

## RST2520H

The RST2520H is a series of high temperature TCXO (Temperature Compensated Crystal Oscillator) and VCTCXO (Voltage Controlled Temperature Compensated Crystal Oscillator). It is designed for high-performance Automotive and communication applications where the required frequency stability  $\pm 0.5$  ppm over operating temperature ranges from  $-40$  to  $105^{\circ}\text{C}$ .

The RST2520H has an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a small form factor  $2.5 \times 2.0 \times 0.8$  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  $105^{\circ}\text{C}$
- Frequency stability  $\pm 0.5$  ppm over extended temperatures
- Excellent phase noise performance
- Output: Clipped sinewave, temperature sensor

### Applications

- Automotive
- Communications
- Consumer devices
- Wi-Fi

2.5 x 2.0 x 0.8 mm



## Standard Specifications

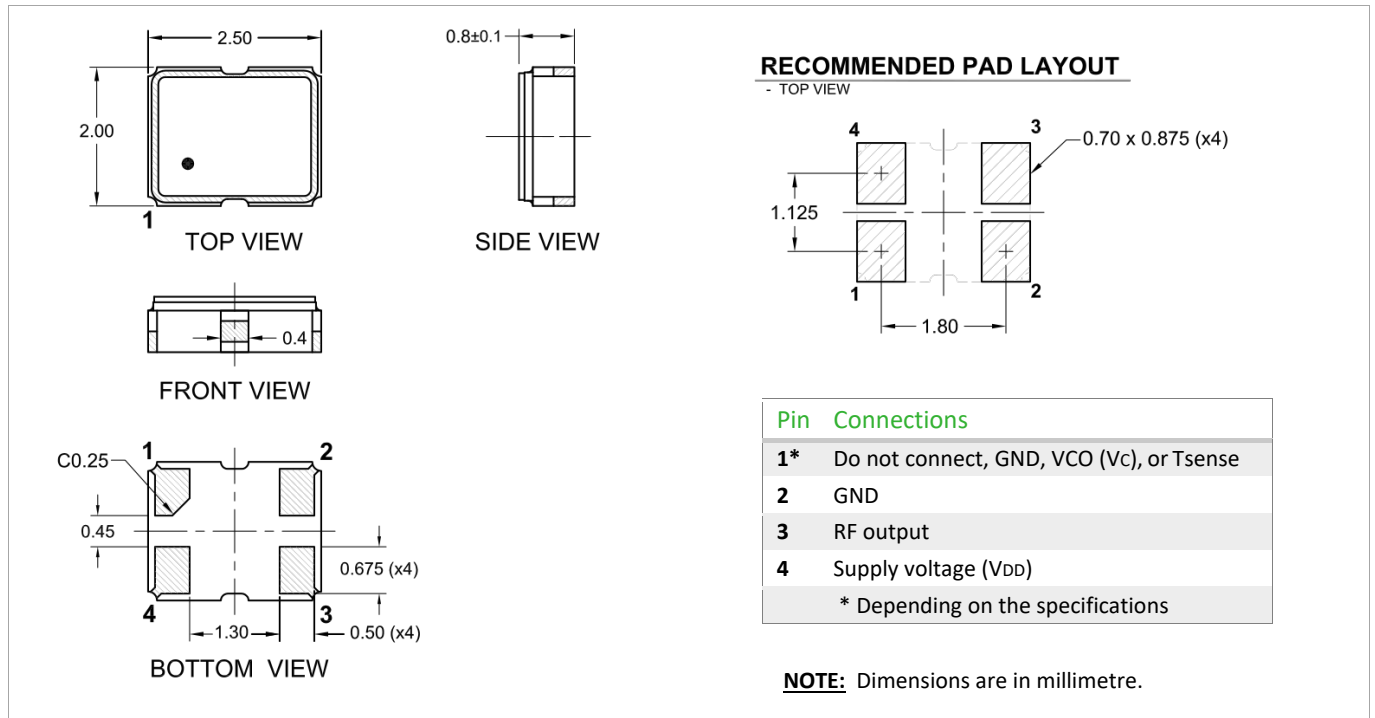
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		10 – 52		MHz	
Frequency calibration			$\pm 1$	ppm	Offset from nominal frequency measured at $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
Reflow shift			$\pm 1$	ppm	Two consecutive reflows
Operating temperature range	-40		105	$^{\circ}\text{C}$	The operating temperature range over which the frequency stability is measured
Frequency stability over temperature			$\pm 0.5$	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. For a 100% screen-tested product, please refer to the alternative RIT2520H
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 <sub>DD</sub> 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			$\pm 1$	ppm	Frequency drift over 1 year at $25^{\circ}\text{C}$
Supply voltage (V <sub>DD</sub> )		1.8 – 3.3		V	With a tolerance of $\pm 5\%$
Control voltage (Vc) range	0.2	0.9 1.2	V <sub>DD</sub> - 0.2	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	0.8			V <sub>pk-pk</sub>	At minimum V <sub>DD</sub> , specified for load stated in oscillator output section at $25^{\circ}\text{C}$ <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  $25^{\circ}\text{C}$ .

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

## Model Outline and Recommended Pad Layout



## Test Circuit

