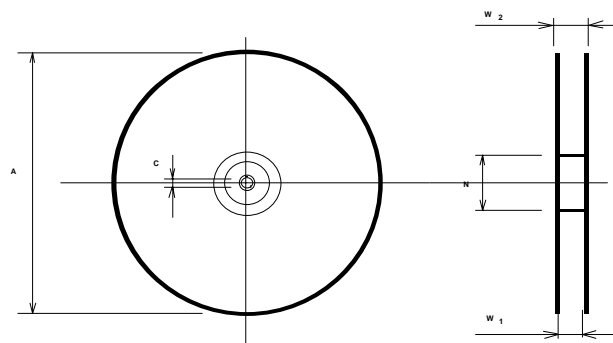
max. pieces of filters per reel:	3000
reel of empty components at start:	min 300 mm
reel of empty components at start including leader:	min 500 mm
trailer	min 300 mm

Tape (all dimensions in mm)

W	: 12 ± 0,3
Po	: 4 ± 0,1
Do	: 1,5 + 0,1
E	: 1,75 ± 0,1
F	: 5,5 ± 0,05
G (min)	: 0,75
P2	: 2 ± 0,05
P1	: 8 ± 0,10
D1(min)	: 1,5
Ao	: 5,30 ± 0,1
Bo	: 5,30 ± 0,1
CT	: 13,0 ± 0,2

**Reel (all dimensions in mm)**

A	: 330
W1	: 12,4 + 2
W2 (max)	: 18,4
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.	

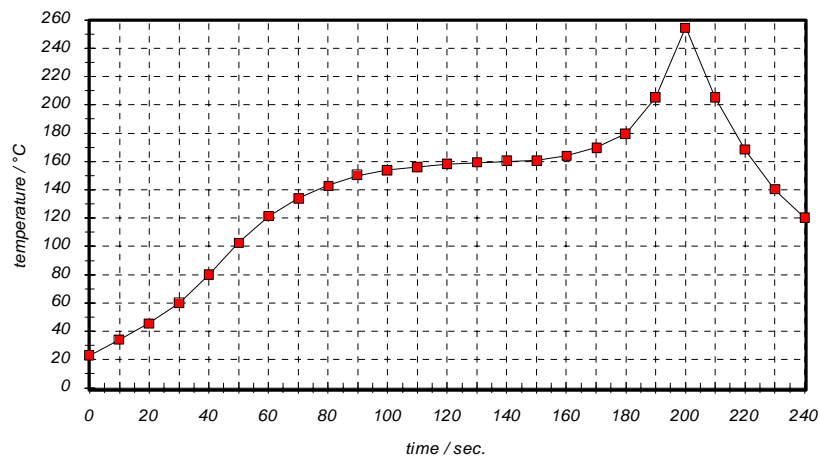
Chip-mount air reflow profile

Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

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	230
100	154	215	205
110	156	220	180
120	158	230	165
130	159	240	140
			120

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VI TELEFILTER**SAW Resonator Specification****TFR 868A 5/5****History**

version	reason of changes	name	date
1.0	generate specification	Pfeiffer	04.09.2002
1.1	typical values of frequency inversion temperature added	Pfeiffer	09.09.2002

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