

## RSV2522

The RSV2522 is a low power Voltage Controlled SAW Oscillator (VCSO). Its advanced Surface Acoustic Wave technology enables the ultimate in performance for excellent phase noise performance at very high frequencies. This miniature +5V low power supply SMD package VCSO is ideal for the latest generation of high speed converters, which require a high frequency clock with low jitter.

The VCSO series uses high performance SAW resonators to generate 800MHz and 1GHz frequency outputs, and each are combined with a frequency doubler to reach 1.6GHz and 2GHz frequencies, respectively. The RSV2522 can be easily locked to a stable reference through a Phase Locked Loop system, or they can be used as a SAW clock without the need for external circuitry.

### Features

- Excellent phase noise performance:
  - ✓ 1 kHz offset: -115 dBc/Hz
  - ✓ 10 kHz offset: -141 dBc/Hz
  - ✓ Noise floor: -172 dBc/Hz
- Broadband jitter: < 10 fs (offset frequency 10 kHz to 40 MHz)
- Low power consumption: <40mA

### Applications

- Instrumentation, test and measurement
- High speed converter and low jitter applications
- Ground based military equipment
- Avionics
- Telecommunications

25.4 x 22 x 5 mm<sup>3</sup>



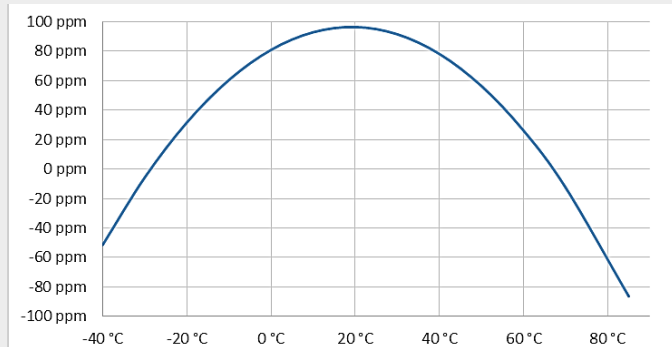
## 1. Environmental Conditions

Parameter	Condition / Remarks	Typ.	Guaranteed	Unit
Operating & storage temperature		-40 to 85		°C
G-sensitivity	On each axis	1	<2	ppb/g
Shock & random vibration	As per MIL-PRF-28800F, Class 3, test equipment			

## 2. Frequency Characteristics

Parameter	Condition / Remarks	Typ.	Guaranteed	Unit
Nominal frequency (F <sub>nom</sub> )	F <sub>nom</sub> = 500, 800, 1000, 1600 or 2000 MHz @ 25°C without external control	F <sub>nom</sub> x (1 + 10 <sup>-4</sup> )		MHz
Frequency calibration	With regards to nominal frequency	±100		ppm
Frequency drift	On operating temperature range	±100		ppm
Long term stability (Ageing)	1st year		< ±5	ppm
	10 years		< ±10	
Tuning range	For control voltage 0.5 – 4.5V	600	>500	ppm
Tuning sensitivity	Positive slope	150		Ppm/V
Start-up time			<10	ms
Power consumption	@ 5V	30	<40	mA
Output power	Sine wave into 50 Ω load		+10±2	dBm
Output impedance	@ F <sub>nom</sub> ± 1MHz		<2.0:1	VSWR

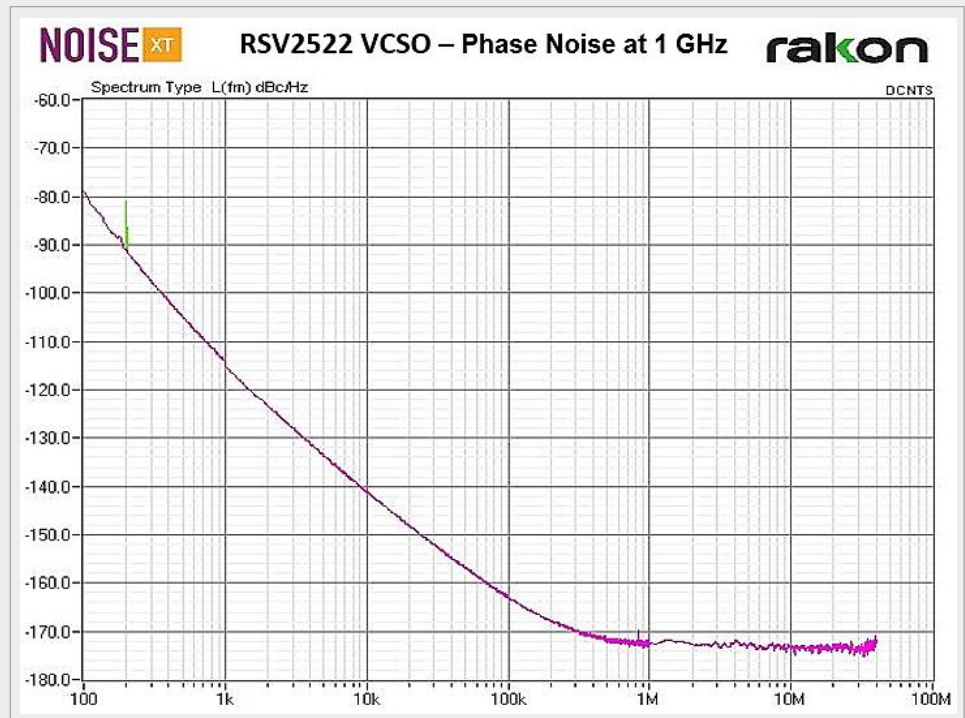
Frequency drift vs Temperature @ 1 GHz output frequency



### 3. Single Side Band Phase Noise (PN) @ 1 GHz and Time Jitter

Parameter	Condition / Remarks	Typ.	Guaranteed	Unit	
Phase noise (Static conditions at 25°C)	Guaranteed values on full temperature range	@ 1 MHz offset	-115	<-110	dBc/Hz
		@ 1 kHz offset	-141	<-138	
		@ 10 kHz offset	-172	<-170	
Harmonic distortion		-40	<-30	dBc	
Spurious	Non-harmonics		<-80	dBc	
Broadband jitter	From 10 kHz to 40 MHz	4	<10	fs	

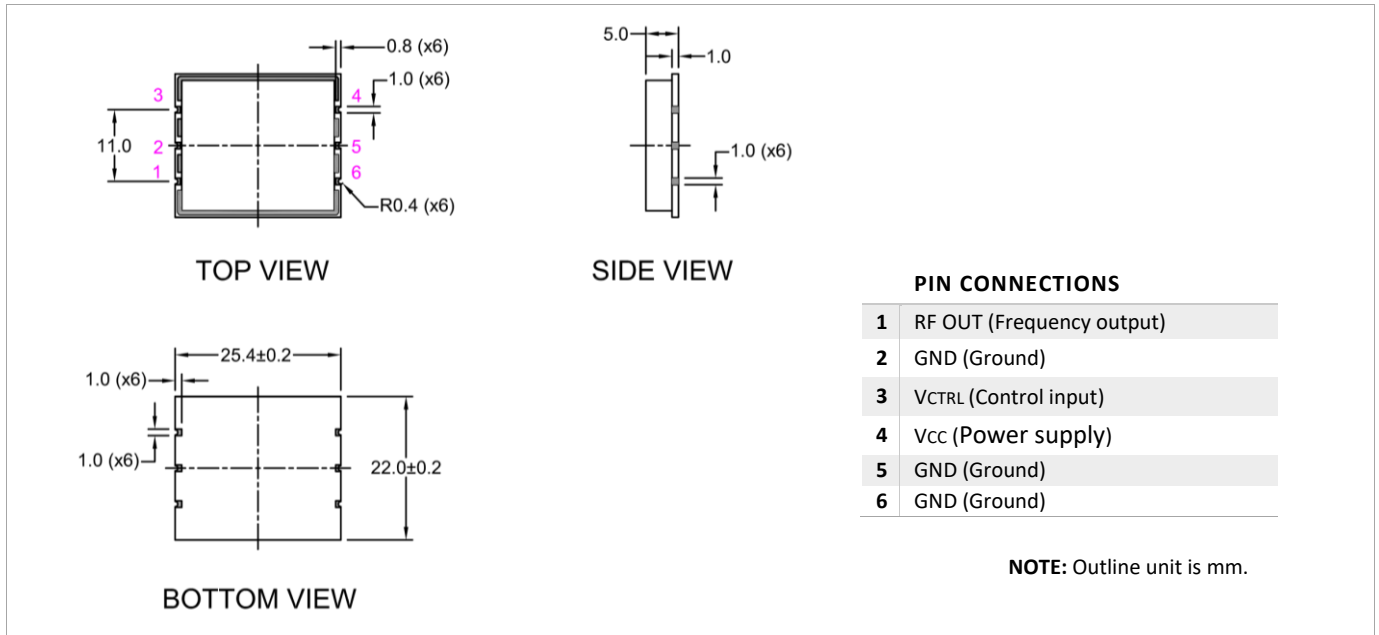
Phase Noise plot  
@ 1GHz output frequency



### 4. Electrical Interface

Parameter	Condition / Remarks	Typ.	Guaranteed	Unit
Power supply (Vcc)	Pin 4 - Absolute maximum - Operating range		+5±2.5 <+6	V
Load impedance	Pin 1 50Ω all phases		<1.3:1	VSWR
Control input voltage (VCTRL)	Pin 3		0.5 to +4.5	V
Control input impedance	Pin 3	2		kΩ
Control input modulation bandwidth	Pin 3		>10	kHz

## 5. Model Outline, Pin Connections



## 6. Pb-free Reflow Profile

The assembly of this SMD module must be performed through a “Pb-free” reflow process and according to recommended standards defined in IPC/JEDEC J-STD-020.

