# SAW Components

## SAW resonator

Short range devices

| | |
|---|---|
| **Series/type:** | **R903** |
| **Ordering code:** | **B39321R 903H110** |
| Date: | July 08, 2013 |
| Version: | 2.1 |

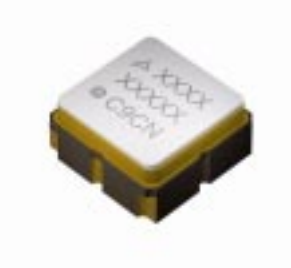
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Data sheet SMD

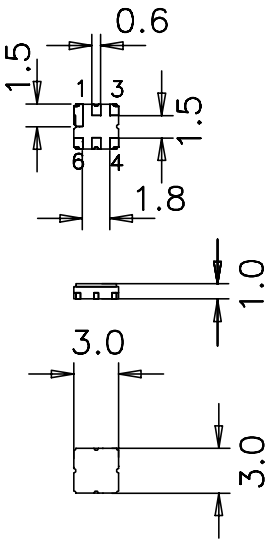
## Application

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



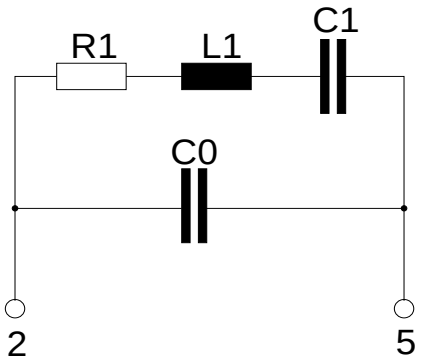
## Features

- Package size 3.0 x 3.0 x 1.0 mm³
- Package code DCC6E
- RoHS compatible
- Approximate weight 0.037 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- Lead free soldering compatible with J - STD20C
- Passivation layer Elpas
- AEC-Q200 qualified component family
- **E**lectrostactic **S**ensitive **D**evice (**ESD**)




## Pin configuration

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



Data sheet SMD

## Characteristics

Reference temperature: $T_A$ = 25 °C
Terminating source impedance: $Z_S$ = 50 Ω
Terminating load impedance: $Z_L$ = 50 Ω

| | | min. | typ. | max. | |
|---|---|---|---|---|---|
| **Center frequency[1)]** | $f_C$ | 315.425 | 315.50 | 315.575 | MHz |
| **Minimum insertion attenuation** | $\alpha_{min}$ | — | 1.5 | 1.9 | dB |
| Unloaded quality factor | $Q_U$ | 7600 | 10500 | — | |
| **Ageing of $f_C$** | | — | — | –50/+50 | ppm |
| **Equivalent circuit elements** | | | | | |
| Motional capacitance | $C_1$ | — | 2.42 | — | fF |
| Motional inductance | $L_1$ | — | 105.4 | — | µH |
| Motional resistance | $R_1$ | — | 19 | 27 | Ω |
| Parallel capacitance[2)] | $C_0$ | — | 3.2 | — | pF |
| **Temperature coefficient of frequency[3)]** | $TC_f$ | — | –0.032 | — | ppm/K² |
| **Turnover temperature** | $T_0$ | 10 | — | 30 | °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, pin5 - 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 | °C | |
| Storage temperature range | $T_{stg}$ | –45/+125 | °C | |
| DC voltage | $V_{DC}$ | 12 | V | |
| Source power | $P_S$ | 0 | dBm | |

## References

| | |
|---|---|
| **Type** | R903 |
| **Ordering code** | B39321R 903H110 |
| **Marking and package** | C61157-A7-A143 |
| **Packaging** | F61074-V8168-Z000 |
| **Date codes** | L_1126 |
| **Soldering profile** | S_6001 |
| **RoHS compatible** | 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 8th, 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. |
| **Coils** | See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm |

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