

- **Ideal for 441.20 MHz Transmitters**
- **Very Low Insertion Loss**
- **Quartz Stability**
- **Rugged, Hermetic, Low Profile F-11 Package**

**SR441B**

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	441.20	NS	MHz
	Tolerance from 441.20 MHz	$\Delta f_C$	-	-	± 75	KHz
Insertion Loss		$IL$	-	2.8	3.3	dB
Quality Factor	Unloaded Q-Value	$Q_U$	-	12,350	-	-
	50Ω Loaded Q-Value	$Q_L$	-	3,400	-	-
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	$R_M$	-	38.0	46.0	Ω
	Motional Inductance	$L_M$	-	169.3413	-	μH
	Motional Capacitance	$C_M$	-	0.7692	-	fF
	Pin 1 to Pin 2 Static Capacitance	$C_O$	0.85	1.15	1.45	pF

NS = Not Specified

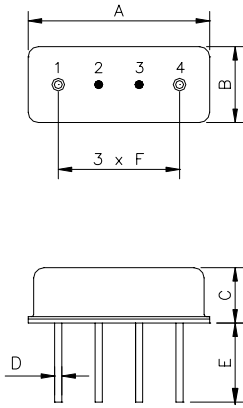
**Notes:**

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  $T_C = +25°C \pm 2°C$ .
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,  $T_O$ , is the temperature of maximum (or turnover) frequency,  $f_o$ . The nominal frequency at any case temperature,  $T_C$ , may be calculated from:  $f = f_o [1 - FTC (T_O - T_C)^2]$ .
5. 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 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  $C_O$ .
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.

# 441.20 MHz One-Port SAW Resonator



## Package Dimensions (F-11)



## Electrical Connections

Terminals	Connection
1	Input/Output
2	Case Ground
3	Case Ground
4	Output/Input

## Package Dimensions

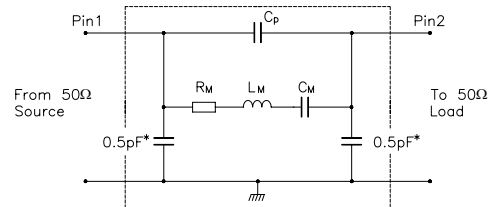
Dimensions	Nom. (mm)	Tol. (mm)
A	11.0	±0.3
B	4.5	±0.3
C	3.2	±0.3
D	0.45	±0.1
E	5.0	±0.5
F	2.54	±0.2

## Marking



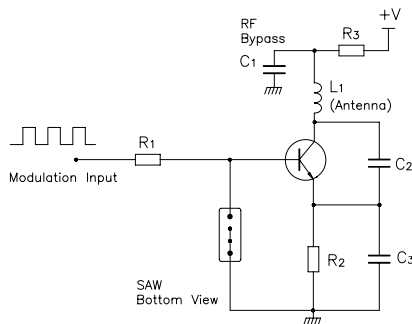
Ink Marking  
Color: Black or Blue

## Equivalent LC Model and Test Circuit

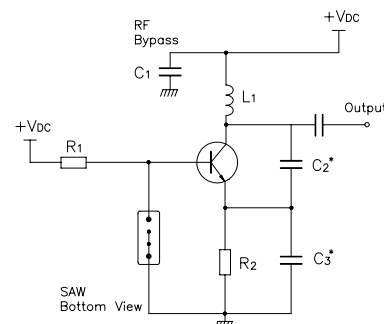


## Typical Application Circuit

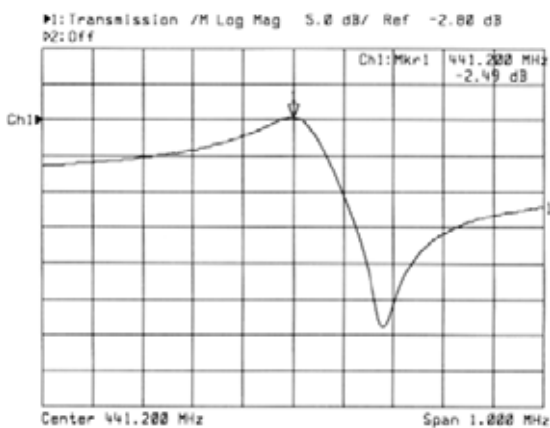
### Low Power Transmitter Application



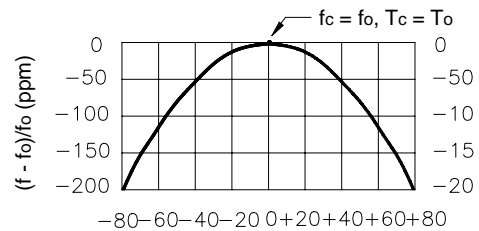
### Local Oscillator Application



## Typical Frequency Response



## Temperature Characteristics



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

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