

- **Ideal for 315.00 MHz Transmitters**
- **Very Low Insertion Loss**
- **Quartz Stability**
- **Ultra Miniature Ceramic SMD Package (QCC4A)**

# SR5414

| Absolute Maximum Rating (Ta=25°C) |           |           |
|-----------------------------------|-----------|-----------|
| Parameter                         | Rating    | Unit      |
| CW RF Power Dissipation           | $P$       | 0         |
| DC Voltage                        | $V_{DC}$  | ±30       |
| Operating Temperature Range       | $T_A$     | -10 ~ +60 |
| Storage Temperature Range         | $T_{stg}$ | -40 ~ +85 |

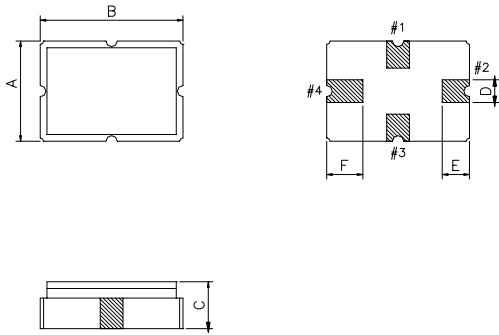
| Electronic Characteristics                    |                                      |              |         |         |      |                     |
|---|--------------------------------------|--------------|---------|---------|------|---------------------|
| Parameter                                     | Sym                                  | Minimum      | Typical | Maximum | Unit |                     |
| Frequency (25°C)                              | Nominal Frequency                    | $f_c$        | NS      | 315.00  | NS   | MHz                 |
|   | Tolerance from 315.00 MHz            | $\Delta f_c$ | -       | -       | ± 75 | KHz                 |
| Insertion Loss                                |                                      | $IL$         | -       | 1.3     | 1.8  | dB                  |
| Quality Factor                                | Unloaded Q-Value                     | $Q_U$        | -       | 11,950  | -    | -                   |
|   | 50Ω Loaded Q-Value                   | $Q_L$        | -       | 1,650   | -    | -                   |
| Temperature Stability                         | Turnover Temperature                 | $T_o$        | 25      | -       | 55   | °C                  |
|   | Turnover Frequency                   | $f_o$        | -       | $f_c$   | -    | KHz                 |
|   | Frequency Temperature Coefficient    | $FTC$        | -       | 0.032   | -    | ppm/°C <sup>2</sup> |
| 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                  | $R_M$        | -       | 16      | 23   | Ω                   |
|   | Motional Inductance                  | $L_M$        | -       | 96.7546 | -    | μH                  |
|   | Motional Capacitance                 | $C_M$        | -       | 2.6411  | -    | fF                  |
|   | Shunt Static Capacitance             | $C_o$        | 2.60    | 2.85    | 3.10 | pF                  |

NS = Not Specified

**Note:**

- The frequency  $f_c$  is the frequency of minimum IL with the resonator in the specified test fixture in a 50Ω test system with VSWR ≤ 1.2:1.
- Unless noted otherwise, case temperature TC = +25°C±2°C.
- Frequency aging is the change in fC 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.
- Turnover temperature, T<sub>0</sub>, is the temperature of maximum (or turnover) frequency, f<sub>0</sub>. The nominal frequency at any case temperature, TC, may be calculated from:  $f = f_o [1 - FTC (T_o - T_o)^2]$ .
- This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C<sub>0</sub> is the measured static (nonmotional) capacitance between input terminal and ground or output terminal and ground.
- The measurement includes case parasitic capacitance.
- Derived mathematically from one or more of the following directly measured parameters:  $f_c$ , IL, 3 dB bandwidth,  $f_c$  versus T<sub>C</sub>, and C<sub>0</sub>.
- The specifications of this device are based on the test circuit shown above and subject to change or obsolescence without notice.
- Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
- 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.
- For questions on technology, prices and delivery, please contact our sales offices or e-mail to sales@vanlong.com.

Package Dimensions (QCC4A)



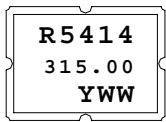
Electrical Connections

| Terminals | Connection  |
|-----------|-------------|
| 1         | Terminal 1  |
| 3         | Terminal 2  |
| 2,4       | Case-Ground |

Package Dimensions

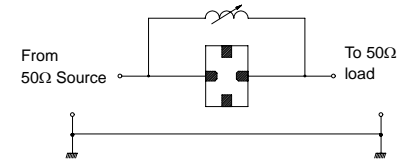
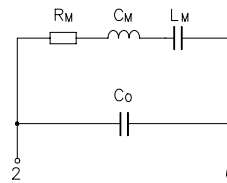
| Dimensions | Nom (mm) | Dimensions | Nom (mm) |
|------------|----------|------------|----------|
| A          | 3.5      | D          | 0.5      |
| B          | 5.0      | E          | 0.8      |
| C          | 1.4      | F          | 1.2      |

Marking



1. R5414 - Part Code
2. Frequency in MHz
3. Date Code:  
 Y : Last digit of year  
 WW : Week No.

Equivalent LC Model and Test Circuit

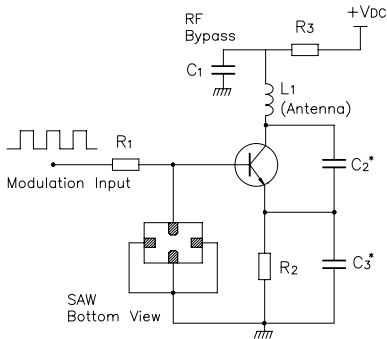


Equivalent LC Model

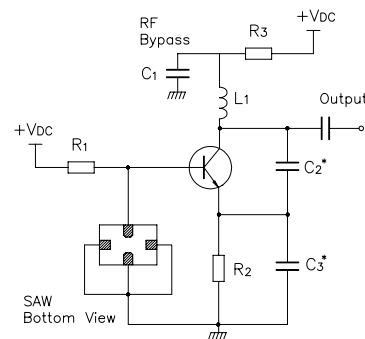
Typical Test Circuit

Typical Application Circuit

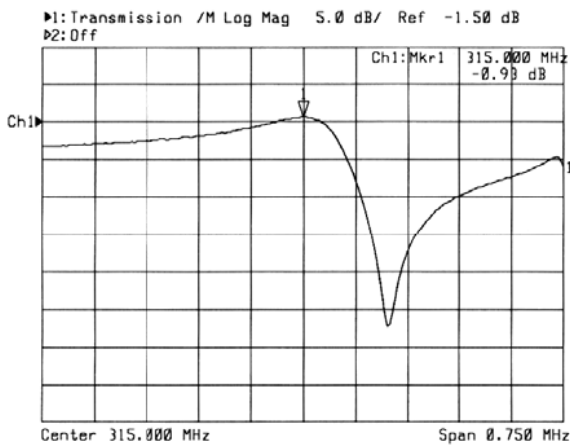
Low Power Transmitter Application



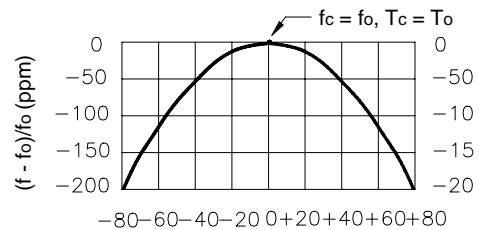
Local Oscillator Application



Typical Frequency Response



Temperature Characteristics



$$\Delta T = T_c - T_o \text{ (}^\circ\text{C)}$$

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