Tel : +44 118 979 1238
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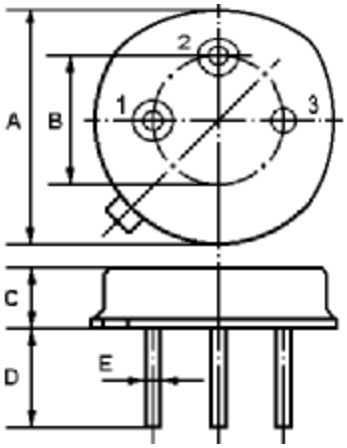
The **ACTR912/912.0/TO39** is a true one-port, surface-acoustic-wave (**SAW**) resonator in a low-profile metal **TO-39** case. It provides reliable, fundamental-mode, quartz frequency stabilization i.e. in transmitters or local oscillators operating at **912.000** MHz.

## 1.Package Dimension (TO-39)

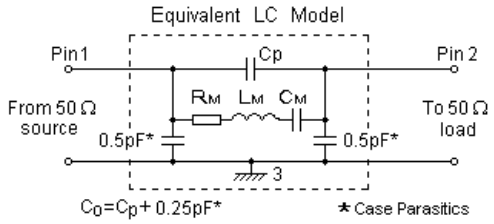



## 2.

| Pin | Configuration |
|---|---|
| 1 | Input / Output |
| 2 | Output / Input |
| 3 | Case Ground |

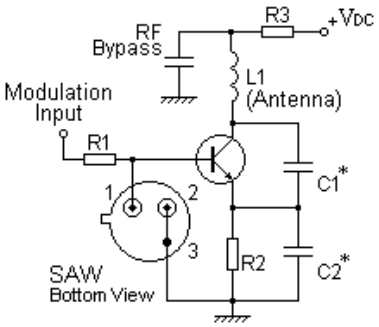
| Dimension | Data (unit: mm) |
|---|---|
| A | 9.30±0.20 |
| B | 5.08±0.10 |
| C | 3.40±0.20 |
| D | 3±0.20 / 5±0.20 |
| E | 0.45±0.20 |

## 3.Equivalent LC Model and Test Circuit

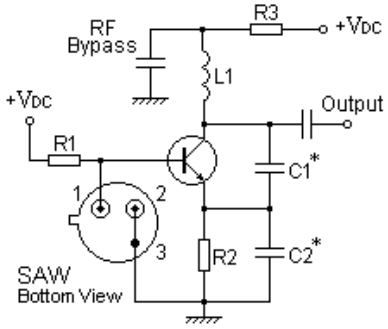



## 4.Typical Application Circuits

1) Low-Power Transmitter Application




2) Local Oscillator Application



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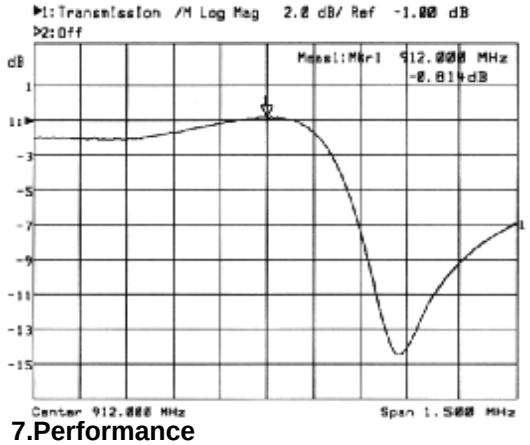
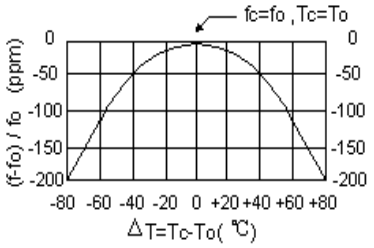
## 5.Typical Frequency Response




## 6.Temperature Characteristics




The curve shown above accounts for resonator contribution only and does not include oscillator temperature characteristics.

## 7.Performance

### 7-1.Maximum Ratings

| Rating | | Value | Unit |
|---|---|---|---|
| CW RF Power Dissipation | $P$ | 0 | dBm |
| DC Voltage Between Any two Pins | $V_{DC}$ | ±30 | V |
| Storage Temperature Range | $T_{stg}$ | -40 to +85 | °C |
| Operating Temperature Range | $T_A$ | -10 to +60 | °C |

### 7-2.Electronic Characteristics

| Characteristic | | Sym | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|---|
| Centre Frequency (+25°C) | Absolute Frequency | $f_C$ | 911.850 | | 912.150 | MHz |
| | Tolerance from 912.000MHz | $\Delta f_C$ | | ±150 | | kHz |
| Insertion Loss | | IL | | 1.3 | 1.8 | dB |
| Quality Factor | Unloaded Q | $Q_U$ | | 11,600 | | |
| | 50 Ω Loaded Q | $Q_L$ | | 1,600 | | |
| Temperature Stability | Turnover Temperature | $T_0$ | 25 | | 55 | °C |
| | Turnover Frequency | $f_0$ | | $f_C$ | | kHz |
| | Frequency Temperature Coefficient | FTC | | 0.032 | | ppm/°C$^2$ |
| Frequency Aging | Absolute Value during the First Year | $\|f_A\|$ | | ≤10 | | ppm/yr |
| DC Insulation Resistance Between Any Two Pins | | | 1.0 | | | MΩ |
| RF Equivalent RLC Model | Motional Resistance | $R_M$ | | 41 | 50 | Ω |
| | Motional Inductance | $L_M$ | | 32.4059 | | µH |
| | Motional Capacitance | $C_M$ | | 0.9407 | | fF |
| | Pin 1 to Pin 2 Static Capacitance | $C_0$ | 1.70 | 2.00 | 2.30 | pF |

In keeping with our ongoing policy of product evolvement and improvement, the above specification is subject to change without notice.

**ISO9001: 2000 Registered - Registration number 6830/2**

Issue : 1 C1

Date : SEPT 04

**For quotations or further information please contact us at:**

**3 The Business Centre, Molly Millars Lane, Wokingham, Berks, RG41 2EY, UK**

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**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!**

1. The centre frequency, $f_C$, is measured at the minimum IL point with the resonator in the 50 Ω test system.
2. Unless noted otherwise, case temperature $T_C$ = +25°C±2°C.
3. Frequency aging is the change in $f_C$ with time and is specified at +65°C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
4. Turnover temperature, $T_0$, is the temperature of maximum (or turnover) frequency, $f_0$. The nominal frequency at any case temperature, $T_C$, may be calculated from: $f = f_0 [1 - FTC (T_0 - T_C)^2]$.
5. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance $C_0$ is the measured static (non=motional) capacitance between Pin1 and Pin2. The measurement includes case parasitic capacitance.
6. Derived mathematically from one or more of the following directly measured parameters: $f_C$, IL, 3 dB bandwidth, $f_C$ versus $T_C$, and $C_0$.
7. The specifications of this device are based on the test circuit shown above and subject to change or obsolescence without notice.
8. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
9. Our liability is only assumed for the Surface Acoustic Wave (SAW) component(s) per se, not for applications, processes and circuits implemented within components or assemblies.