

RST2016AL

The low-power TCXO RST2016AL features an analogue ASIC-based oscillator and a high-order temperature compensation circuit within a compact 2.0 x 1.6 mm package. The device offers enable/disable functionality, optimises power efficiency during standard operation, and can operate at a supply voltage as low as 1.2 V.

The RST2016AL TCXO provides ± 0.5 ppm frequency stability over a temperature range of -40°C to 85°C . With its low power consumption, compact footprint, and advanced compensation technology, it is ideally suited for time and frequency reference applications across wireless modules, GNSS positioning, consumer devices and IoT.

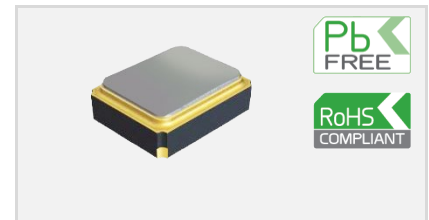
Features

- Low supply voltage 1.2 V
- Power down mode
- High temperature stability of ± 0.5 ppm over wide temperature ranges

Applications

- Wireless modules
- Communications
- GNSS
- IoT and consumer devices

2.0 x 1.6 x 0.7 mm



Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		13 – 52		MHz	
Frequency calibration			± 1	ppm	Offset from nominal frequency measured at 25°C $\pm 2^{\circ}\text{C}$
Reflow shift (ΔF)			± 1	ppm	Two consecutive reflows as per attached profile after 2 hours relaxation at 25°C
Operating temperature range	-40		85	$^{\circ}\text{C}$	The operating temperature range over which the frequency stability is measured
Frequency stability over temperature (FvT)			± 0.5	ppm	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range ¹ . Control voltage set to midpoint of Vc
Sensitivity to supply voltage variations			± 0.1	ppm	V _{DD} varied $\pm 5\%$ at 25°C
Sensitivity to load variations			± 0.2	ppm	$\pm 10\%$ load change at 25°C
Long term stability			± 1 ± 5	ppm	Over 1 year at $25 \pm 5^{\circ}\text{C}$ Over 10 years at $25 \pm 5^{\circ}\text{C}$
Supply voltage (V _{DD})		1.2 – 1.8		V	With a tolerance of $\pm 5\%$
Supply current					
~26 MHz			1.5	mA	At maximum V _{DD} . Specified for load stated in oscillator output section at 25°C .
~32 MHz			2.0		
≤ 52 MHz			2.5		
Output voltage level	0.8		1.2	V _{pk-pk}	
Output load resistance	9	10	11	k Ω	
Output load capacitance	9	10	11	pF	
Start-up time (amplitude)			0.5	ms	Within 90% of the minimum specified output level
Start-up time (frequency)			2	ms	Within ± 0.5 ppm of steady-state frequency

¹ Parts should be shielded from drafts that cause unexpected thermal gradients. Temperature changes due to ambient air currents on the oscillator can lead to short-term frequency drift.

SSB Phase Noise (26.0 MHz, at 25°C)

Parameter	Min/	Typ.	Max.	Unit.	Test Condition / Description
1Hz offset		-63		dBc/Hz	
10Hz offset		-93		dBc/Hz	
100Hz offset		-114		dBc/Hz	
1kHz offset		-135		dBc/Hz	
10kHz offset		-148		dBc/Hz	
100kHz offset		-149		dBc/Hz	
1MHz offset		-151		dBc/Hz	

Model Outline and Recommended Pad Layout

TOP VIEW

FRONT VIEW

BOTTOM VIEW

RECOMMENDED PAD LAYOUT - TOP VIEW

Pin Connections

Output Enable (OE)	
Pin 1	Pin 3
High	OUTPUT
Low	High-Impedance

- 2** GND
- 3** Output
- 4** Supply voltage (V_{DD})

NOTE:
Dimensions are in millimetres.

Test Circuit

