Preliminary Product Brief

VIAVI Solutions

VIAVI

µPNT™ C-Force™ GNSS-Integrated Clock
Part# 100801

Ultra-high stability, ultra-low phase noise oscillator for high vibration, high-temperature and demanding air/ground/sea environments

Defense | Airborne | All-Terrain Vehicles | Maritime | Drone | UAV

Counter IED/Counter UAS | Communications| Radar

Solving Defense Operational Challenges

PNT equipment designed for all-domain defense applications must operate reliably in challenging environments, enduring intense vibration, severe shock, and extreme temperature

Under such demanding conditions, integrated modules must be ruggedized and maintain optimal performance, ensuring reliable timing and operation even when GNSS signals are compromised.

Highly Ruggedized PNT Clock Solution

The new µPNT™ C-Force™ GNSS-Integrated Clock is a highly ruggedized GNSS receiver and oscillator module designed for low SWaP (size, weight and power) applications.

It features various I/O signals, and its innovative operating capabilities ensure reliable performance across a wide range of demanding air, ground and sea environments, from military applications to harsh industrial conditions.

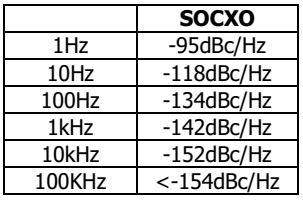
Benefits

- Ruggedized GNSS+oscillator clock module
- Innovative operating capabilities
- Suitable for low SWaP PNT applications
- High performance in GNSS-denied environments
- Cost-effective design solution

Features

- Ultra-high stability: <10ns rms (1-Sigma) to UTC in GNSS-locked mode
- Ultra-low 10 MHz phase noise: -95 dBc/Hz at 1 Hz under airborne vibration
- Frequency Stability over Temperature, per-g per axis ±3E-09, <0.08 ppb per g
- Integrated L1/L2 GNSS receiver
- High temperature range: -55°C to +95°C
- Holdover: 5 µs over 6 hours

Typical Specifications

μPNT™ C-Force™ GNSS-Integrated Clock	
GNSS	
GNSS Receiver	L1 and L2, Auto-Survey, Position-Hold Mode, SSM Notch Filters
GNSS Frequency, antenna power	L1 and L2, GPS/Glonass/Galileo/BeiDou/QZSS 3.3V power out
Sensitivity	Acquisition –148 dBm, Tracking -167 dBm
GNSS TTFF (one hour on with GNSS, then one hour off for cold-start)	Cold Start <29 sec, Warm Start <2 sec, Hot Start <2 sec
1PPS Output	
1PPS Output	OCXO flywheel generated, LVDS Levels
1 PPS Stability	<10ns to UTC RMS (1-Sigma) GPS Locked
ADEV at 25.0°C, no airflow/motion/vibration, 5 days GPS locked	0.1s < 4E-12, 1s < 3E-12, 1Ks < 6E-12, 10Ks < 2E-12
Holdover at 25.0°C, no airflow, no motion/vibration, 5 days GPS locked	<5us over 6 hours
1PPS Input	
1PPS External Reference	Supports an optional external 1PPS TTL/CMOS input
Frequency Outputs	
10 MHz	+8.5dBm ±0.5dB
Warmup and Stabilization Time	<8 min at +25°C to <1E-09 Accuracy to GNSS
38.4Mhz optional output	+8.5dBm ±0.5dB
Phase Noise @ 10Mhz under airborne vibration	
Frequency Stability over Temperature, per-g per axis	±3E-09, <0.08ppb per g
10 MHz Retrace	<±1E-09 After 1 Hour @ +25°C (no GNSS)
Output Harmonics, spurs	<-50dBc/Hz, <-70dBc/Hz
OCXO aging (fully compensated by GNSS)	<±0.1ppm per year without GNSS
Communications	
Serial Control	GNSS NMEA and Status Output, SCPI-99 control, RS-422 Port
Power & Consumption	
Supply Voltage (Vdd) Power consumption	5.5V +0.5V/-0.3 <1.75W @25C, <2W during warmup
Environmental	
Temperature range Operating Storage	-55°C ambient to +95°C case temperature -55°C ambient to +95°C case temperature
Mechanical	
Size	1.5 x 3.0 x 0.7 Inches
Weight	<4 oz
Connections	
10MHz Sine Wave Out, GNSS Antenna	SMA
+5.5V Power, 1PPS output, RS-422 serial	12-pin Hirose, PN: DF11-12DP-2DSA(01)
3-pin 100mil through hole (optional)	1PPS Input, ISP#

	SOCXO
1Hz	-95dBc/Hz
10Hz	-118dBc/Hz
100Hz	-134dBc/Hz
1kHz	-142dBc/Hz
10kHz	-152dBc/Hz
100KHz	<-154dBc/Hz

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