

## RST3225N

The RST3225N employs an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a small form factor 3.2 x 2.5 x 0.9 mm package. This low-power SMD Temperature Compensated Crystal Oscillator (TCXO) provides a voltage control option (VCTCXO) with a wide frequency range available from 10 to 52 MHz. Supply voltage options are 1.8 to 3.3 V.

The high stability RST3225N is designed for high-performance GNSS and communication applications where the required frequency stability  $\pm 0.5$  ppm over operating temperature ranges from -40 to 85°C.

### Features

- Frequency slope and perturbation specifications can be customised to the application's requirement
- Excellent phase noise performance
- Frequency stability  $\pm 0.5$  ppm over operating temperatures from -40 to 85°C

### Applications

- GNSS
- Smartphone
- Consumer devices
- Communications
- Wi-Fi

### 3.2 x 2.5 x 0.9 mm



## Standard Specifications

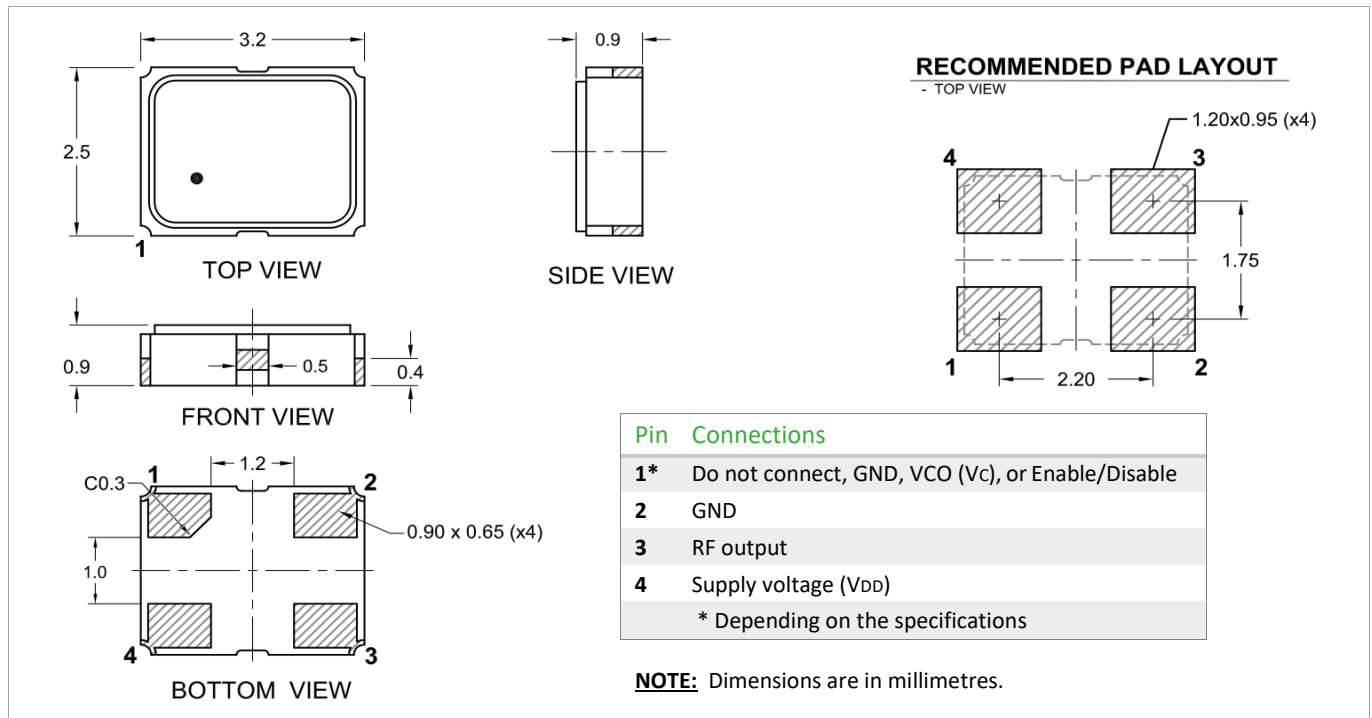
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		10 – 52		MHz	
Frequency calibration			$\pm 1$	ppm	Offset from nominal frequency measured at 25°C $\pm 2^\circ\text{C}$
Reflow shift			$\pm 1$	ppm	Two consecutive reflows
Operating temperature range	-40		85	°C	The operating temperature range over which the frequency stability is measured
Frequency stability over temperature			$\pm 0.5$	ppm	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range <sup>1</sup> . Control voltage set to the midpoint of Vc. 100% screen test
Frequency slope			$\pm 0.1$	ppm/°C	Minimum of one frequency reading every 2°C over the operating temperature range <sup>2</sup>
Static temperature hysteresis			0.6	ppm	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C
Sensitivity to supply voltage variations			$\pm 0.1$	ppm	V <sub>DD</sub> varied $\pm 5\%$ at 25°C
Sensitivity to load variations			$\pm 0.2$	ppm	$\pm 10\%$ load change at 25°C <sup>2</sup>
Long term stability			$\pm 1$	ppm	Frequency drift over 1 year at 25°C
Acceleration sensitivity			1	ppb/g	Gamma vector of all three axes from 30 to 1500Hz
Supply voltage (V <sub>DD</sub> )		1.8 – 3.3		V	With a tolerance of $\pm 5\%$
<b>Control voltage (Vc) range</b>	0.3 0.4	0.9 1.4	1.5 2.4	V	V <sub>DD</sub> $\leq$ 2.3V V <sub>DD</sub> > 2.3V
Supply current			2	mA	At maximum V <sub>DD</sub> <sup>2</sup>
Output voltage level	0.7			V <sub>pk-pk</sub>	At minimum V <sub>DD</sub> , specified for load stated in oscillator output section at 25°C <sup>2</sup>
Output waveform					DC coupled clipped sinewave <sup>3</sup>

<sup>1</sup> Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents on the oscillator can lead to short term frequency drift.

<sup>2</sup> Specified for load stated in oscillator output section at 25°C.

<sup>3</sup> External AC-Coupling capacitor required. 1 nF or greater recommended.

## Model Outline and Recommended Pad Layout



## Test Circuit

