ROM9070EA

The ROM9070EA uses Rakon's market-leading proprietary Mercury+™ technology, delivering the world's smallest and lowest power Stratum 3E OCXO. This product family delivers ±10 ppb frequency stability over -40 to 95°C and ageing of less than 1 ppb/day; fully compliant with Stratum 3E specifications. The ROM9070EA is an ideal solution for telecommunications equipment which require low dynamic noise contribution from oscillators, and where small form factor, low cost and power are paramount.

Mercury+™ ASIC-OCXOs enable lower Total Cost of Ownership of customer equipment through significantly enhanced reliability. With a small 9 x 7 mm form factor and few discrete components, the ROM9070EA consumes only 0.4W at room temperature and has faster warm up times than traditional OCXOs.

Features

- Miniature SC-cut OCXO
- Stratum 3E grade stability and ageing
- Low ADEV and RMS phase jitter
- Fast warm up time
- Ultra-reliable OTP memory programming
- Lower customer Total Cost of Ownership through VLSI ASIC-integration

Applications

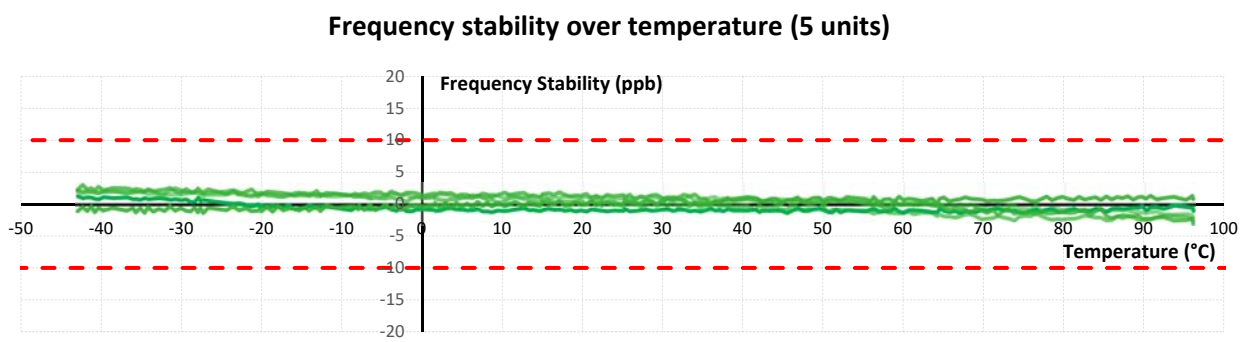
- Stratum 3E
- PTP Enabled Ethernet Switches and Routers
- Cable Modem CMTS and Remote PHYs
- G.8262, G.8263, G.8273.2, G.8273.3, G.8273.4

9.7 x 7.5 x 3.9 mm

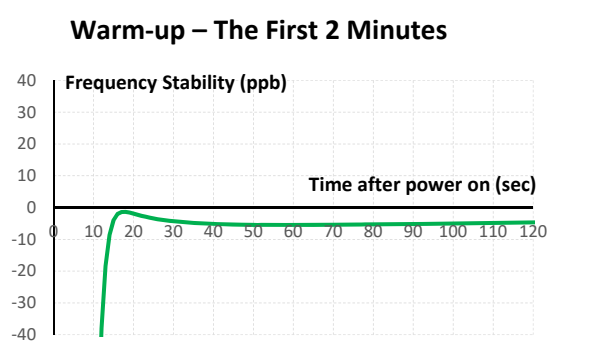
Standard Specifications

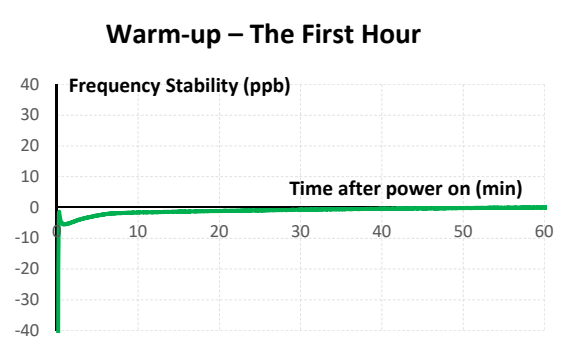
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency		10 – 50		MHz	Standard frequencies: 10, 12.8, 19.2, 20, 24.576, 25, 30.72, 38.4, 38.88, 49.152, 50 MHz
Frequency calibration			±0.2	ppm	Initial accuracy at 25°C ±2°C
Reflow shift			±0.2	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
Operating temperature range	-40		+95	°C	
Frequency stability temperature			±10	ppb	In still air. Reference to (FMAX + FMIN)/2
Frequency slope ΔF/ΔT in still air		±0.1	±0.5	ppb/°C	Temperature ramp ≤ 1°C/minute
All causes stability			±4.6	ppm	Including calibration, temperature, supply voltage & load changes and 20 years life, reference to Fn
Supply voltage stability		±5		ppb	±2% variation, frequency ≤ 26 MHz
Load sensitivity		±5		ppb	±10% variation, reference to frequency ≤ 26 MHz at 15pF
Warm-up time		15	60	sec	Time needed for frequency to be within ±20 ppb reference to frequency after 1 hour, at 25°C. Parameter is frequency, assembly and operating history dependent
Long term stability (Ageing)			1 0.3 2.5	ppb ppm	Per day, after 60 days of continuous operation First year 20 years
Root Allan Variance (ADEV)		$30*10^{-12}$ $20*10^{-12}$ $15*10^{-12}$ $15*10^{-12}$ $70*10^{-12}$			tau = 0.1s tau = 1.0s tau = 10s tau = 100s tau = 1000s
Supply voltage (Vcc)		2.7 – 5		V	±5%
Input power		1200 400	1500 440	mW	Warm up Steady state in still air at 25°C
Wander generation	› TDEV compliant with GR-1244 fig 5-4 & G.812 types II & III fig 2 › MTIE compliant with GR-1244 fig 5-5 & G.812 types II & III fig 1 › TDEV & MTIE compliant with G.8262, G.8263, G.8273.2				Oscillator stabilised 24 hours at constant temperature (±1°C, still air). Data subjected to relevant loop filter values (-3dB cut-off, 2nd order high pass)
Oscillator output	Regulated CMOS output (1.0, 1.8, 2.5V) or standard CMOS (options)				

Frequency Stability over Temperature @ 30.72 MHz

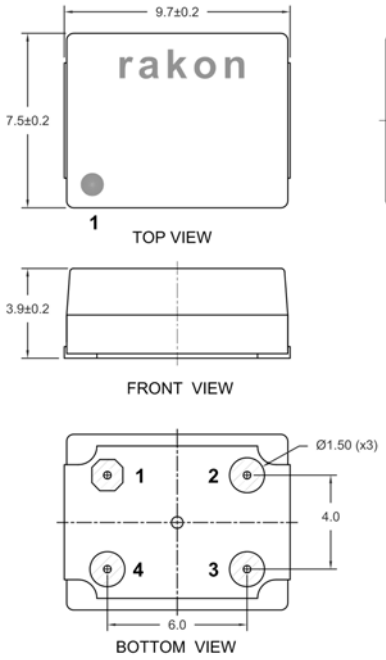


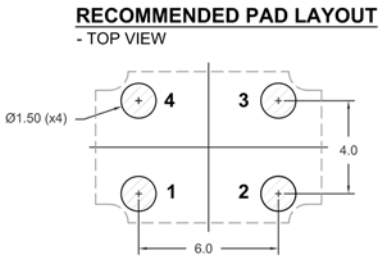
Warm-up Time @ 19.2 MHz





Model Outline and Recommended Pad Layout





NOTE:

- Unit: mm
- Cover: plastic
- Base: FR4
- Finish: 0.05 ~ 0.13 µm Gold over 3 ~ 6 µm Nickel.

Pin	Connections
1	Do not connect (GND optional)
2	GND
3	Output
4	Supply Voltage (Vcc) *for correct operation decouple the supply voltage with a 10 µF capacitor close to the oscillator*