



## **SAW Components**

### **SAW resonator**

Short range devices

<b>Series/type:</b>	<b>R 770</b>
<b>Ordering code:</b>	<b>B39431R 770U310</b>
<b>Date:</b>	<b>October 09, 2006</b>
<b>Version:</b>	<b>2.0</b>



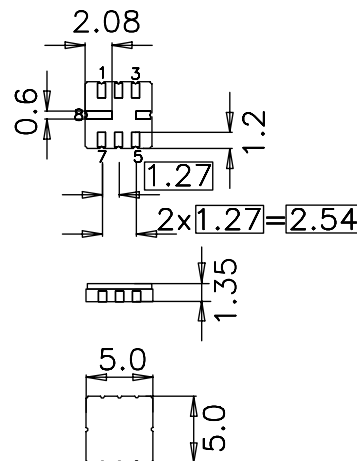
**Application**

- 1-port resonator (2 Resonators in 1 housing)
- Provides reliable, fundamental mode, quartz frequency stabilization i.e. in transmitters or local oscillators



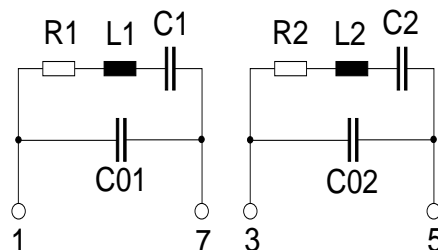
**Features**

- Package size 5.0 x 5.0 x 1.35 mm<sup>3</sup>
- Package code QCC8C
- RoHS compatible
- Approximate weight 0.1 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Protection layer: Protec
- AEC-Q200 qualified component family
- **Electrostatic Sensitive Device (ESD)**



**Pin configuration**

- 1 Input Reso 1
- 3 Input Reso 2
- 7 Output Reso 1
- 5 Output Reso 2
- 4,8 Ground (case)
- 2,6 float





Data sheet



Characteristics Resonator 1

Reference temperature:  $T_A = 25\text{ °C}$   
 Terminating source impedance:  $Z_S = 50\ \Omega$   
 Terminating load impedance:  $Z_L = 50\ \Omega$

		min.	typ.	max.	
<b>Center frequency Resonator 1<sup>1)</sup></b>	$f_C$	433.745	433.810	433.845	MHz
<b>Frequency offset Resonator 2 to Resonator 1</b>	$f_{\text{offset}}$	200.0	250.0	300.0	KHz
<b>Minimum insertion attenuation</b>	$\alpha_{\text{min}}$	—	1.3	1.7	dB
Unloaded quality factor	$Q_U$	7500	10100	—	
<b>Ageing of <math>f_C</math></b>		—	—	-50/+50	ppm
<b>Equivalent circuit elements</b>					
Motional capacitance	$C_1$	—	2.12	—	fF
Motional inductance	$L_1$	—	63.43	—	$\mu\text{H}$
Motional resistance	$R_1$	—	17	23	$\Omega$
Parallel capacitance <sup>2)</sup>	$C_0$	—	2.4	—	pF
<b>Temperature coefficient of frequency<sup>3)</sup></b>	$TC_f$	—	-0.03	—	ppm/K <sup>2</sup>
<b>Turnover temperature</b>	$T_0$	5	—	35	$^{\circ}\text{C}$

1) Center frequency is defined as maximum of the real part of the admittance.

2) If used in two port configuration (pin 1 - input, pin 7 - output)  $C_0$  is reduced by approx. 0.3 pF.

3) Temperature dependence of  $f_C$ :  $f_C(T_A) = f_C(T_0) (1 + TC_f (T_A - T_0)^2)$


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**433.81 / 434.06 MHz**
**Data sheet**

**Characteristics Resonator 2**

Reference temperature:	$T_A = 25\text{ °C}$
Terminating source impedance:	$Z_S = 50\ \Omega$
Terminating load impedance:	$Z_L = 50\ \Omega$

		<b>min.</b>	<b>typ.</b>	<b>max.</b>	
<b>Center frequency Resonator 2<sup>1)</sup></b>	$f_C$	433.995	434.060	434.095	MHz
<b>Frequency offset Resonator 2 to Resonator 1</b>	$f_{\text{offset}}$	200.0	250.0	300.0	KHz
<b>Minimum insertion attenuation</b>	$\alpha_{\text{min}}$	—	1.3	1.7	dB
Unloaded quality factor	$Q_U$	7500	10100	—	
<b>Ageing of <math>f_C</math></b>		—	—	-50/+50	ppm
<b>Equivalent circuit elements</b>					
Motional capacitance	$C_1$	—	2.14	—	fF
Motional inductance	$L_1$	—	62.86	—	$\mu\text{H}$
Motional resistance	$R_1$	—	17	23	$\Omega$
Parallel capacitance <sup>2)</sup>	$C_0$	—	2.4	—	pF
<b>Temperature coefficient of frequency<sup>3)</sup></b>	$TC_f$	—	-0.03	—	ppm/K <sup>2</sup>
<b>Turnover temperature</b>	$T_0$	5	—	35	$^{\circ}\text{C}$

1) Center frequency is defined as maximum of the real part of the admittance.

2) If used in two port configuration (pin 3 - input, pin 5 - output)  $C_0$  is reduced by approx. 0.3 pF.

3) Temperature dependence of  $f_C$ :  $f_C(T_A) = f_C(T_0) (1 + TC_f (T_A - T_0)^2)$

**Maximum ratings**

Operable temperature range	$T_A$	-45/+120	$^{\circ}\text{C}$	between any terminals
Storage temperature range	$T_{\text{stg}}$	-45/+120	$^{\circ}\text{C}$	
DC voltage	$V_{\text{DC}}$	12	V	
Source power	$P_S$	0	dBm	

Please read *cautions and warnings and important notes* at the end of this document.



SAW Components

R 770

SAW resonator

433.81 / 434.06 MHz

Data sheet



## References

Type	R 770
Ordering code	B39431R 770U310
Marking and package	C61157-A7-A56
Packaging	F61074-V8169-Z000
Date codes	L_1126
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."

For further information please contact your local EPCOS sales office or visit our webpage at [www.epcos.com](http://www.epcos.com).

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Please read *cautions and warnings and important notes* at the end of this document.



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