- ***Ideal for 865.00 MHz Transmitters***
- ***Nominal Phase Shift of 180° at Resonance***
- ***Quartz Stability***
- ***Rugged, Hermetic, Low Profile TO-39 Package***

# SQ865

| Absolute Maximum Rating (Ta=25°C) | | | |
|---|---|---|---|
| Parameter | | Rating | Unit |
| CW RF Power Dissipation | $P$ | 10 | dBm |
| DC Voltage | $V_{DC}$ | ±30 | V |
| Operating Temperature Range | $T_A$ | -10 ~ +60 | °C |
| Storage Temperature Range | $T_{stg}$ | -40 ~ +85 | °C |

| Electronic Characteristics | | | | | | |
|---|---|---|---|---|---|---|
| Parameter | | Sym | Minimum | Typical | Maximum | Unit |
| Frequency (25°C) | Nominal Frequency | $f_C$ | NS | 865.00 | NS | MHz |
| | Tolerance from 865.00 MHz | $\Delta f_C$ | - | - | ± 150 | KHz |
| Insertion Loss | | $IL$ | - | 6.0 | 8.0 | dB |
| Quality Factor | Unloaded Q-Value | $Q_U$ | - | 6,400 | - | - |
| | 50Ω Loaded Q-Value | $Q_L$ | - | 3,200 | - | - |
| Temperature Stability | Turnover Temperature | $T_O$ | 25 | - | 55 | °C |
| | Turnover Frequency | $f_O$ | - | $fc$ | - | 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 | $R_M$ | - | 99.5 | 151.0 | Ω |
| | Motional Inductance | $L_M$ | - | 117.5214 | - | μH |
| | Motional Capacitance | $C_M$ | - | 0.2884 | - | fF |
| | Pin 1 to Pin 2 Static Capacitance | $C_O$ | 2.1 | 2.4 | 2.7 | pF |

NS = Not Specified

**Notes:**

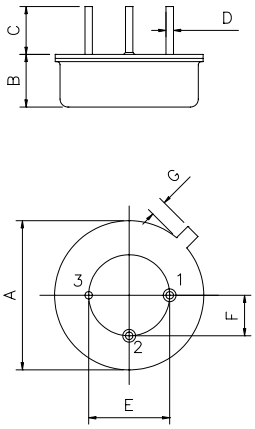
1. The center frequency, $f_C$, is measured at the minimum IL point with the resonator in the 50Ω test system.
2. Unless noted otherwise, case temperature $T_C$ = +25°C ± 2°C.
3. Frequency aging is the change in $f_C$ with time and is specified at +65°C or less. Aging may exceed the specification for 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 (nonmotional) 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.
10. For questions on technology, prices and delivery please contact our sales offices or e-mail to sales@vanlong.com.

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# 865.00 MHz Two-Port SAW Resonator

## Package Dimensions (TO-39)




## Electrical Connections

| Terminals | Connection |
|---|---|
| 1 | Input/ Output |
| 2 | Output/ Input |
| 3 | Case-Ground |

## Package Dimensions

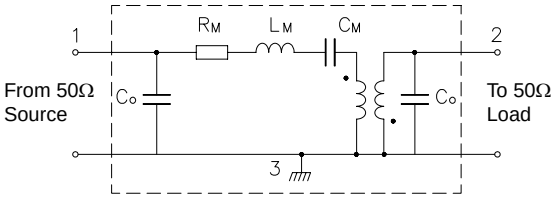
| Dimensions | Nom (mm) | |
|---|---|---|
| | Min | Max |
| A | 9.10 | 9.50 |
| B | 3.20 | 3.60 |
| C | 2.80 | 3.20 |
| D | Φ0.25 | Φ0.65 |
| E | 4.98 | 5.18 |
| F | 2.54 Nominal | |
| G | 0.4 | 0.5 |

## Marking



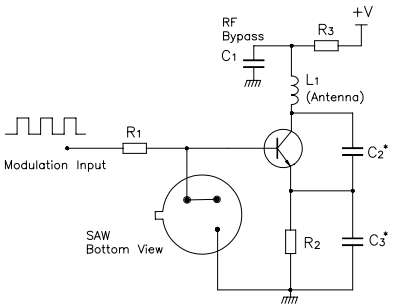

Ink Marking
Color: Black or Blue

## Equivalent LC Model and Test Circuit

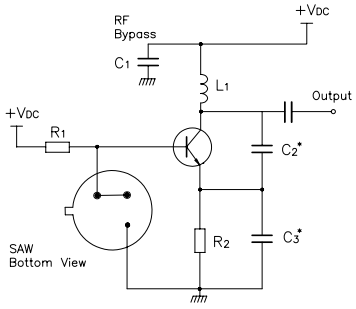



## Typical Application Circuit

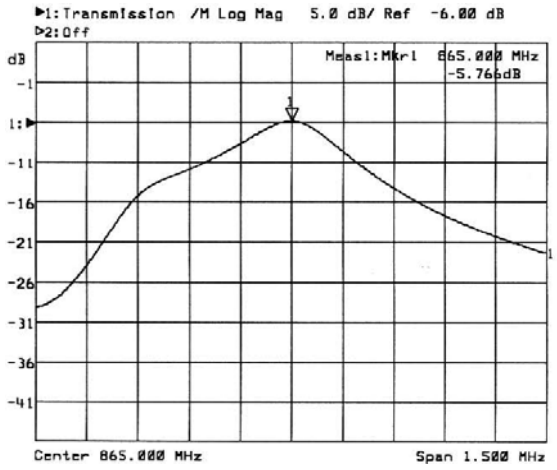
Low Power Transmitter Application



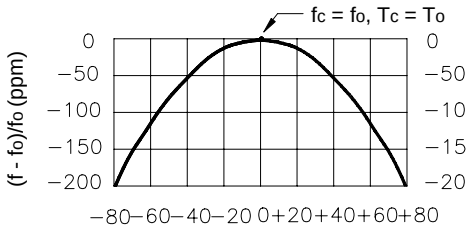

Local Oscillator Application




## Typical Frequency Response




## Temperature Characteristics




ΔT= Tc –To (°C)

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

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