

ROM7050PA

The ROM7050PA is a mini SMD OCXO utilising Rakon's market-leading proprietary Mercury+™ technology. This compact OCXO is a low-power and small footprint in 7.5 x 5.5 mm solutions for radio and small cell applications. This product family achieves excellent frequency stability of ± 20 ppb over -40 to 95°C, with long term ageing less than 1.5 ppm in 10 years and frequency sensitivity to temperature (i.e. slope) as low as 0.1 ppb/°C. Low *g*-sensitivity and extended operating temperature options are available on request. Using Rakon's innovative high-Q quartz crystals, ROM7050PA offers superior close-in phase noise performance, enabling Remote Radio Head PLLs to use a single reference clock to meet both network synchronisation requirements and air interface requirements.

Mercury+™ ASIC-OCXOs enable lower Total Cost of Ownership (TCO) of customer equipment through improved reliability. With a miniature footprint, the ROM7050PA consumes only 400 mW at room temperature and has a faster warm up time than traditional OCXOs.

Features

- Smallest OCXO footprint industrywide: 7 x 5 mm
- Excellent frequency stability: $\leq \pm 20$ ppb over -40 to 95°C (-40 to 105°C available upon request)
- Low frequency slope: 0.1 ppb/°C
- Superior close-in phase noise; noise floor as low as -160 dBc/Hz for 10 MHz devices
- Fast warm-up time (± 20 ppb): <15s at -25°C, <20s at -40°C
- Long-term stability: ≤ 1.5 ppm/10 years
- Excellent *g*-sensitivity: 1 ppb/*g*

Applications

- 5G RRHs
- Small cells
- Optical networks
- Microwave transmission systems

7.5 x 5.5 x 3.3 mm

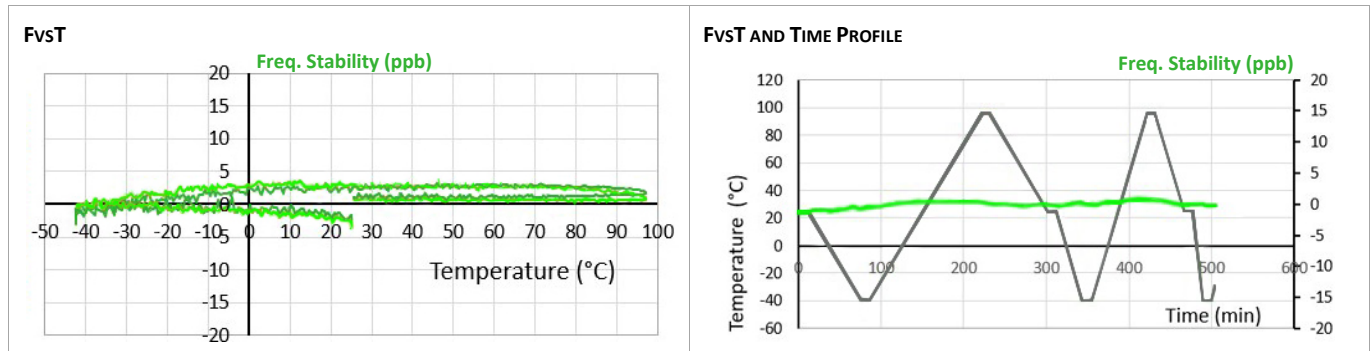


Standard Specifications

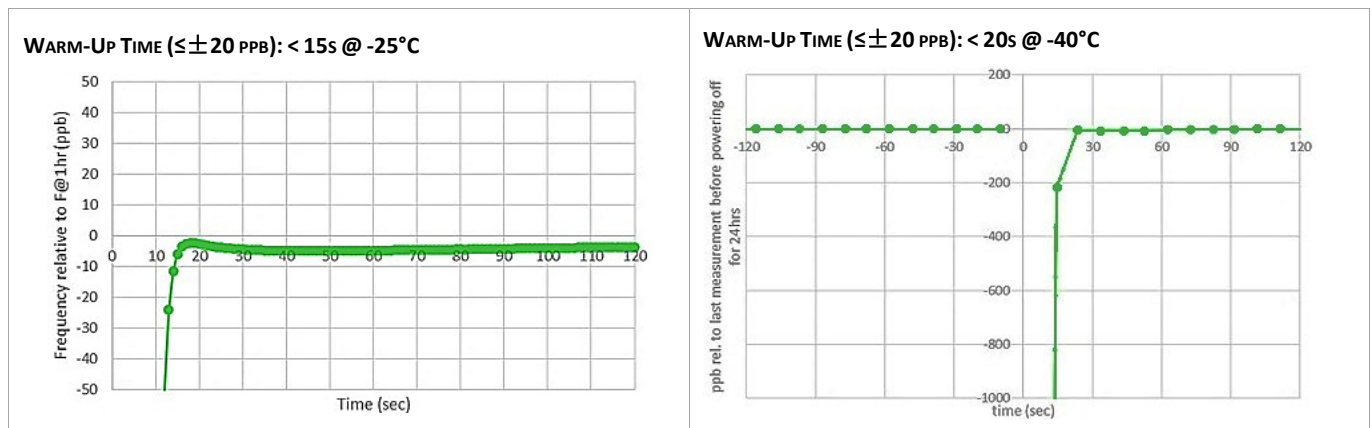
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description				
Nominal frequency		10 – 50		MHz	Standard frequencies: 10, 12.8, 19.2, 20, 25, 30.72, 38.4, 50 MHz				
Frequency calibration			± 0.2	ppm	Initial accuracy at 25°C $\pm 2^\circ\text{C}$				
Reflow shift			± 0.5	ppm	After 1 hour recovery at 25°C				
Operating temperature range	-40		+95	°C	105°C available upon request				
Frequency stability over temperature in still air			± 20	ppb	Reference to $(F_{\text{MAX}} + F_{\text{MIN}})/2$				
Frequency slope $\Delta F/\Delta T$ in still air		± 0.1	± 0.5	ppb/°C	Temperature ramp $\leq 1^\circ\text{C}/\text{minute}$				
Supply voltage stability		± 5		ppb	$\pm 2\%$ variation, reference to frequency at 3.3 V				
Load sensitivity		± 5		ppb	$\pm 10\%$ variation, reference to frequency at 15 pF				
Warm-up time ($F_0 - F_1$) ¹		3	20	s	Time after power on needed for frequency F_0 to be within ± 25 ppb reference to frequency F_1 after 1 hour				
All causes stability (Ageing)			± 4.6	ppm	Including calibration, temperature, supply voltage & load changes over a 10 year life				
Vibration sensitivity (Optional)		0.7	1	ppb/ <i>g</i>	Gamma vector				
Supply voltage (Vcc)		2.7 – 5		V	Nominal value in the range $\pm 5\%$ variation				
Input power (Vcc = 3.3V)		1200 400	1500 440	mW	Warm up Steady state in still air at 25°C				
Root Allan Variance (RAV)		30x10 ⁻¹² 20x10 ⁻¹² 15x10 ⁻¹² 40x10 ⁻¹² 20x10 ⁻¹¹			$\tau = 0.1\text{s}$ $\tau = 1.0\text{s}$ $\tau = 10\text{s}$ $\tau = 100\text{s}$ $\tau = 1000\text{s}$				
Oscillator output	Regulated CMOS output (1.0, 1.8, 2.5V) or standard CMOS (options)								
SSB Phase Noise (Typical value at 25°C)	Frequency	1 Hz	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	Unit
	10 MHz	-82	-114	-144	-158	-160	-160	-160	dBc/Hz

¹ Parameter is assembly and operating history dependent.

Frequency Stability over Temperature (FvsT)



Warm-Up Time



Model Outline and Recommended Pad Layout

