GPS010 UBLOX MAX6 GPS BREAKOUT

Contents:

1 x UBlox MAX6 Breakout PCB
1 x active antenna
1 x 10 pin header and jumper link

Introduction:

The MAX-6 GPS module is generally considered one of the most powerful and versatile GPS modules available. This GPS010 breakout board allows this compact GPS module to be easily used within PICAXE projects.

Breakout board features:

- MAX-6 GPS Module with SMA active antenna connector
- Size 26mm by 26mm (excluding SMA connector)
- Weight 4.3g (excluding antenna)
- Breadboard and stripboard compatible headers (2x 6pin 2.54mm headers, spaced 20.32mm apart)

Connections:

Serial Header JP2

PPS	- connect via 1k resistor to LED for optional 1 pulse per second indicator.
RXD	- GPS receive, connect to PICAXE TXD pin.
TXD	- GPS transmit, connect to PICAXE RXD pin.
VCC	- 2.7V to 3.6V supply.
VB	- Battery backup, connect to 3V lithium coin cell or directly to 0V. Do not leave VB floating.
GND	- 0V supply.

Default baud rate is T9600 (9600,n,8,1, true polarity (idle high, pulse low)). This baud rate may be changed. The Serial Header JP2 is directly compatible with the AXE211 PICAXE Connect board.

I2C (DDC) Header JP1

PPS	- connect via 1k resistor to LED for optional 1 pulse per second indicator.
SCL	- I2C SCL, internal weak 13k pull-up.
SDA	- I2C SDA, internal weak 13k pull-up.
VCC	- 2.7V to 3.6V supply.
VB	- Battery backup, connect to 3V lithium coin cell or directly to 0V. Do not leave VB floating.
GND	- 0V Supply.

Use of JP1 is optional, no connections are required if JP2 is also being used (e.g. on the AXE211 connect board).

General Notes:

It is strongly recommended to use the GPS010 with a M2 or X2 series PICAXE chip and run the whole system at 3.3V or 3V. Never connect a 5V supply to the module (3.6V is the maximum rated voltage).

For PICAXE experimentation the AXE211 PICAXE Connect board (fitted with a PICAXE-20X2 microcontroller) is recommended. More details at: www.picaxe.com/products/AXE211

For MAX-6 technical datasheets and sample BASIC programs showing how to parse the GPS NMEA output stream please see the GPS010 product page at: www.picaxe.com/products/GPS010

Battery Backup

A 3V lithium cell can be connected between the pin 'VB' and 0V to retain configuration between sessions and hence speed up initial satellite fix at power up. However the battery is not essential for use, and so if not used the pin VB should be connected to 0V. A jumper position JP3 is provided on the breakout board to do this. Do not leave pin VB floating.

Note that if used with the AXE211 PICAXE Connect board fitting the AXE211 'CTS jumper' has the effect of connecting the VB pin to 0V, so the GPS010 on board jumper is not required in this situation.
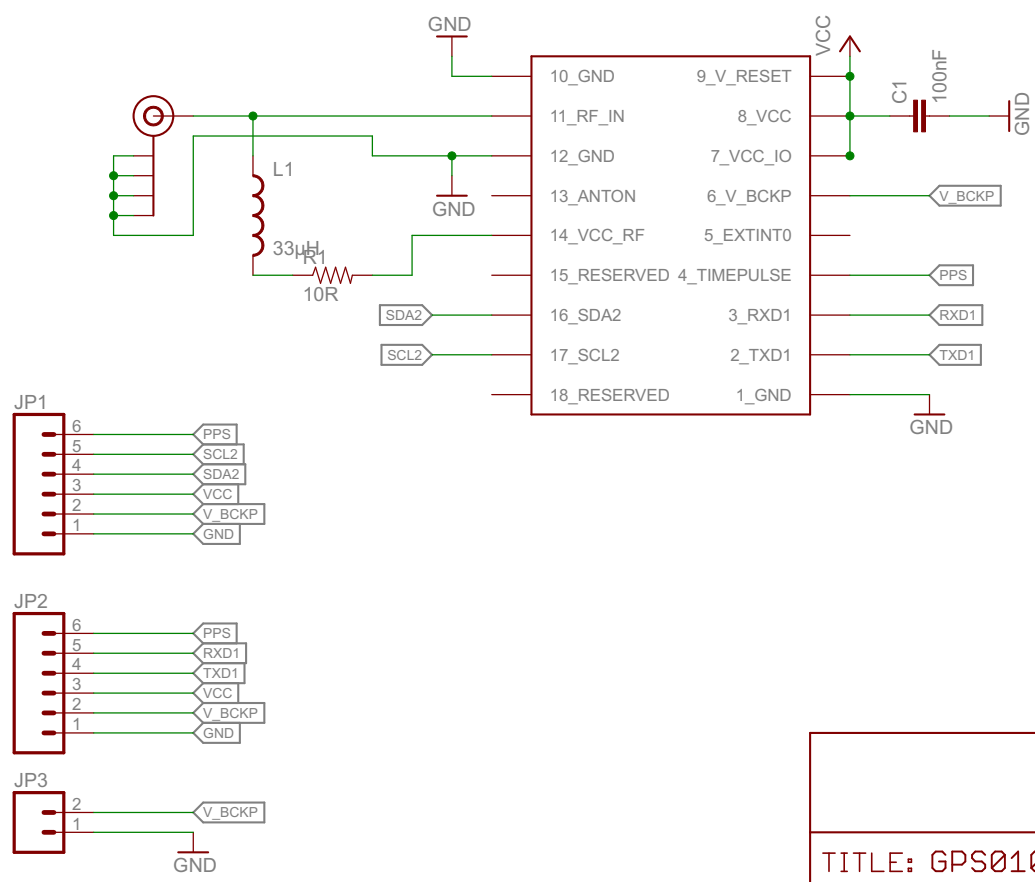
SMA Connector

The SMA connector is designed to connect the active GPS antenna (supplied). This Active GPS antenna is light weight, compact, easy to connect and provides excellent reception to optimize the performance of your GPS receiver. Many users are even able to use the module indoors with this active antenna fitted.

I2C and Configuration EEPROM

An optional I2C EEPROM (Microchip type 24AA32A) may be connected to the I2C interface on JP1. This can be used to save configuration settings permanently. It will automatically be recognized by the MAX-6 firmware upon power-up. The EEPROM address must be set to %10100000 ($A0), so tie pins A0, A1, A2 and WP of the EEPROM all to 0V. SDA and SCL have weak internal 13k pullups, however external 4k7 resistors may also be fitted if desired.

The MAX-6 can also act as an I2c slave - see the MAX-6 technical documentation for more details. Note that if used as an I2C slave any connected EEPROM must not use EEPROM address $A0 (as if the MAX-6 finds an EEPROM with this address upon power up it will automatically adopt master mode). Slave mode is adopted 250ms after power up (if no EEPROM at address $A0 is found).

GND

VCC

10_GND	9_V_RESET
11_RF_IN	8_VCC
12_GND	7_VCC_IO
13_ANTON	6_V_BCKP
14_VCC_RF	5_EXTINT0
15_RESERVED	4_TIMEPULSE
16_SDA2	3_RXD1
17_SCL2	2_TXD1
18_RESERVED	1_GND

C1
100nF
GND

L1
33µH

R1
10R

GND

V_BCKP

PPS

SDA2

RXD1

SCL2

TXD1

GND

JP1
6 PPS
5 SCL2
4 SDA2
3 VCC
2 V_BCKP
1 GND

JP2
6 PPS
5 RXD1
4 TXD1
3 VCC
2 V_BCKP
1 GND

JP3
2 V_BCKP
1
GND

TITLE: GPS010

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Date: 15/08/2012 21:33:17   Sheet: 1/1