



# SAW Components

## SAW resonator

Short range devices

<b>Series/type:</b>	<b>R 960</b>
<b>Ordering code:</b>	<b>B39431R 960H110</b>
<b>Date:</b>	<b>July 21, 2010</b>
<b>Version:</b>	<b>2.2</b>

Data sheet



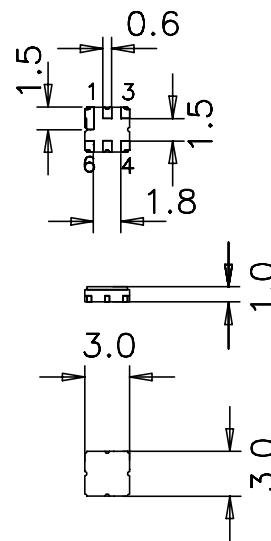
**Application**

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



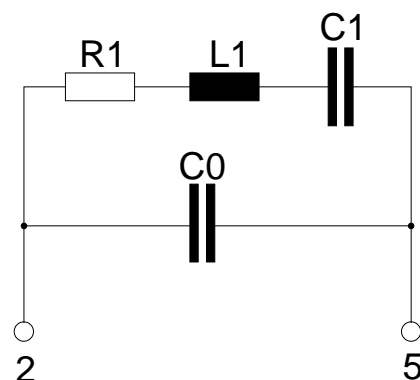
**Features**

- Package size 3.0 x 3.0 x 1.0 mm<sup>3</sup>
- Package code DCC6E
- RoHS compatible
- Approximate weight 0.037 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Passivation layer Elpas
- AEC-Q200 qualified component family
- **Electrostatic Sensitive Device (ESD)**



**Pin configuration**

- 2 Input
- 5 Output, grounded in 1-port conf.
- 1,3,4,6 Ground (case)



**Data sheet**

**Characteristics**

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<sup>1)</sup></b>	$f_C$	433.87	433.92	433.97	MHz
<b>Minimum insertion attenuation</b>	$\alpha_{\min}$	—	1.3	1.8	dB
Unloaded quality factor	$Q_U$	8400	12400	—	
<b>Ageing of <math>f_C</math></b>		—	—	-50/+50	ppm
<b>Equivalent circuit elements</b>					
Motional capacitance	$C_1$	—	1.72	—	fF
Motional inductance	$L_1$	—	77.9	—	$\mu\text{H}$
Motional resistance	$R_1$	—	17	25	$\Omega$
Parallel capacitance <sup>2)</sup>	$C_0$	—	2.3	—	pF
<b>Temperature coefficient of frequency<sup>3)</sup></b>	$TC_f$	—	-0.032	—	ppm/K <sup>2</sup>
<b>Turnover temperature</b>	$T_0$	10	—	30	$^{\circ}\text{C}$

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 3 - 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	-40/+125	$^{\circ}\text{C}$	
Storage temperature range	$T_{\text{stg}}$	-40/+125	$^{\circ}\text{C}$	
DC voltage	$V_{\text{DC}}$	12	V	
Source power	$P_S$	0	dBm	

**References**

<b>Type</b>	R 960
<b>Ordering code</b>	B39431R 960H110
<b>Marking and package</b>	C61157-A7-A143
<b>Packaging</b>	F61074-V8168-Z000
<b>Date codes</b>	L_1126
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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."

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