RST2520HC

The RST2520HC 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 applications to comply with AEC-Q200, where the required frequency stability is ±2.5 ppm over operating temperatures from -40 to 105°C.

The RST2520HC has an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a small font factor 2.5 x 2.0 x 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.

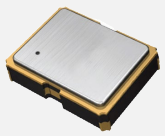
Features

- High-end operating temperature up to 105°C
- Excellent phase noise performance
- Output: CMOS

Applications

- Automotive
- Communications
- Consumer devices
- Wi-Fi

2.5 x 2.0 x 0.8 mm



Pb FREE

RoHS COMPLIANT

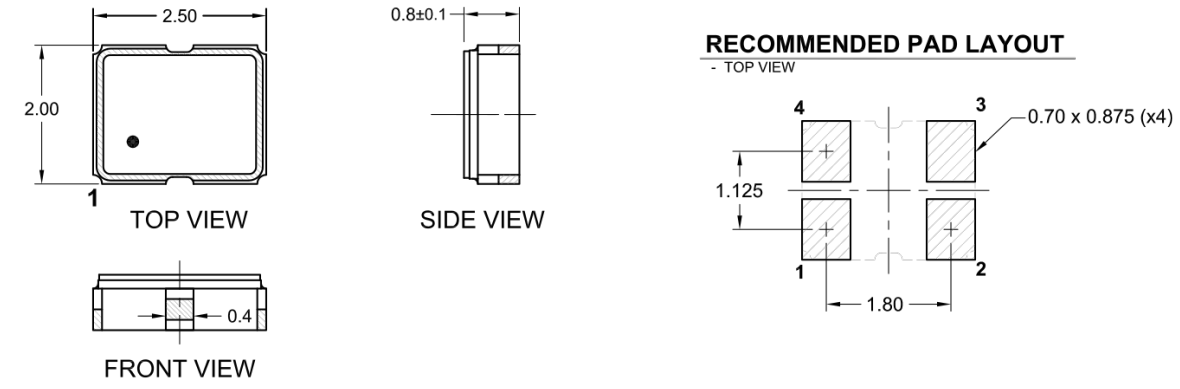
Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		10 – 52		MHz	
Frequency calibration			±1	ppm	Offset from nominal frequency measured at 25°C ±2°C
Reflow shift			±1	ppm	Two consecutive reflows
Operating temperature range	-40		105	°C	The operating temperature range over which the frequency stability is measured
Frequency stability over temperature			±2.5	ppm	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range[1]
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			±0.1	ppm	V_{DD} varied ±5% at 25°C
Sensitivity to load variations			±0.1	ppm	±10% load change at 25°C[2]
Long term stability (Ageing)			±1	ppm	Frequency drift over 1 year at 25°C
Supply voltage (V_{DD})		1.8 – 3.3		V	With a tolerance of ±5%
Supply current			3.8	mA	At maximum V_{DD}[2]
Power down	≥80% 		 ≤20%	VDD	Oscillation Enable (VIH) Oscillation Disable (VIL)
Output voltage level low (VOL) Output voltage level high (VOH)	 90		10	%VDD	Measured with a capacitive load of 15pF
Duty cycle	45		55		Measured at 50% VDD trigger level
Output load			15	pF	
Start-up time Normal mode Fast mode			3 2	ms	@ 26 MHz ±2.5 ppm
Rise time / Fall time			5	ns	@ 10% to 90% VDD, CMOS output

[1] 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.

[2] Specified for load stated in oscillator output section at 25°C.

Model Outline and Recommended Pad Layout



Pin	Connections
1*	Enable/Disable
2	GND
3*	Output (see table below)
4	Supply voltage (V_{DD})

Pin 1	Pin 3
High	Output
Low	High-Impedance

NOTE:
Dimensions are in millimetre.

Test Circuit – CMOS