Measurement condition

Ambient temperature:	25	°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 the passband attenuation a_{min}. The tolerance for the centre frequency also includes a frequency shift due to the temperature coefficient of frequency TC_f in the operating temperature range and a production tolerance for the centre frequency f_C.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	$a_e = a_{min}$	1,2	dB	max.	2,5	dB
Centre frequency at ambient temperature	f_C	433,92	MHz		±75	kHz
Ageing of centre frequency		-		max.	<±10	ppm/ yr
Quality Factor	Unloaded Q	11,000			-	
	Loaded Q 50Ω	2,000			-	
Parallel capacitance	C_0	2,0	pF	max.	±0,3	pF
Motional resistance	R_1	18	Ω	max.	26	Ω
Motional inductance	L_1	86	µH		-	
Motional capacitance	C_1	1,56	fF		-	
DC Insulation resistance		-		min.	1	MΩ
DC Voltage	V_{DC}	-		max.	10	V
AC Voltage (50Hz/60Hz)	V_{pp}	-		max.	10	V
Input power level		-		max.	0	dBm
Operating temperature range	OTR	-		-40 °C ... + 85°C		
Storage temperature range		-		-45 °C ... + 85°C		
Turnover temperature	T_0	25	°C			
Temperature coefficient of frequency	TC_f **	0,032	ppm/K²			

*) 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.
**) $\Delta f(Hz) = TC_f(ppm/K^2) \times (T_0-T)^2 \times f_{CAT}(MHz)$.

Generated:

Checked / Approved:

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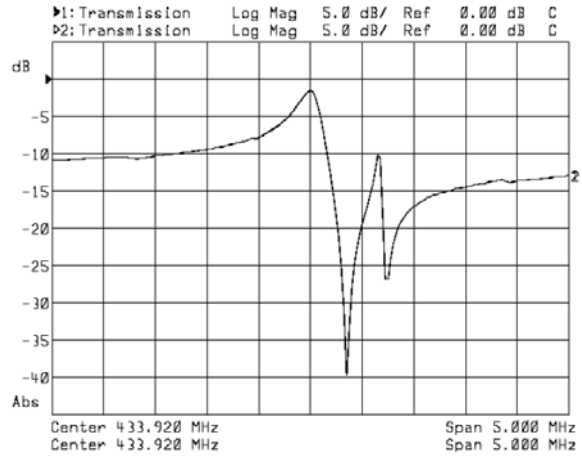
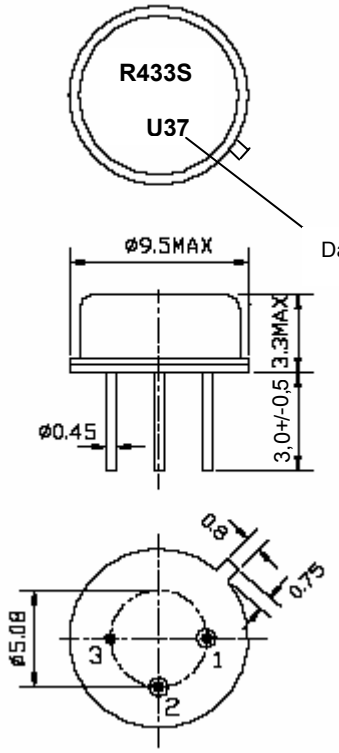
Resonator characteristic



Construction and pin connection

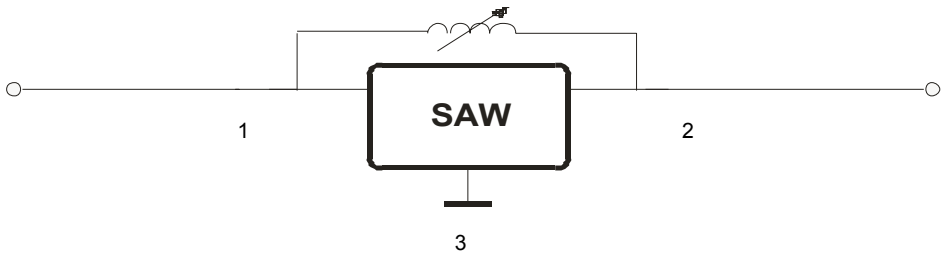
(All dimensions in mm)



Date code:	Year + week
U	2006
V	2007
W	…..2008
...	

1	Input
2	Output
3	Ground

50 Ω test circuit



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Stability characteristics

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 / 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;

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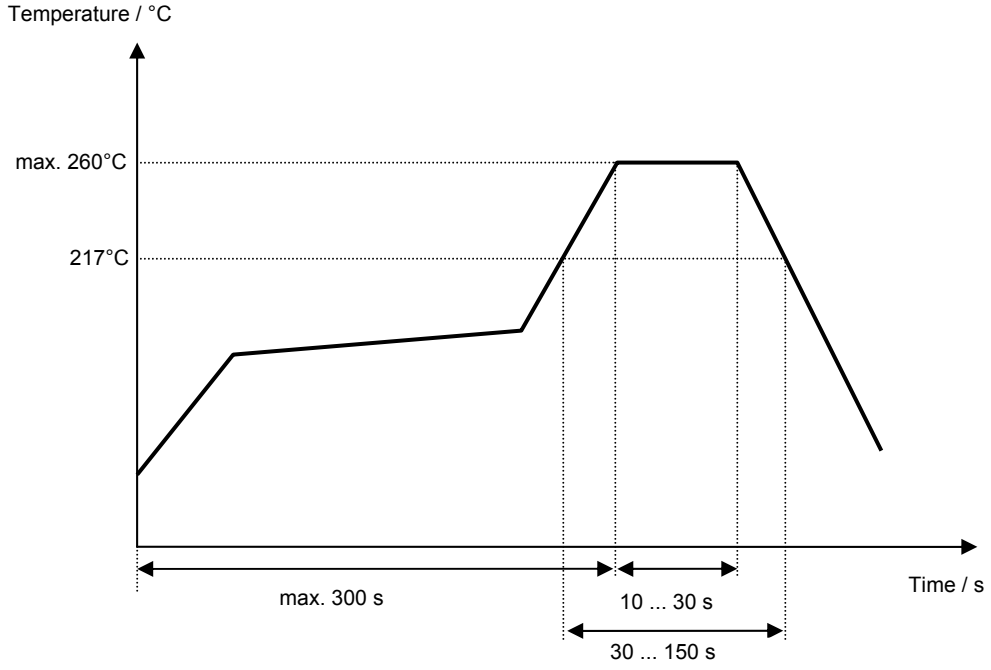
Air reflow temperature conditions

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 resonator specification	Strehl	18.01.2005
1.1	Change measurement condition of centre frequency	Strehl	19.04.2005
1.2	Added resonator characteristic	Martens	13.09.2006

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