

- **Ideal for 447.725 MHz Transmitters**
- **Very Low Insertion Loss**
- **Quartz Stability**
- **Ultra Miniature Ceramic SMD Package (QCC4A)**

**SR5521**

Absolute Maximum Rating (Ta=25°C)		
Parameter	Rating	Unit
CW RF Power Dissipation $P$	0	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	447.725	NS	MHz
	Tolerance from 447.725 MHz	$\Delta f_c$	-	-	± 75	KHz
Insertion Loss		$IL$	-	1.6	2.2	dB
Quality Factor	Unloaded Q-Value	$Q_u$	-	11,100	-	-
	50Ω Loaded Q-Value	$Q_L$	-	1,850	-	-
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	$R_M$	-	20.0	29.0	Ω
	Motional Inductance	$L_M$	-	78.9554	-	μH
	Motional Capacitance	$C_M$	-	1.60205	-	fF
	Shunt Static Capacitance	$C_o$	1.6	1.9	2.2	pF

NS = Not Specified

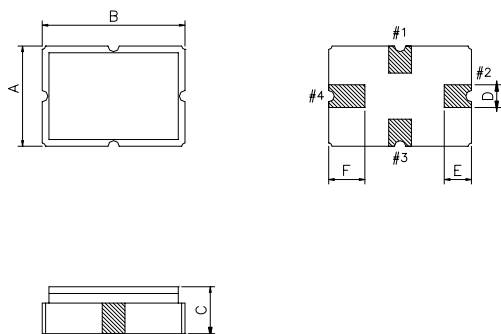
**Note:**

- 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, T0, is the temperature of maximum (or turnover) frequency, f0. 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  $C_o$  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  $T_C$ , and  $C_o$ .
- 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.

# 447.725 MHz One Port SAW Resonator



## Package Dimensions (QCC4A)



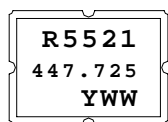
## Electrical Connections

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

## Package Dimensions

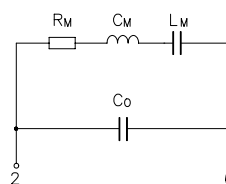
Dimensions	Nom (mm)	Dimensions	Nom (mm)
A	3.5	D	0.5
B	5.0	E	0.8
C	1.4	F	1.2

## Marking

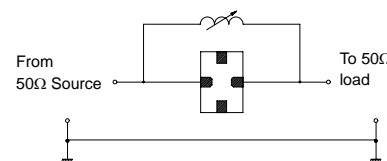


1. R5521 - Part Code
2. Frequency in MHz
3. Date Code:  
Y : Last digit of year  
WW : Week No.

## Equivalent LC Model and Test Circuit



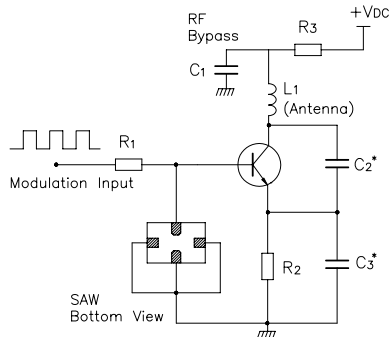
Equivalent LC Model



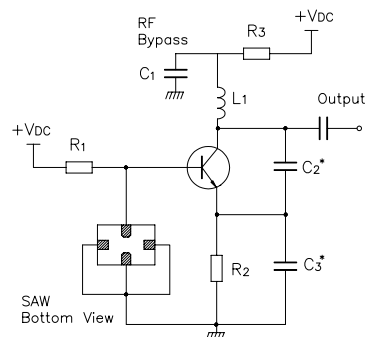
Typical Test Circuit

## Typical Application Circuit

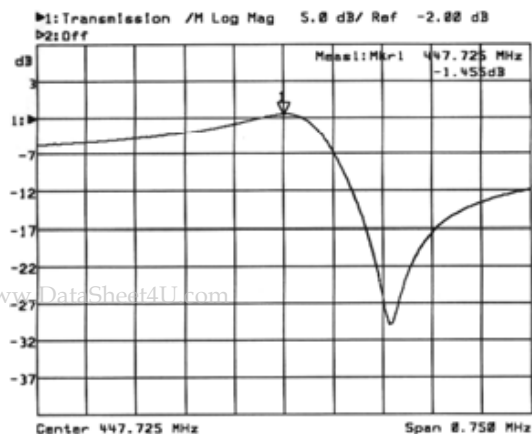
### Low Power Transmitter Application



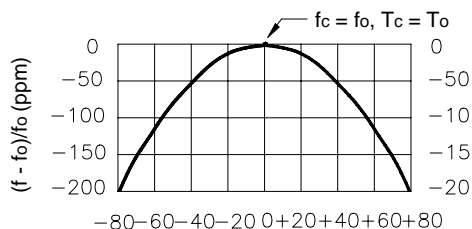
### Local Oscillator Application



## Typical Frequency Response



## Temperature Characteristics



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

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