

RFPO65

The RFPO65 is from the world’s first ASIC-based OCXO product family and utilizes Rakon’s patented Mercury™ ASIC technology. This Stratum 3 compliant oscillator delivers temperature stability as low as ± 10 ppb (over -20 to 70°C) and is capable of short term aging of typically less than ± 2 ppb per day.

With a highly integrated oven included, the RFPO65 ensures short warm-up times and consumes very low power – only 350mW at room temperature. The ASIC architecture delivers a 1000x reliability improvement when compared to traditional discrete OCXOs. The RFPO65 is available in an industry standard, Dual-In-Line (DIL) package.

Features

- Frequency stability over temperature as low as ± 10 ppb over -20 to 70°C
- Low power consumption
- High reliability

Applications

- Stratum 3
- Small Cells
- Switches and Routers
- Time & Frequency References
- SyncE and IEEE 1588

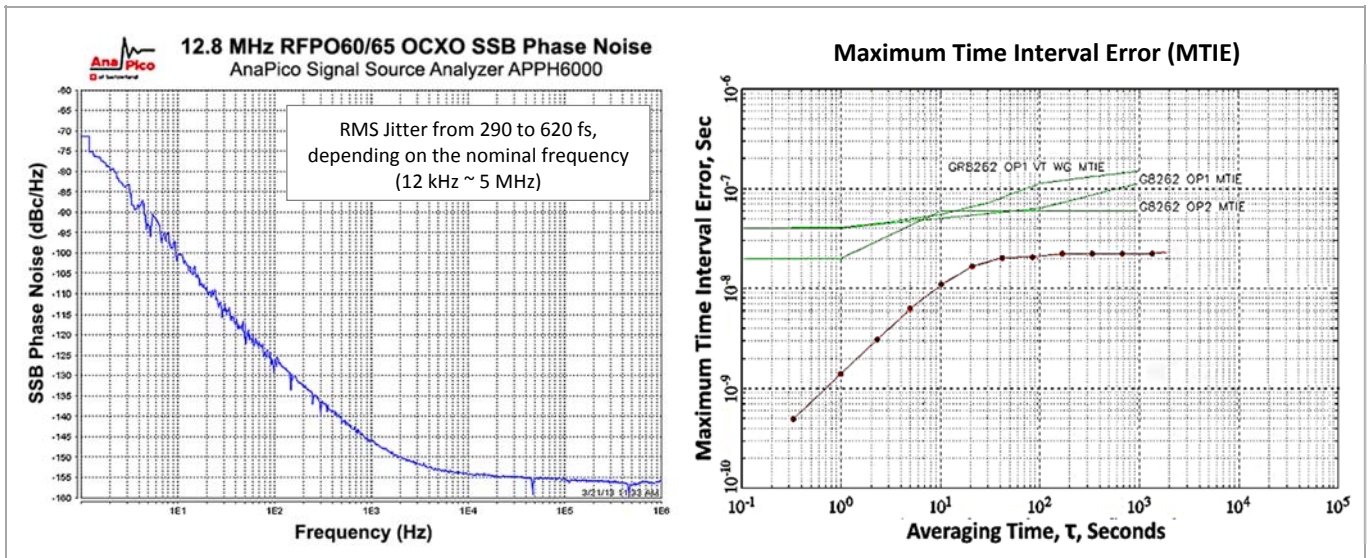
21.7 x 13.08 x 8.65 mm



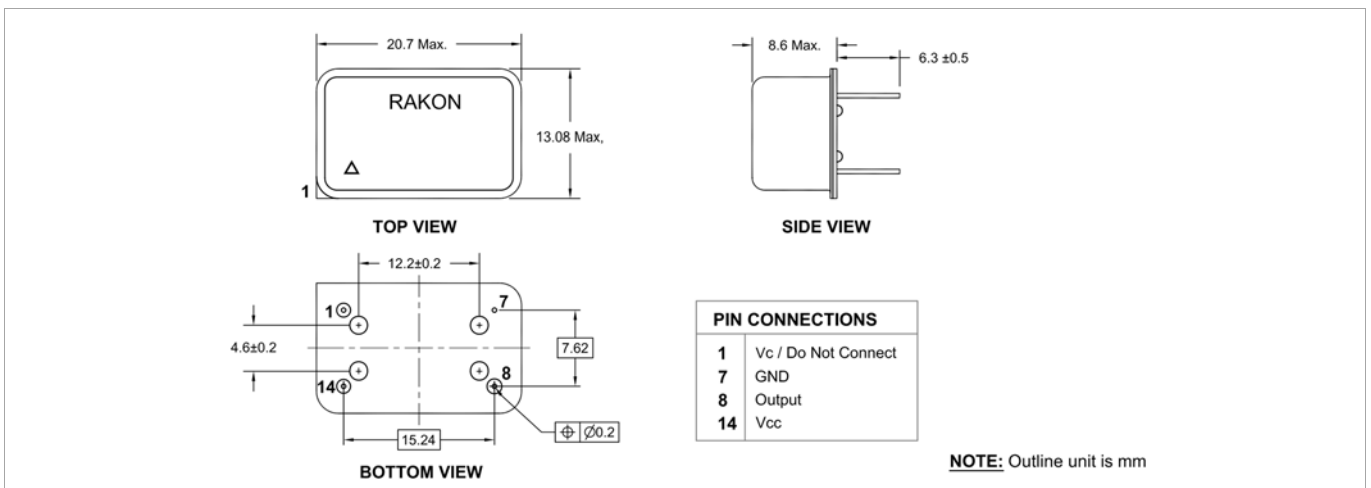
Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency		10 – 26		MHz	Standard frequencies: 10, 12.8, 19.2, 19.44, 20, 24.576, 25 and 26MHz
Frequency calibration			± 0.5	ppm	Initial accuracy at 25°C $\pm 2^\circ\text{C}$
Reflow shift			± 1	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
Frequency stability over temperature in still air			$\pm 10 - \pm 100$	ppb	Reference to $(F_{\text{MAX}} + F_{\text{MIN}})/2$
Frequency slope $\Delta F/\Delta T$ in still air			$\pm 0.5 - \pm 2$	ppb/ $^\circ\text{C}$	Temperature ramp $\leq 1^\circ\text{C}/\text{minute}$
Operating temperature range	-40		85	$^\circ\text{C}$	
Supply voltage stability		± 10		ppb	$\pm 5\%$ variation, frequency $\leq 26\text{MHz}$
Load sensitivity		± 10		ppb	$\pm 5\text{pF} / \pm 10\%$ variation, frequency $\leq 26\text{MHz}$
Warm-up time		< 3		minutes	The time needed for the frequency to be within ± 20 ppb of the frequency after 1 hour, at 25°C. This parameter is frequency, assembly and operating history dependent
Acceleration sensitivity		< 2		ppb/g	Gamma vector of all 3 axes, 30 to 1500Hz
Holdover drift		$< \pm 2.5 - \pm 4$		ppb	24 hours, temperature variation $\leq \pm 1^\circ\text{C}$. After 30 days of continuous operation
Free-run accuracy		± 4.6		ppm	All causes, 20 years life, reference to nominal fr
Loop bandwidth for wander generation compliance	3			mHz	MTIE compliant with GR-1244 Fig 5-5 & G.812 Type III Fig1 (≤ 100 ns), TDEV compliant with GR-1244 Fig 5-4 & G.812 Type III Fig2 (≤ 10 ns), oscillator stabilised 24 hours at Constant temperature ($\pm 1^\circ\text{C}$, still air), data collected over 100,000 seconds at 1 second intervals (-3dB cut-off, 2nd order high pass loop filter)
Long term stability (ageing)		$< \pm 2$	± 1 ± 3	ppb ppm ppm	Per day (after 30 days of continuous operation) First year 10 years
Root Allan Variance (20 MHz)		7.10^{-11}			$\tau = 1.0\text{s}$
Supply voltage (Vcc)		2.7 – 5.5		V	$\pm 5\%$
Input power (warm up)		1000		mW	-40 to 85°C devices
Input power (steady state in still air, 25°C)			400	mW	-40 to 85°C devices
Oscillator output – C/Sinewave	0.8	1.1		Vpk-pk	At minimum supply voltage, 10k Ω /10pF load
Oscillator output – HCMOS					
Output voltage level high (V _{OH})			10% Vcc	V	
Output voltage level high (V _{OL})	90% Vcc			V	
Duty cycle	45		55	%	At 50% level
Rise and fall times			4	ns	10 to 90%
Load	0	15	30	pF	

SSB Phase Noise (Typical Value at 25°C) and MTIE



Model Outline



Model Code Builder

