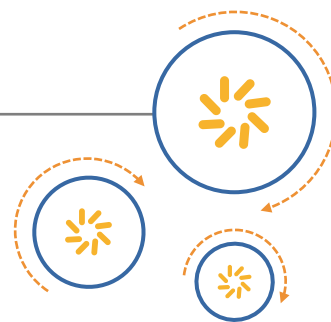


RF360 Europe GmbH

A Qualcomm – TDK Joint Venture



## SAW Components

### SAW resonator

Short range devices

Series/type: R970  
Ordering code: B39431R 970H110

Date: July 09, 2013  
Version: 2.1

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# SAW Components

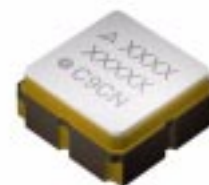
## SAW resonator

Short range devices

|                       |                        |
|-----------------------|------------------------|
| <b>Series/type:</b>   | <b>R970</b>            |
| <b>Ordering code:</b> | <b>B39431R 970H110</b> |
| <b>Date:</b>          | <b>July 09, 2013</b>   |
| <b>Version:</b>       | <b>2.1</b>             |

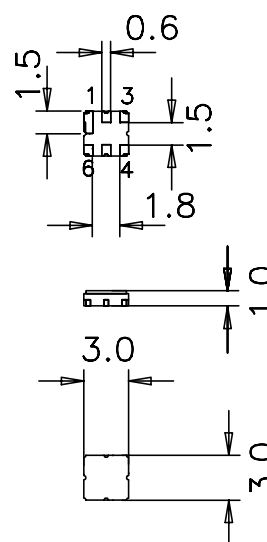
## Application

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



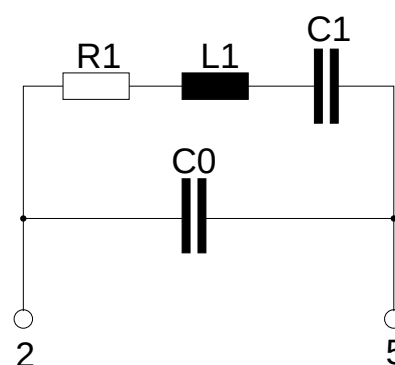
## Features

- 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
- **Electrostatic Sensitive Device (ESD)**



## Pin configuration

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



**SAW Components**
**R970**
**SAW resonator**
**433.92 MHz**
**Data sheet**

**Characteristics**

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

|                                                          |                 | 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    | 2.0     | dB                 |
| Unloaded quality factor                                  | $Q_U$           | 7600   | 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     | 28      | $\Omega$           |
| 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 2 - 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 | $T$              | −45/+125 | $^{\circ}\text{C}$ |  |
| Storage temperature range  | $T_{\text{stg}}$ | −45/+125 | $^{\circ}\text{C}$ |  |
| DC voltage                 | $V_{\text{DC}}$  | 12       | V                  |  |
| Source power               | $P_S$            | 0        | dBm                |  |

**SAW Components**
**R970**
**SAW resonator**
**433.92 MHz**

Data sheet


**References**

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>                | R970                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Ordering code</b>       | B39431R 970H110                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <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>     | RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 <sup>th</sup> , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases. |
| <b>Coils</b>               | See Inductor pdf-catalog<br><a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a><br>and Data Library for circuit simulation<br><a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a>                                                                                                                                                                             |

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