

Measurement condition

Ambient temperature:	85	°C
Input power level:	0	dBm
Terminating impedance:		
Input:	50	Ω
Output:	50	Ω

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 S11. The tolerance for the centre frequency does not include a frequency shift due to the temperature coefficient of frequency TC_f .

D a t a		typ. value		tolerance / limit	
Insertion loss (reference level)	$a_e = a_{\min}$	-		max.	2,5 dB
Centre frequency (minimum of S11)	f_c	434.2	MHz	± 12.5	kHz
Quality factor	Unloaded Q	8000		-	
Parallel capacitance	C_0	2.7	pF *	-	
Motional resistance	R_1	24	Ω *	-	
Motional inductance	L_1	89	μH *	-	
Motional capacitance	C_1	1.5	fF *	-	
Input power level		-		max.	0 dBm
Operating temperature		-		85	°C
Operable temperature range	OTR1	-		- 40 °C ... + 125 °C	
	OTR2	-		- 40 °C ... + 180 °C	
	OTR3	-		- 40 °C ... + 220 °C	
Storage temperature range		-		- 40 °C ... + 120 °C	
Temperature coefficient of frequency	TC_f **	+ 16.2	ppm/K		
Temperature error due to aging ***					
within OTR1		0.29	K	max.	- 2 K ... 2 K
within OTR2		2.33	K	max.	- 2 K ... 5 K
within OTR3		4.33	K	max.	- 2 K ... 8 K

*) The equivalent circuit model is for reference only.

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

***) 1000 hours cumulative at maximum temperature

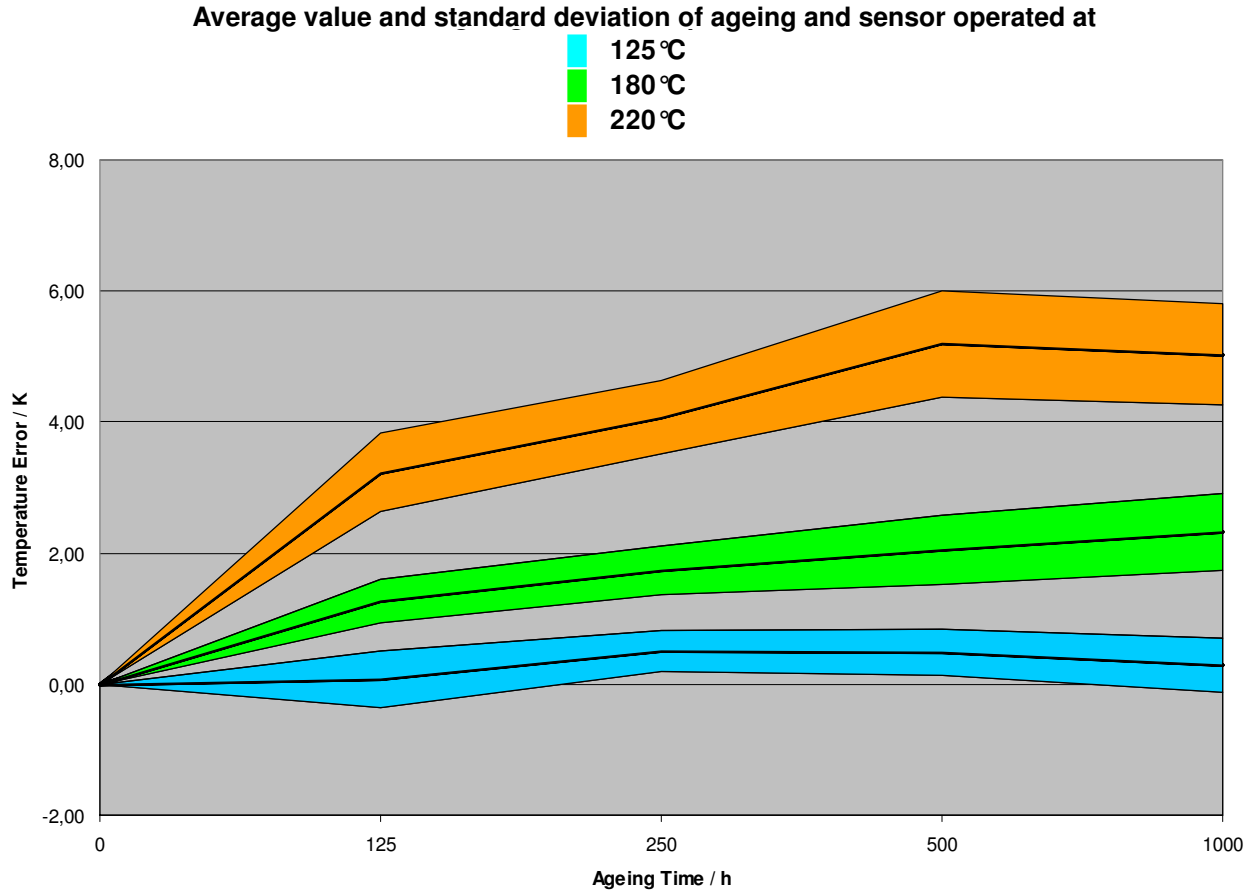
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Checked / Approved:

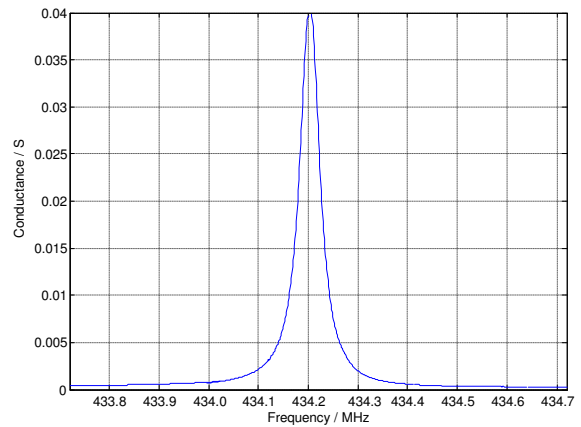
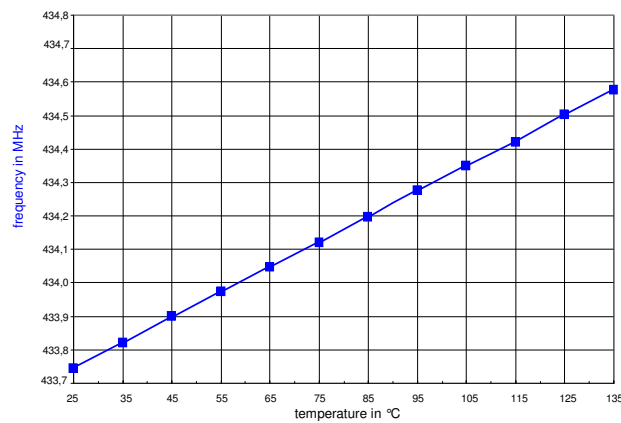
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Typical ageing error of sensor signal for operation in extended temperature range

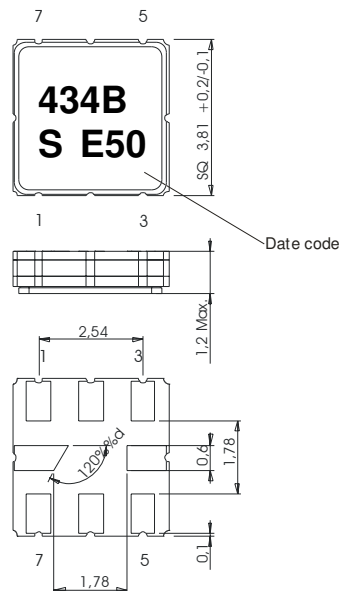


Temperatur sensor characteristic



Construction and pin connection

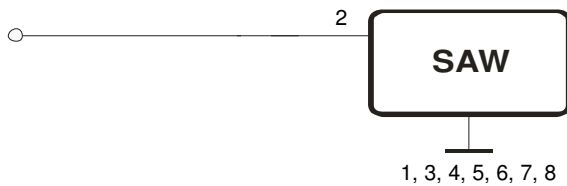
(All dimensions in mm)



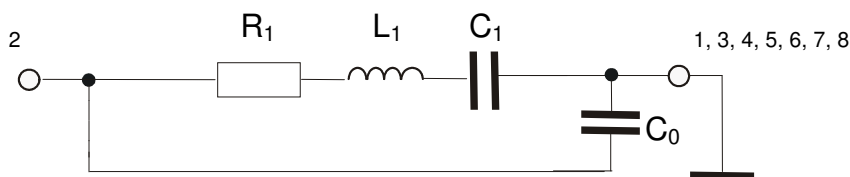
- 1 Ground
- 2 Input
- 3 Ground
- 4 Ground
- 5 Ground
- 6 Ground
- 7 Ground
- 8 Ground

Date code: Year + week
 E 2014
 F 2015
 G 2016
 ...

50 Ohm Test circuit



Equivalent circuit



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Stability characteristics, reliability

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 / 15 min. each / 100 cycles
DIN IEC 68 part 2 – 14 Test N
- 4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 5;

This filter is RoHS compliant (2011/65/EU)

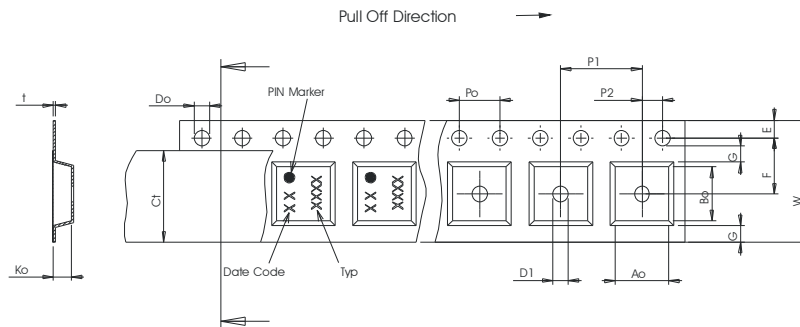
Packing

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

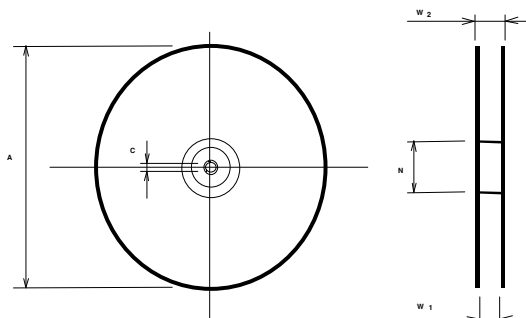
Tape (all dimensions in mm)

W	:12.00 ± 0.3
Po	:4.00 ± 0.1
Do	:1.50 +0.1/-0
E	:1.75 ± 0.1
F	:5.50 ± 0.05
G(min)	:0.75
P2	:2.00 ± 0.05
P1	:8.00 ± 0.1
D1(min)	:1.50
Ao	:4.30 ± 0.1
Bo	:4.30 ± 0.1
Ct	: 9.5 ± 0.1



Reel (all dimensions in mm)

A	: 330 or 180
W1	:12.4 +2/-0
W2(max)	:18.4
N(min)	: 50
C	:13.0 +0.5/-0,2



The minimum bending radius is 45 mm.

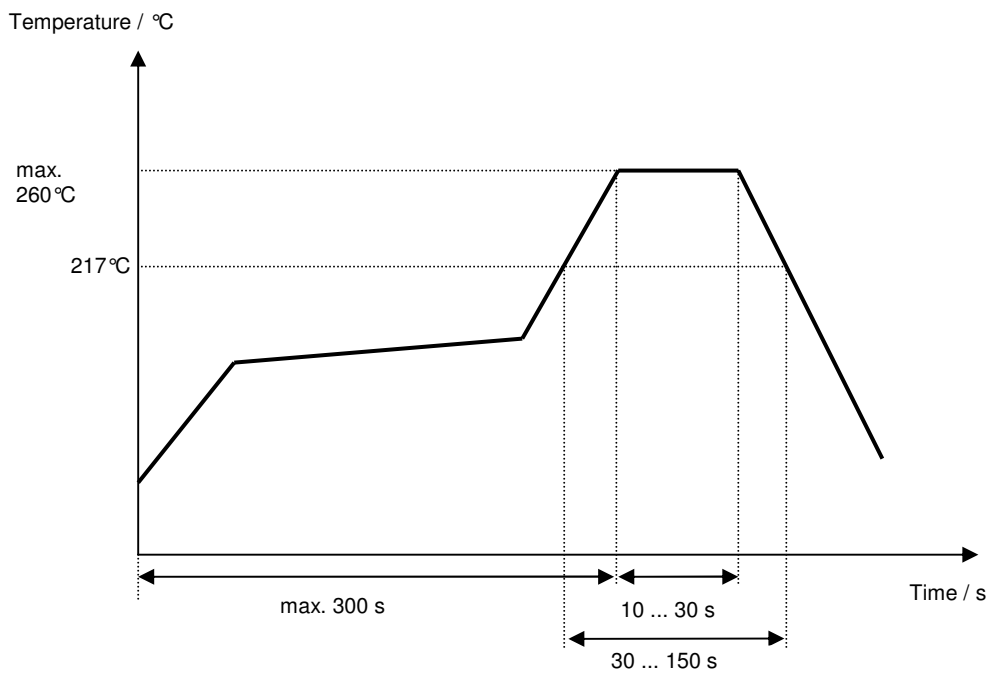
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Air reflow temperature conditions

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	10.12.2007
1.1	- Introduce temperature error caused by aging in data table - Changed from development specification to temperature sensor specification - Add typical values for motional parameters	Raura	14.12.2009
2.0	- Changed f_c tolerance/limit in data table - Updated stability characteristics, reliability section - Changed pin marker direction in packing tape & reel section - Changed punctuation marks from comma to period	Raura	11.12.2014