

RPT5032A

The RPT5032A encompasses Rakon's new patented Pluto+ ASIC. Pluto+ advances on the world famous, 'best-in-class' Pluto ASIC technology by delivering exceptional phase noise and jitter performance, and enhanced frequency versus temperature stability. The single chip oscillator with its analogue compensation circuit is capable of sub 0.1ppm frequency stability over an extended temperature range and RMS phase jitter down to 0.13ps for IEEE1588 and SyncE applications. It's unique tilt control ensures lifetime specification compliance, unlike other TCXOs available.

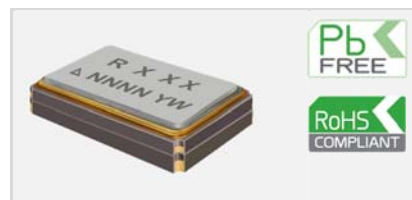
Features

- Best in class frequency versus temperature
- RMS phase jitter down to 0.13ps
- Phase noise < -160dBc/Hz noise floor
- Voltage control and T-sense options available

Applications

- **Time and frequency reference**
 - Positioning
 - Test and Measurement
 - Telecommunications
 - Hi-Rel / Defense

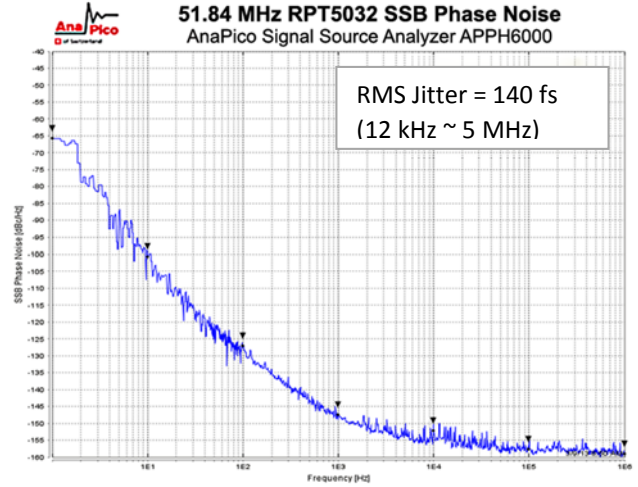
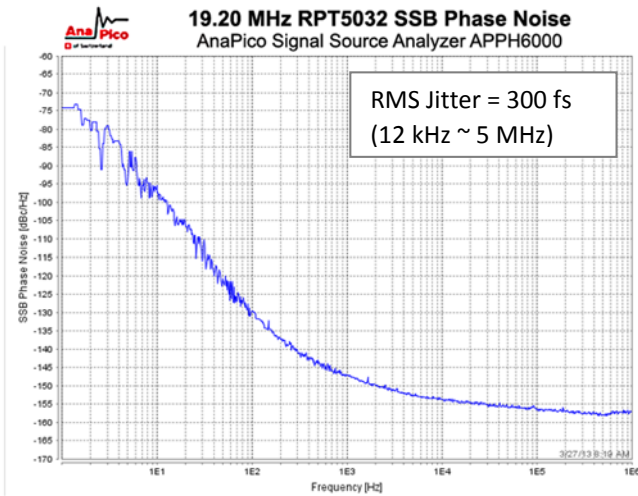
5.0 x 3.2 mm



Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency		1.25 – 52		MHz	Standard frequencies: 10.0, 12.8, 16.384, 19.2, 19.44, 20.0, 25.0, 26.0, 30.72, 38.88 and 40MHz
Frequency calibration			±1	ppm	Initial accuracy at 25 ± 1°C
Reflow shift			±0.5	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
Operating temperature range	-55		105	°C	
Frequency stability over temperature			±0.05 – ±2.5	ppm	Reference to (Fmax + Fmin)/2. The best available stability depends on the nominal frequency and selected operating temperature range
Supply voltage stability		±0.025		ppm	±5% variation Reference to frequency at nominal V _{CC}
Load sensitivity		±0.05		ppm	<ul style="list-style-type: none"> • HCMOS, AC MOS: ±5pF variation, • Clipped sine wave / Sine wave: ±10% variation reference to frequency at nominal load
Long term stability (aging)					
≤26MHz			±1	ppm/year	±3ppm/10 years
>26MHz			±2	ppm/year	±5ppm/10 years
Acceleration Stability		<2		ppb/g	Gamma vector, 3-axes, 30-1500Hz
Start-up time			5 – 15	ms	90% amplitude
Supply voltage, V _{CC}	2.5		5.7	V	±5%, standard values are 3.0, 3.3 and 5.0V
Current (C/Sine)		2		mA	
Current (Sine)		8		mA	
Current (HCMOS)		4		mA	
Current (ACMOS)		8		mA	
Control voltage, V _c	0.5		2.5	V	
Frequency tuning					
≤26MHz	±5			ppm	
>26MHz	±7			ppm	
Root Allan Variance (20MHz)		5		10 ⁻¹¹	tau = 1.0s
Oscillator output options					Clipped sine wave, sine wave, HCMOS (LVCMOS & LVTTTL compatible as per JESD8C) and AC MOS
Tri-State Control					
Input level low (pin 6)			0.2V _{CC}	V	Device disabled, output in high impedance state
Input level high (pin 6)	0.6V _{CC}			V	Device enabled, operating

SSB Phase Noise (Typical value at 25°C)



Model Outline and Recommended Pad Layout (6 pad)

TOP VIEW: 5.00±0.20, 3.20±0.20, 1, R, Δ

SIDE VIEW: 2.1 Max. or 2.4 Max., 0.65 Ref.

BOTTOM VIEW: C0.3, 1.6, 1, 2, 3, 4, 5, 6, 0.80 x 0.80 (x4), 0.80 x 0.70 (x2), 3.4

RECOMMENDED PAD LAYOUT - TOP VIEW

To GND, External Bypass Cap 100nF, 1.6, 1, 2, 3, 4, 5, 6, 3.4, Output to Circuit, External AC Coupling Cap 10nF for CS Output, 0.95 x 0.80 (x2), 0.95 x 0.95 (x4)

PIN CONNECTIONS	
1 *	Do Not Connect / Vc
2	GND
3 *	Do Not Connect / Vref / Vtemp
4	RF Output
5	Vcc
6	Enable

* Depending on specification

NOTE: Outline unit is mm.

Model Outline and Recommended Pad Layout (10 pad version coming soon)

TOP VIEW: 5.0±0.2, 3.2±0.2, 1, R, Δ

SIDE VIEW: 1.7 Max.

BOTTOM VIEW: C0.3, 1.4, 10, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.6 x 1.2 (x4), 1.0 x 0.6 (x2), 0.9 x 0.8 (x4), 1.2, 3.0, 0.1 Typ.

RECOMMENDED PAD LAYOUT - TOP VIEW

To GND, External Bypass Cap 100nF, 0.7 x 1.35 (x4), 1.20, 10, 1.15 x 0.70 (x2), 1.15 x 1.05 (x4), 4.05, Buf_Pwr Phase Noise Filter Cap 100nF, 1, 2, 3, 4, 5, 6, 7, 8, 9, Optional Phase Noise Filter Cap 1µF, To GND, Output to Circuit, External AC Coupling Cap 10nF for CS Output, 2.05, 2.35

PIN CONNECTIONS			
1 *	Do Not Connect / Vc	6	RF Output
2	Buf_Pwr PN Filter Cap	7	PN Filter Cap
3	Do Not Connect	8 *	Do Not Connect / Vref / Vtemp
4	GND	9	Vcc
5	Enable	10	Do Not Connect (GND optional)

* Depending on specification

Unit: mm.