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Symmetricom

SA.22c

Precision Rubidium Oscillator

KEY FEATURES

- Disciplines to a 1PPS Input
- Compact Form Factor for a Wide Range of Applications
- Low Power Operation
- Wide Temperature Spectrum Performance
- RoHS Compliant Oscillator

APPLICATIONS

- Delivers GSM and UMTS Level Stability In Free Run (Without Need for Re-calibration)
- Ideal Performance Levels for CDMA Networks
- Stratum 2, or Type II Level Performance for Synchronization for Central Offices / Network Nodes

Symmetricom's innovative rubidium atomic oscillator, the SA.22c, is the culmination of significant advances in physics miniaturization and integration. SA.22c's compact form factor, low power consumption, and full-spectrum temperature operation make rubidium performance accessible to a wide range of synchronization applications, from telecom networks to handheld test and measurement devices.

The SA.22c is a board mounted rubidium oscillator, with a complete range of output frequencies is available to meet the needs of a large set of synchronization applications. The SA.22c can be disciplined to a precision 1PPS reference input (such as GPS) or it can operate by itself as a precision stand-alone reference. SA.22c's outputs also include a 1PPS.

The SA.22c can communicate through its serial port to provide dynamic frequency control and selection and to enable or disable outputs. The SA.22c can be queried for such information as serial number, operating hours, operating temperature, event history, self-test and other such performance indicators.

The SA.22c provides highly precise outputs using the inherent stability of the rubidium atom, in a compact form factor. This delivers an excellent value to the market for a wide range of applications.



SA.22c Precision Rubidium Oscillator

SA.22c Performance Specifications

ELECTRONIC

- Frequency outputs*
  - Output 1: Derived Square Wave at 1.544, 2.048, 5, 9.8304, 10, 10.24, 10.29, 13, or 15 MHz (5V ACMOS)
  - Output 2: 1PPS

*Refer to manufacturer for other frequency outputs

- Phase noise (@10 MHz):
  - 1 Hz <-72 dBc/Hz
  - 10 Hz <-90 dBc/Hz
  - 100 Hz <-128 dBc/Hz
  - 1 kHz <-140 dBc/Hz
  - 10 kHz <-148 dBc/Hz
- Jitter: <10 ps RMS
- Stability: (Allan deviation)
  - t=1 second <3E-11
  - t=10 second <1E-11
  - t=100 second <3E-12
- Accuracy at shipment: <±5E-11 (25°C), typical
- Retrace: <±2E-11 (on-off-on: 24 h, 48 h, 12 h @ 25°C)
- Control range
  - With digital input: ±1E-6 with granularity of 1E-12.
  - With analog input: ±1.5E-9, 0-5 V into 5 k ohms
    Or optional ±6.5E-9, 0-5 V into 5 k ohm
- 1PPS output
  - Pulse width: 400 ns
  - Amplitude: VL<0.5V, VH >4.5V, 15pf Load
  - Rise time: 10 ns, 15pf load
- Warm-up time
  - Time to lock: 5 mins (accuracy at lock <5E-8)
  - Time to <1E-9 @ 25C: 7.5 minutes
- Supply voltages/current (Both required)
  - +5 Vdc ±5%, Max. current <100mA
  - +15 Vdc ±5%, Max. current <1.2A
- Power consumption
  - Warm-up: 18.5 W max (-10°C to +75°C)
  - Operating: 15 W @ -10°C, 10 W @ 25°C, 5 W @ 75°C baseplate
- Voltage coefficient
  - +5 Vdc ±5%: Magnitude (df/f) <2E-11 peak to peak
  - +15 Vdc ±5%: Magnitude (df/f) <3E-11 peak to peak
- Radiated emissions: Compliant to FCC part 15, Class B
- Test/status
  - Built-in self-test (BIST)
  - ACMOS: Service / fault-unlock
  - Serial: SSIP
- Application profiles:

Application Profile Name	Monthly Aging Rate dF/F	Tempco	Temperature Range	Notes
AP1	±4E-11	<1E-10	-10°C to 75°C	High performance applications
AP2	±5E-11	<3E-10	-10°C to 75°C	Tempco of Symmetricom LPRO / XPRO
AP2A	±3.5E-10	<2E-10	-10°C to 75°C	Ideal for CDMA holdover
AP3	±3E-10	<3E-9	-10°C to 75°C	GSM / UMTS specifications (<5E-8 over 20 yrs)

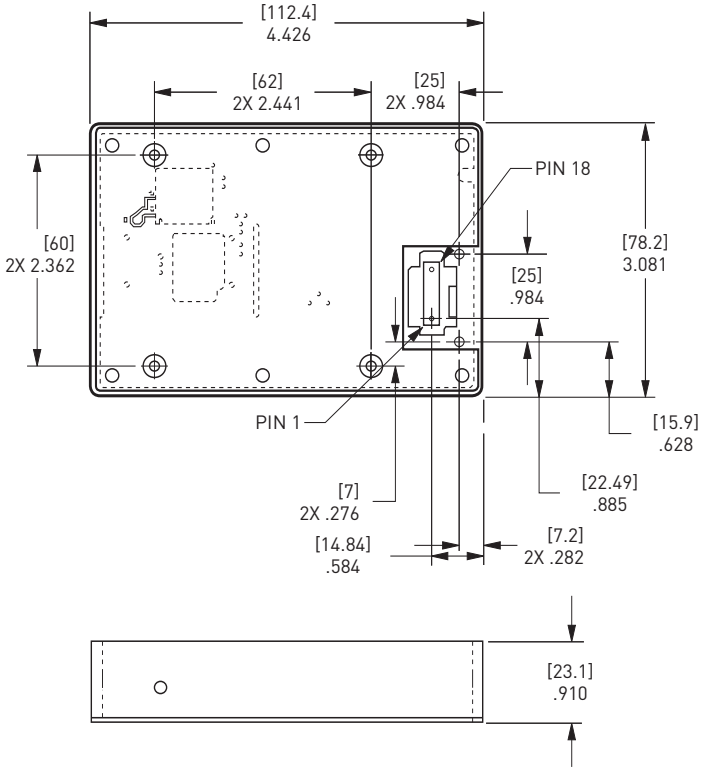
- MTBF: Per Telcordia 332, issue 1,
  287,000 hrs @ 40°C (Ground, fixed, uncontrolled)

ENVIRONMENTAL

- Operating temperature: -10°C to +75°C baseplate
- Magnetic field sensitivity: <±6E-11/Gauss (up to ±2 Gauss)
- Humidity: GR-CORE-63, issue 2, April 2002, section 4.1.2, < 90%, RH non-cond.
- Vibration (operating): GR-CORE-63, issue 2, April 2002, section 4.43 and 5.4.2, locked to 1.0 g peak sine @ 5-100Hz
- Storage and transport
  - Temperature: -55°C to +100°C
  - Shock/vibration: GR-CORE-63, issue 2, April 2002, section 4.4.4 and 5.4.3, curve 1 of Fig 4-3, up to 1.5 g

PHYSICAL

- Weight: < 428.5gm (<15 oz)
- Size: 23.1mm H X 78.2mm W X 112.4mm L (0.91" H x ≤3.1" W x ≤4.5" L)
- Volume: 203.04cm3 (≤12.4 in^3)



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