

## ZELIA

### INTEGRATED ANTENNA AND GPS RECEIVER

#### BENEFIT HIGHLIGHTS

- Integrated antenna element, GPS receiver, real-time clock, and low noise amplifier
- Ideal for applications with low cost and tight space requirements
- Shortens new product time-to-market

#### KEY FEATURES

- GPS receiver: Trimble Condor C1011
  - L1 frequency (1575.42 MHz); C/A code; 22-channel continuous tracking
  - NMEA input, output, and PPS timing output
  - SBAS (WAAS, EGNOS, MSAS); aGPS capable
  - Update rate up to 5 Hz
- Integrated antenna element (omni-directional)
- Internal 32 kHz real-time clock
- Internal low noise amplifier (LNA)
- Connector: 0.8 mm pitch, 1 mm thick

#### THE CHALLENGES OF INTEGRATING A GPS RECEIVER AND ANTENNA

Integrating a GPS receiver and antenna in a tough electrical environment is a complex RF design problem. Tight space constraints often place the GPS antenna near strong transmitters, noisy power supplies and fast microprocessors. Getting it right often takes multiple expensive iterations and, in the end, engineers are frequently forced to compromise performance for time-to-market considerations.

#### TAKE ADVANTAGE OF TRIMBLE'S 30+ YEARS OF EXPERIENCE

Trimble has been integrating GPS receivers and antennas in all types of devices for over 30 years and can help you bring your product to market faster.

Trimble's integrated antenna and GPS receiver product, Zelia, is comprised of a GPS receiver and antenna element on an easily integrated module.

#### INTEGRATED MONOPOLE ANTENNA

Zelia includes a linearly-polarized printed monopole antenna element. It is an omni-directional antenna ideal for portable device applications.

The printed monopole takes up less space than a patch antenna, giving Zelia a smaller size overall.

With this antenna design, Zelia can be installed either perpendicular to the ground plane or off the edge of the PCB, which means an even smaller footprint on the PCB.



*Zelia  
(approximate size)*

#### ZELIA INTEGRATES ANTENNA, GPS RECEIVER, RTC AND LNA

The integrated antenna element is paired with the Condor C1011 GPS Receiver. The C1011 provides NMEA input and output, and PPS timing output.

The C1011 is the most compact Condor receiver. Built with the best components and the highest production quality standards, it delivers top tier positioning performance, accuracy, and sensitivity in signal acquisition and tracking.

Zelia also provides an internal 32 kHz crystal for Real Time Clock (RTC) and an internal Low Noise Amplifier (LNA).

#### ZELIA FITS PROJECTS ON THE GO

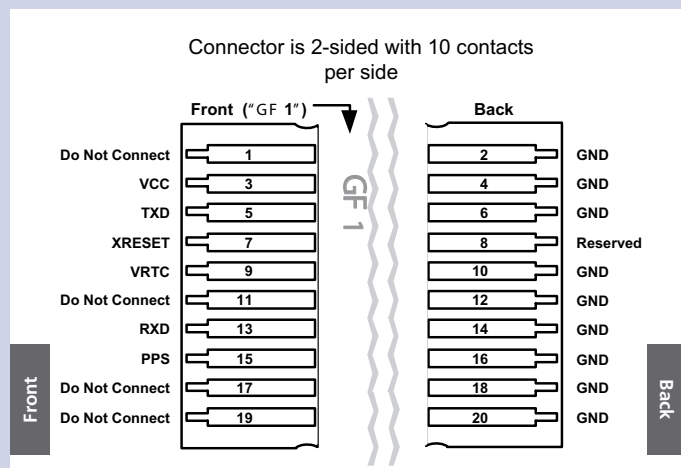
Zelia fits just right for performance-dependent applications that are space constrained and time and cost sensitive.

Zelia has an omni-directional antenna perfect for portability, an integrated GPS receiver module that delivers quality positioning performance, and a small footprint.

# ZELIA INTEGRATED ANTENNA AND GPS RECEIVER

## INTERFACES

### Pin Out Diagram



### Pin Out Table

PIN	Function	Description
1	Do not Connect	
2	Ground	Ground
3	V <sub>CC</sub> (Main Power)	V <sub>CC</sub> = main power 3.0 V to 3.6 V
4	Ground	Ground
5	TXD UART (Output)	Transmit (NMEA 0183) @ 2.8 V LVTTTL
6	Ground	Ground
7	XRESET = System reset	For host reset of module
8	Reserved	Pull to V <sub>CC</sub> via a 10 kΩ resistor
9	V <sub>RTC</sub> (Backup Power)	V <sub>RTC</sub> = backup power 2.0 V to 3.6 V
10	Ground	Ground
11	Do not Connect	
12	Ground	Ground
13	RXD UART (Input)	Receive (NMEA 0183) @ 2.8 V LVTTTL
14	Ground	Ground
15	PPS Interface (Output)	2.8 V LVTTTL compatible Pulse Width: Configurable 4.2 μs
16, 18, 20	Ground	Ground
17, 19	Do not connect	

### Connector

0.8 pitch, 1 mm thick

Connects to:

Vertical socket P/N ..... SAMTEC MEC8-110-01-L-DV

Right angle socket P/N ..... SAMTEC MEC8-110-01-L-D-RA1

### ORDERING INFORMATION

Model	Part Number	Packaging			Starter Kit P/N
		1 piece	100-pc tray	500-pc box	
Zelia	77794-00	✓	✓	✓	TBD

## PERFORMANCE SPECIFICATIONS

GPS performance statistics are clear view, stationary, autonomous (no aiding), 50% figures. Sensitivity based on signals measured at the antenna

Update Rate	1 Hz (default), up to 5 Hz
Accuracy	
Position	< 2 m
Altitude	< 3 m
PPS	< ±25 ns
Acquisition	
Re-Acquisition	2 s
Hot Start	2 s
Warm Start	35 s
Cold Start	38 s
Sensitivity	
Tracking	-160 dBm
Acquisition	-146 dBm
Dynamics	
Acceleration	2 g
Velocity	515 m/s (COCOM Limit)

## ELECTRICAL INTERFACE SPECIFICATIONS

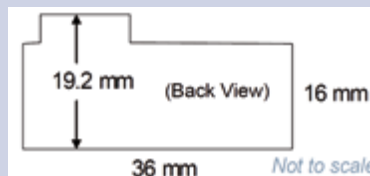
Serial Interface	
UART	2.8 V LVTTTL level
Protocol	NMEA 0183
Messages	GGA, GSA, GSV, RMC (default)
Baud Rate	9600, 8-N-1
PPS Interface	1 Hz timing pulse, output
Level	2.8 V LVTTTL level
Pulse Width	Configurable 4.2 μs
Main Power	
DC Levels	3.0 V to 3.6 V
Consumption	< 43 mA typical @ 20 °C
Backup Power	
DC Levels	2.0 V to 3.6 V
Consumption	6 μA typical @ 20 °C

## ENVIRONMENTAL INTERFACE SPECIFICATIONS

Temperature	
Operating	-40 °C to + 85 °C
Storage	-55 °C to +105 °C
Humidity	.5% to 95% non-condensing @ 60 °C
Vibration	
5 Hz to 20 Hz	0.008 g <sup>2</sup> /Hz
20 Hz to 100 Hz	0.05 g <sup>2</sup> /Hz
100 Hz to 900 Hz	-3 dB/octave

## PHYSICAL SPECIFICATIONS

Dimensions excluding connector	16.0 mm x 36 mm
Connector	3.2 mm x 12 mm
Dimensions including edge connector	19.2 mm x 36 mm



Specifications subject to change without notice.

### NORTH AMERICA

Trimble Navigation Limited  
Corporate Headquarters  
935 Stewart Drive  
Sunnyvale, CA 94085  
+1-800-787-4225 Phone  
+1-408-481-7741 Phone  
Email: AD\_Sales@trimble.com

### EUROPE

Trimble Navigation Europe  
+46 70-544-10-20 Phone

### KOREA

Trimble Export Ltd, Korea  
+82-2-555-5361 Phone

### CHINA

Trimble Navigation Ltd, China  
+86-10-8857-7575 Phone

