

- **Ideal for 316.80 MHz Transmitters**
- **Very Low Insertion Loss**
- **Quartz Stability**
- **Rugged, Hermetic, Low Profile TO-39 Package**
- **Complies with Directive 2002/95/EC (RoHS Compliant)**

# SR316

ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ )			
Parameter		Rating	Unit
CW RF Power Dissipation	$P$	0	dBm
DC Voltage	$V_{bc}$	$\pm 30$	V
Operating Temperature Range	$T_A$	-10 ~ +60	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-40 ~ +85	$^{\circ}\text{C}$

ELECTRONIC CHARACTERISTICS						
	Parameter	Sym	Minimum	Typical	Maximum	Unit
Frequency (25 $^{\circ}\text{C}$ )	Nominal Frequency	$f_c$	NS	316.80	NS	MHz
	Tolerance from 316.80 MHz	$\Delta f_c$	-	-	$\pm 75$	KHz
Insertion Loss		$IL$	-	1.3	1.8	dB
Quality Factor	Unloaded Q-Value	$Q_U$	-	13,800	-	-
	50 $\Omega$ Loaded Q-Value	$Q_L$	-	1,900	-	-
Temperature Stability	Turnover Temperature	$T_O$	25	-	55	$^{\circ}\text{C}$
	Turnover Frequency	$f_O$	-	$f_c$	-	KHz
	Frequency Temperature Coefficient	$FTC$	-	-0.032	-	ppm/ $^{\circ}\text{C}^2$
Frequency Aging	Absolute Value during the First Year	$ f_A $	-	-	10	ppm/yr
DC Insulation Resistance Between any Two Pins		-	1.0	-	-	M $\Omega$
RF Equivalent RLC Model	Motional Resistance	$R_M$	-	16	23	$\Omega$
	Motional Inductance	$L_M$	-	110.7814	-	$\mu\text{H}$
	Motional Capacitance	$C_M$	-	2.2806	-	fF
	Pin 1 to Pin 2 Static Capacitance	$C_O$	2.35	2.65	2.95	pF

NS = Not Specified

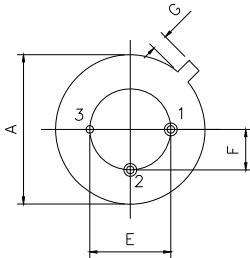
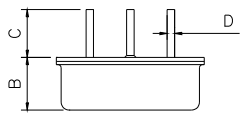
**Notes:**

- The center frequency,  $f_c$ , is measured at the minimum IL point with the resonator in the 50 $\Omega$  test system.
- Unless noted otherwise, case temperature  $T_C = +25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .
- Frequency aging is the change in  $f_c$  with time and is specified at +65 $^{\circ}\text{C}$  or less. Aging may exceed the specification for prolonged temperatures above +65 $^{\circ}\text{C}$ . Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
- 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:  $f = f_O [1 - FTC (T_O - T_C)^2]$ .
- 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.
- 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.

# 316.80 MHZ ONE-PORT SAW RESONATOR



## PACKAGE DIMENSIONS (TO-39)



## Electrical Connections

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

## Package Dimensions

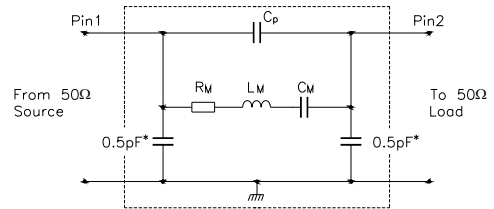
Dimensions	Nom (mm)	
	Min	Max
A	9.10	9.50
B	3.20	3.60
C	2.80	3.20
D	Φ0.25	Φ0.65
E	4.98	5.18
F	2.54 Nominal	
G	0.4	0.5

## MARKING



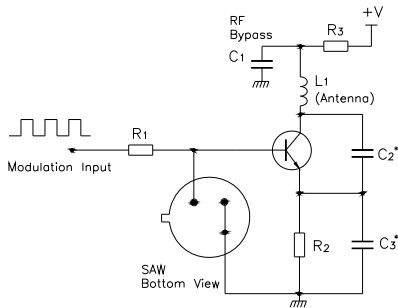
Laser or Ink Marking  
 Line 1: Part Number  
 Line 2: Date Code  
 YY : Last 2 digits of year  
 WW : Week No.

## EQUIVALENT LC MODEL AND TEST CIRCUIT

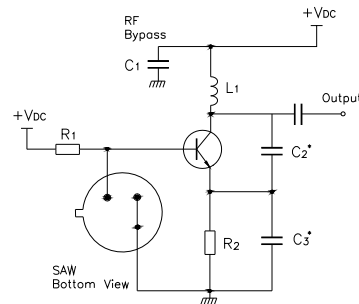


## TYPICAL APPLICATION CIRCUIT

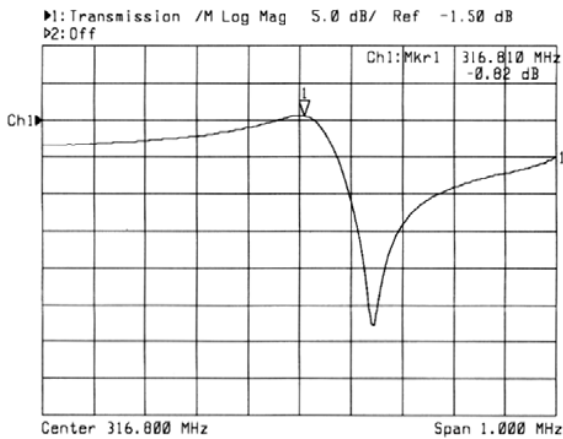
### Low Power Transmitter Application



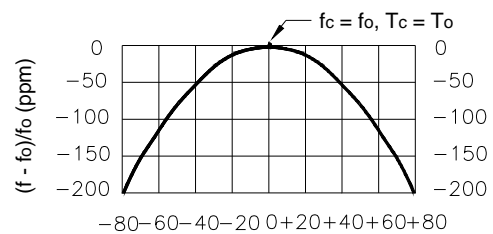
### Local Oscillator Application



## 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.