

## RST3225HC

The RST3225HC is a series of high temperature TCXO (Temperature Compensated Crystal Oscillator) and VCTCXO (Voltage Controlled Temperature Compensated Crystal Oscillator) with CMOS output. It is designed for high-performance Automotive and communication applications where the required frequency stability  $\pm 2$  ppm over operating temperature ranges from  $-40$  to  $105^{\circ}\text{C}$ .

The RST3225H has an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a small form factor  $3.2 \times 2.5 \times 0.9$  mm package. This low-power SMD TCXO provides a voltage control option of VCTCXO, with a wide frequency range available from 10 to 52 MHz. Supply voltage options are 1.8 to 3.3 V.

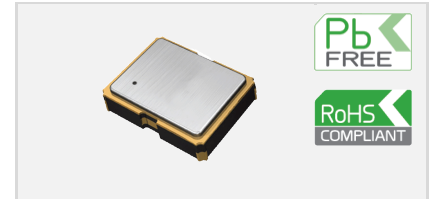
### Features

- High-end operating temperature up to  $105^{\circ}\text{C}$
- Excellent phase noise performance
- Output: CMOS

### Applications

- Automotive
- Communications
- Consumer devices
- Wi-Fi

3.2 x 2.5 x 0.9 mm



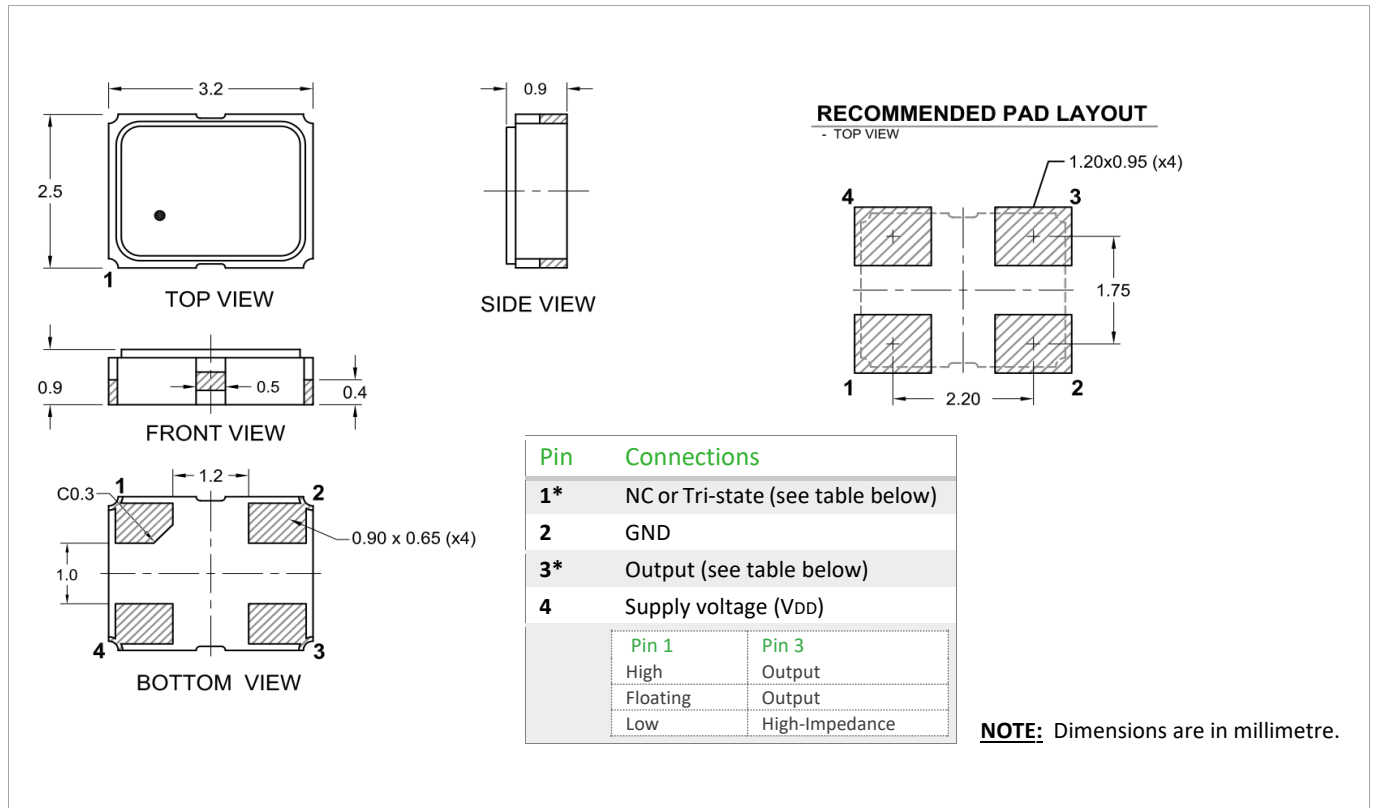
## Standard Specifications

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 $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
Reflow shift			$\pm 1$	ppm	Two consecutive reflows
Operating temperature range	-40		105	$^{\circ}\text{C}$	The operating temperature range over which the frequency stability is measured
Frequency stability over temperature			$\pm 2$	ppm	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range <sup>1</sup>
Static temperature hysteresis			0.6	ppm	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at $25^{\circ}\text{C}$
Sensitivity to supply voltage variations			$\pm 0.1$	ppm	$V_{\text{DD}}$ varied $\pm 5\%$ at $25^{\circ}\text{C}$
Sensitivity to load variations			$\pm 0.1$	ppm	$\pm 10\%$ load change at $25^{\circ}\text{C}$ <sup>2</sup>
Long term stability (Ageing)			$\pm 1$	ppm	Frequency drift over 1 year at $25^{\circ}\text{C}$
Acceleration sensitivity			1	ppb/g	Gamma vector of all three axes from 30 to 1500Hz
Supply voltage ( $V_{\text{DD}}$ )		1.8 – 3.3		V	With a tolerance of $\pm 5\%$
Supply current			3.8	mA	At maximum $V_{\text{DD}}$ <sup>2</sup>
Power down	$\geq 80\%$		$\leq 20\%$	$V_{\text{DD}}$	Oscillation Enable ( $V_{\text{IH}}$ ) Oscillation Disable ( $V_{\text{IL}}$ )
Output voltage level low ( $V_{\text{OL}}$ )			10	$\%V_{\text{DD}}$	Measured with a capacitive load of 15pF
Output voltage level high ( $V_{\text{OH}}$ )	90				
Duty cycle	45		55		Measured at 50% $V_{\text{DD}}$ trigger level
Output load			15	pF	
Start-up time			3	ms	@ 26 MHz $\pm 2.5$ ppm
			2		
Rise time / Fall time			5	ns	@ 10% to 90% $V_{\text{DD}}$ , CMOS output

<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  $25^{\circ}\text{C}$ .

## Model Outline and Recommended Pad Layout



## Test Circuit

