

ROM1490EA

The ROM1490EA uses Rakon's market-leading proprietary Mercury+™ technology, delivering the world's first ASIC-based Stratum 3E OXCO. 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 ROM1490EA is an ideal solution for Telecom Boundary Clocks (T-BC) Class C and Class D, which require low dynamic noise contribution from oscillators over the operating temperature range. Holdover of a few hours is available for select temperature profiles.

Mercury+™ ASIC-OCXOs enable lower Total Cost of Ownership of customer equipment through significantly enhanced reliability. With a small form factor and few discrete components, the ROM1490EA consumes only 0.4W at room temperature and has faster warm-up times than traditional OCXOs.

Features

- Stratum 3E grade stability and ageing
- Low ADEV and RMS phase jitter
- Miniature SC-cut crystal
- 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.8262.1, G.8263, G.8273.2, G.8273.3, G.8273.4

14.3 x 9.1 x 5.9 mm



Standard Specifications

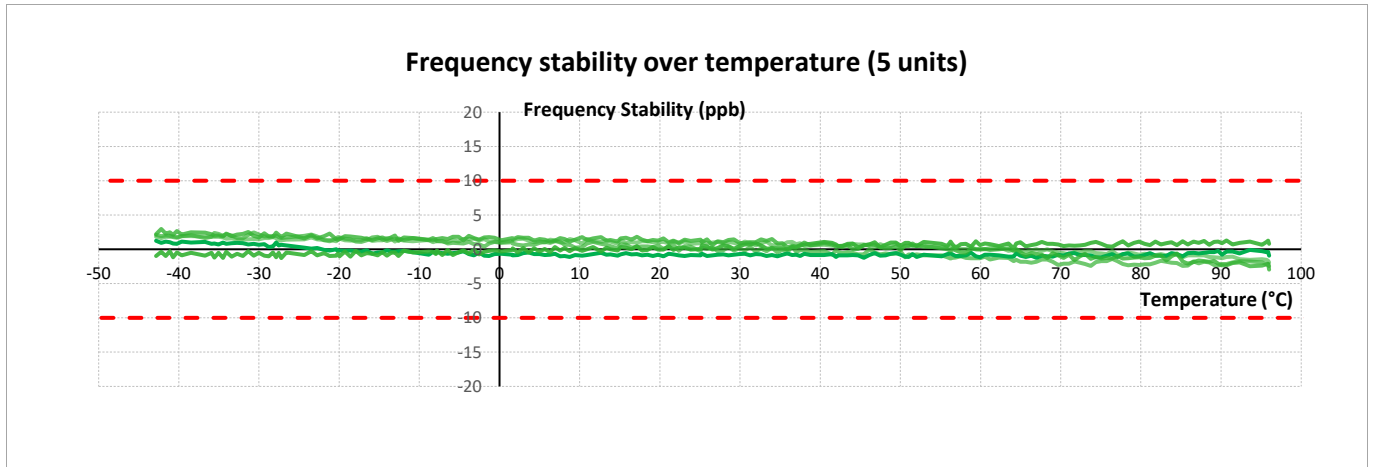
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		10 – 50		MHz	Standard frequencies: 10, 12.8, 19.2, 20, 24.576, 25, 30.72, 38.4, 38.88, 49.152, 50 MHz
Frequency calibration			±0.2	ppm	Initial accuracy at 25°C ±2°C
Reflow shift			±0.2	ppm	Pre to post-reflow ΔF (measured ≥ 60 minutes after reflowing)
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 15 pF
Warm-up time		15	60	sec	Time needed for a frequency to be within ±20 ppb reference to frequency after 1 hour, at 25°C. The 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.8262.1, G.8263, G.8273.2, G.8273.3, G.8273.4			The oscillator stabilised for 24 hours at a 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)			

Issue: B, 26 August 2024

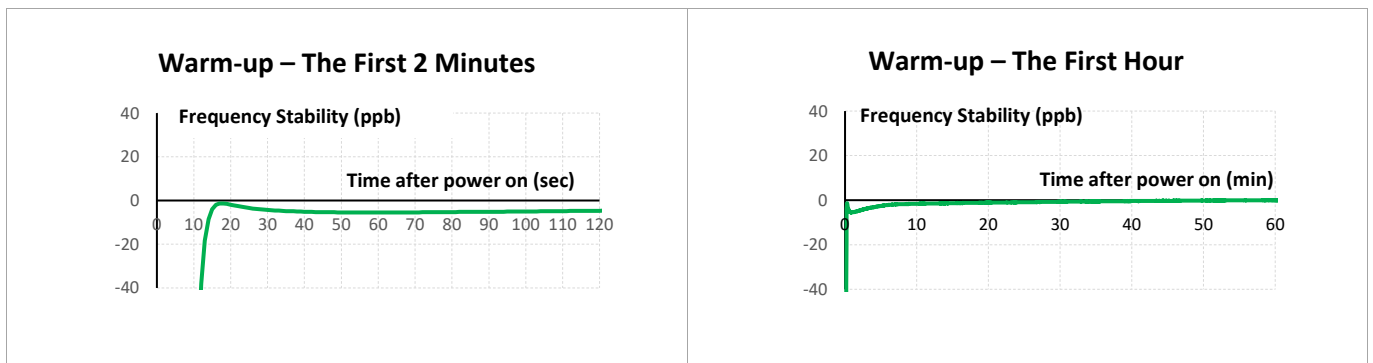
Specifications are subject to change without notice.

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Frequency Stability over Temperature @ 30.72 MHz



Warm-up Time @ 19.2 MHz



Model Outline and Recommended Pad Layout

TOP VIEW: Dimensions 14.3±0.2 mm width and 9.1±0.2 mm height. A circular feature is located near the bottom-left corner.

SIDE VIEW: Shows the component's profile with a central notch.

FRONT VIEW: Shows the component's height as 5.9±0.2 mm.

BOTTOM VIEW: Shows the pin layout with dimensions: 1.02 (x6) for pin spacing, 2.54 Typ. for pin width, 1.60 (x6) for pad width, and 5.9 mm for the overall width.

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

RECOMMENDED PAD LAYOUT - TOP VIEW

NOTE

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