SA.22c

Precision Rubidium Oscillator

Key Features

- Disciplines to a 1PPS input
- Compact form factor for a wide range of applications
- Wide temperature spectrum performance
- RoHS compliant oscillator

Benefits

- Low power operation

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

The Microsemi® innovative rubidium atomic oscillator, the SA.22c, is the culmination of significant advances in physics miniaturization and integration. The 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 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. The 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

Specifications

ELECTRICAL SPECIFICATIONS

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 kohms 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:

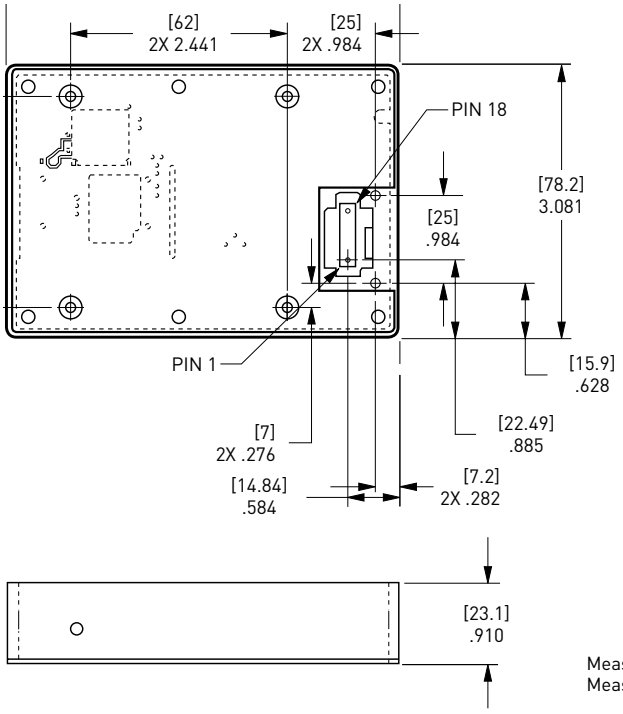
Application Profile Name	Monthly Aging Rate dF/F	Tempco	Temperature Range	Notes
AP1	±4E-11	<1E-10	-10°C to 75°C	High performance applications
AP2	±5E-11	<3E-10	0°C to 50°C	Tempco of Microsemi LPRO / XPRO
AP2A	±3.5E-10	<2E-10	-10°C to 75°C	Ideal for CDMA holdover
AP3	±3E-10	<3E-9	-10°C to 75°C	GSM / UMTS specifications (<5E-8 over 20 yrs)

ENVIRONMENTAL SPECIFICATIONS

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 SPECIFICATIONS

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 in³)



Measurement in millimeters: [00.00]
Measurement in inches: 0.00

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