

Approved by:
Checked by:
Issued by:

SPECIFICATION

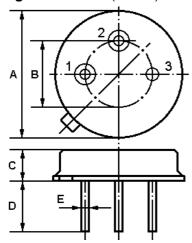
PRODUCT: SAW RESONATOR

MODEL: HR315.5 TO-39

HOPE MICROELECTRONICS CO., LIMITED

The NDR315.5 is a true one-port, surface-acoustic-wave (**SAW**) resonator in a low-profile metal **TO-39** case. It provides reliable, fundamental-mode, quartz frequency stabilization i.e. in transmitters or local oscillators operating at **315.500** MHz.

1.Package Dimension (TO-39)



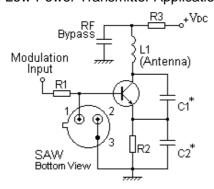
2.Marking

HR315.5

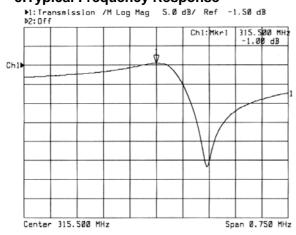
Color: Black or Blue

4.Typical Application Circuits

1) Low-Power Transmitter Application



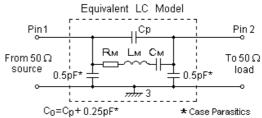
5. Typical Frequency Response



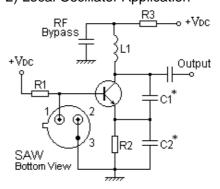
Pin Configuration 1 Input / Output 2 Output / Input 3 Case Ground

Dimension	Data (unit: mm)				
А	9.30±0.20				
В	5.08±0.10				
С	3.40±0.20				
D	3±0.20 / 5±0.20				
Е	0.45±0.20				

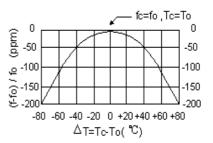
3. Equivalent LC Model and Test Circuit



2) Local Oscillator Application



6.Temperature Characteristics



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

7.Performance

7-1.Maximum Ratings

Rating	Value	Unit	
CW RF Power Dissipation	Р	0	dBm
DC Voltage Between Any two Pins	$V_{ m DC}$	±30	V
Storage Temperature Range	$T_{\rm stg}$	-40 to +85	
Operating Temperature Range	T_{A}	-10 to +60	

7-2. Electronic Characteristics

	Characteristic	Sym	Minimum	Typical	Maximum	Unit
Center Frequency (+25)	Absolute Frequency	f _C	315.425		315.575	MHz
	Tolerance from 315.500MHz	Δf_{C}		± 75		kHz
Insertion Loss		IL		1.2	1.8	dB
Quality Factor	Unloaded Q	Q_U		14,550		
	50 Ω Loaded Q	Q _L		1,900		
Temperature Stability	Turnover Temperature	T ₀	25		55	
	Turnover Frequency	f ₀		f _C		kHz
	Frequency Temperature Coefficient	FTC		0.032		ppm/ ²
Frequency Aging	Absolute Value during the First Year	f _A		10		ppm/yr
DC Insulation Resistance Between Any Two Pins			1.0			ΜΩ
RF Equivalent RLC Model	Motional Resistance	R _M		15	23	Ω
	Motional Inductance	L _M		110.2789		μН
	Motional Capacitance	См		2.3099		fF
	Pin 1 to Pin 2 Static Capacitance	C ₀	2.4	2.7	3.0	pF

(i) CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!

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- 1. The center frequency, f_C, is measured at the minimum IL point with the resonator in the 50 test system.
- 2. Unless noted otherwise, case temperature $T_C = +25^{\circ}C \pm 2^{\circ}C$.
- 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 C₀ 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 .
- 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 sales@hoperf.com.