

ULN 1100

100 MHz GPSDO DOCX0 Module

Defense | 5G Communications | SATCOM | Transportation
 Data Center Energy | Financial | Critical Infrastructure

The ULN-1100 is an extremely small Global Positioning System Disciplined Oscillator (GPSDO) with various 10 MHz and 100 MHz outputs, Distribution Amplifiers, and a high-performance 50-channel GPS receiver with -160 dBm tracking capability. All outputs are frequency and phase-synchronized to UTC via the GPS system, providing Better-Than-Cesium™ long-term performance.

Applications

- ULN-100 is ideal for Ultra-Low-Phase-Noise up-conversion systems.
- ULN-1100 provides a direct redundancy feature allowing multiple units to be daisy-chained to each other for increased reliability for mission-critical applications.

Highlights

- Only 1.5 x 4.0 inches in size
- Sine, CMOS, LVDS Outputs
- High-performance 50-channel GPS receiver with -160 dBm tracking capability
- -162 dBc/Hz Phase Noise Floor
- Optimized for Up-Conversion to Ka/Ku/K Bands
- NMEA-0183 SCPI-99 Plug and Play
- Built-in 100 MHz, 2-port distribution amplifier with +13 dBm Sine Wave outputs
- 10 MHz Sine Wave and LVDS outputs.
- Backwards compatible in fit and function with the FireFly-IIA GPSDO
- Ruggedized, extended temp-range, low-g Oscillator option



ULN 1100

Typical Electrical Specifications

Module Specifications	Description
1 PPS Accuracy	± 30 ns to UTC RMS (1-Sigma) GPS Locked
Frequency Accuracy	Better than $\pm 3E-010$ after 1 hour of operation with GPS locked
Holdover Stability	$< \pm 7$ μ s over 24 hour Period @+25°C (No Motion)
ADEV	1 s to 1000 s: 5 to 9E-12 with GPS lock typical
1 PPS Outputs (OCXO Flywheel Generated)	Three outputs: 5 V CMOS, LVDS, and RS-232 level output
10/100 MHz Outputs (9 outputs total, 7 @100 MHz, 2 at 10 MHz)	4x LVDS 100MHz, 2x +7 dBm, 1x CMOS, 1x Sine 10 MHz, 1x LVDS 10 MHz
RS-232 Control	Full control via SCPI-99 Control Commands, NMEA-0183
GPS Frequency	L1, C/A 1574 MHz
GPS Antenna	Passive or Active, 5 V
GPS Receiver	50 Channels, Mobile, GPS, WAAS, EGNOS, MSAS supported, Galileo ready
Sensitivity	
Acquisition	-144 dBm
Tracking	-160 dBm
GPS TTFF	
Cold Start	<45 sec
Warm Start	1 sec
Hot Start	1 sec
TTL Alarm Output	GPS Unlock and Hardware Failure indicator
Warm Up Time/Stabilization Time	<10 min at +25°C to 1E-09 Accuracy Typ.
Supply Voltage (Vdd)	11.0 V to 16.0 V DC Nominal
Power Consumption	< 4 W at +25°C with DOCXO
Temperature	
Operating Temperature	-25°C to +75°C (+85°C extended temp range option)
Storage Temperature	-45°C to +85°C
Environmental Conformance	MIL-STD-202, Method 204, Condition I-A

Typical Electrical Specifications continued

Oscillator Specifications	Description		
Frequency Output	Both 10 MHz, and 100 MHz outputs		
10/100 MHz Retrace	±2E-08 After 1 Hour		
Frequency Stability	±2.5E-010 over temperature, low-g option: ±3E-010 per g per axis		
Output Amplitude			
100 MHz	LVDS, CMOS 5 V, +7 dBm Sine		
10 MHz	LVDS, +12 dBm Sine		
Warm Up Time	<12 min		
Phase Noise		<i>100 MHz Out</i>	<i>10 MHz Out</i>
	1 Hz	-60 dBc/Hz	-100 dBc/Hz
	10 Hz	-95 dBc/Hz	-125 dBc/Hz
	100 Hz	-118 dBc/Hz	-140 dBc/Hz
	1 kHz	-140 dBc/Hz	-142 dBc/Hz
	10 kHz	-155 dBc/Hz	-145 dBc/Hz
	100 kHz	-160 dBc/Hz	-145 dBc/Hz
Designed Lifetime	>10 years		

NOTE: Specifications subject to change without notice.

Product Ordering Information

VIAMI offers the ULN-1100 in the following configurations:

Product Number	Description	SOCXO	DOCXO	Std Temp	Ext Temp	Low-G
22174848	ULN 1100 100MHz SOCXO Standard Temp - RoHS	•		•		
22174846	ULN 1100 100MHz DOCXO Standard Temp - RoHS		•	•		
22174847	ULN 1100 100MHz DOCXO Extended Temp - RoHS		•		•	
22174849	ULN 1100 100MHz DOCXO Extended Temp Low G - RoHS		•		•	•
22174853	ULN 1100 100MHz DOCXO Low G Ultra Extended Temp - RoHS		•		•	•



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