rakon

Mercury/+™ IC-OCXO Product Brief

Overview

Rakon has used its extensive ASIC design experience to develop unique patented OCXO technology. The Mercury/+[™] IC OCXO product family meets frequency accuracy requirements up to Stratum 3E level. The product family also includes the smallest OCXO available – suiting the requirements of urban and enterprise Small Cells. The Mercury/+[™] IC OCXO is an ideal frequency and timing solution for basestations, carrier ethernet equipment, small cells, packet networks, and other synchronisation deployments.

The flexibility of Rakon's proprietary Mercury/+[™] ASIC, allows different customer requirements to be addressed, by using alternative circuit configurations. The Mercury/+[™] IC OCXO achieves enhanced reliability, fast warm up times, very low power consumption, miniature size and features ultra-low phase noise with excellent short and medium term stability performance.

High Performance Mercury/+[™] ASIC OCXO



> Small Cell timing requirements for 3GPP air interfaces

> SyncE enabled Carrier Ethernet Switches and Routers

> Backhaul Equipment supporting Boundary Clocks and Slave Clocks

> G.8263 compliant for Base Stations

> Packet Based Time Slave Clocks

> Grand Master Clock and Timing Servers

> Smart Power Grid Synchronisation Modules
 > Transport Equipment Timing Solutions

Highlights

- > Temperature stability down to ±5 ppb
- > Frequency slope down to 0.5 ppb/°C
- > MTIE and TDEV are compliant with G.8263
- > Long term stability down to ±1 ppb/day
- > Low noise floor: as low as -161 dBc/Hz at 100 kHz offset
- > Low power consumption: 350 mW
- > Small package size 9.7 x 7.5 mm
- 6 times better reliability (in terms of FITs) compared to discrete solutions
- > Industry standard foot print options

Compliance Support

- > GR-1244 Stratum 3/3E & GR 254
- > ITU-T SDH Slave Equipment Clocks based on G.813,
 SyncE Ethernet Equipment Clocks based on G.8262
- > Packet Based Timing Recovery standards ITU-T G.8263, G.8273.x & G.812 types II and III
- > Interfaces ITU-T G.823, G.824, G.8261 & G.8271

Mercury/+™ IC OCXO	Frequency Range	Stability (FvsT, -40 to 85°C)	Ageing (Per day)	RMS Phase Jitter (10 kHz ~ 5 MHz offset)	Standard Compliance
RFPO - 40/50	5 to 50 MHz	±25 ppb	±2 ppb/day	360 fs (@20.0 MHz)	Stratum 3
RFPO – 45/55	10 to 26 MHz	±20 ppb ±5ppb (G.8263 Temp Profile)	±2 ppb/day ±1 ppb/day	360 fs (@20.0 MHz)	Stratum 3 G.8263
ROM – PS ROM – PA	10 to 20 MHz 10 to 50 MHz	±10 ppb (Vc) ±20 ppb (Vc)	±1 ppb/day	150 fs (@19.2 MHz)	RRHs & Small Cells
ROM – E ROM – EA	10 to 100 MHz	±5 ppb (Fixed) ±10 ppb (Fixed)	±1 ppb/day	450 fs (@12.8 MHz)	Networking & Stratum 3E
ROM – C ROM – CA	10 to 100 MHz	±10 ppb (Vc) ±20 ppb (Vc)	±1 ppb/day	450 fs (@10.0 MHz)	Custom & Defense

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Applications



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Wander Compliance – Mercury™ IC OCXO



Sigma For All Tau G.8262 TDEV G.8262 TDEV

Time Deviation (TDEV)

Mercury/+™ IC OCXO for Typical Applications



Additional Rakon Oscillator and Timing Product Solutions

Products Family	Product Series	Key Capabilities 🐳 🥥 🥥 🧹 🔍 🔍
тсхо	Ultra Stable	1.5 to 52 MHz, ± 0.05 to 2.0 ppm as wide as -55°C to 105°C and in 7.0 x 5.0 or 5.0 x 3.2 mm packages.
	High Stability	10 to 52 MHz, ±0.5 to 5 ppm over -40 to 85°C and in 3.2 x 2.5, 2.5 x 2.0 or 2.0 x 1.6 mm packages.
vcxo	M / P / R	8 to 1500 MHz with low phase-noise and CMOS/PECL/LVDS in 7.0 x 5.0, 5.0 x 3.2 or 2.5 x 2.0 mm packages.
	с	1.5 to 54 MHz commercial CMOS output in 7.0 x 5.0 or 5.0 x 3.2 or 3.2 x 2.5 mm packages.
хо	M / P / R	8 to 1500 MHz with <1 ps jitter and CMOS/PECL/LVDS in 7.0 x 5.0, 5.0 x 3.2 or 2.5 x 2.0 mm packages.
	Q	8 to 1500 MHz selectable frequency, 1.0/2.0 ps jitter and CMOS/PECL/LVDS output in 2.5 x 2.0 mm package.
	С	0.75 to 60 MHz commercial CMOS output in 7.0 x 5.0, 5.0 x 3.2, 3.2 x 2.5, 2.5 x 2.0 or 2.0 x 1.6 mm packages.
Crystals	RSX	12 to 48 MHz for Ethernet, WiFi and USB.
	RTF	32 kHz for real time clocks.

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