

## Welcome to the thingSoC® Grovey One

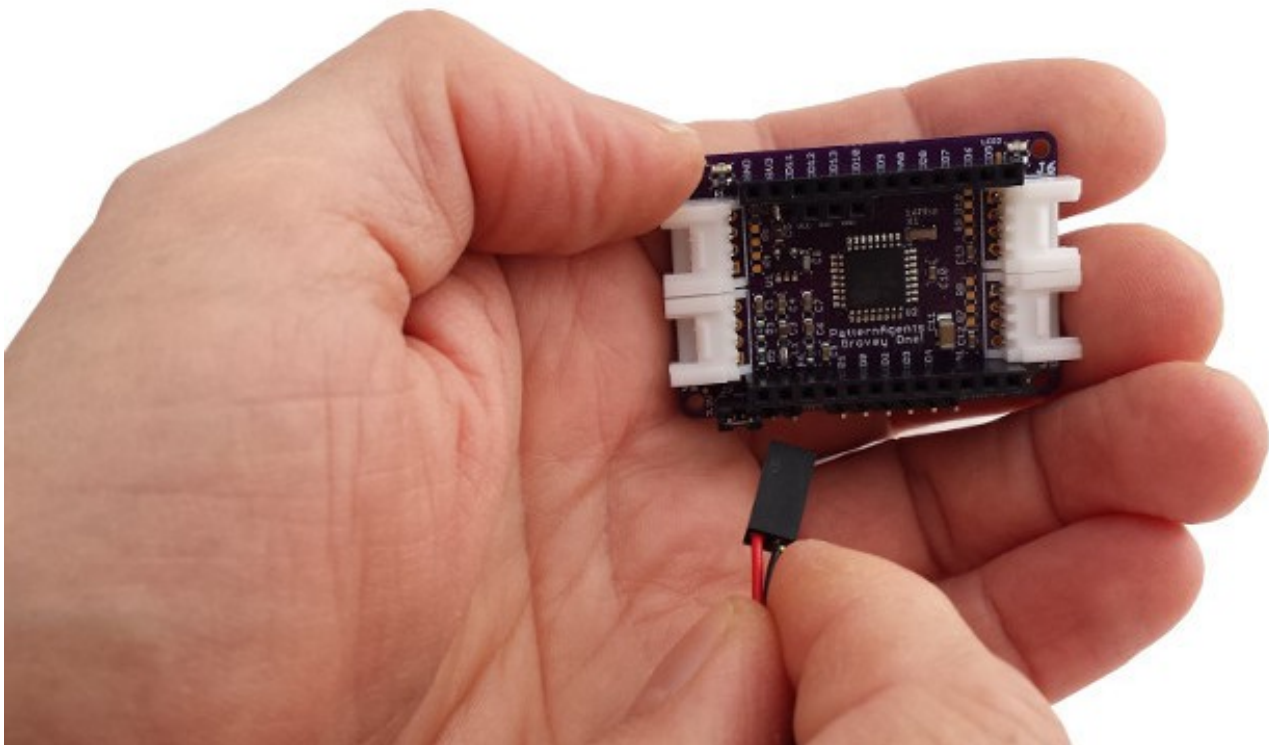
The TSOC\_GROVEY\_ONE is an Arduino Uno compatible board, based on the Atmel ATMEGA328P chip, in an Embedded Module format for the new thingSoC, Internet of Things open source hardware standard.

### Getting Started :

The TSOC\_GROVEY\_ONE is very flexible, and there are a number of different ways to power and reprogram the board, including using a thingSoC USBUART, or other "FTDI" type USB to UART adapters, as well as JTAG/SWD/SPI interfaces for "bare metal" programming.

### Using a Li-Po Battery or Wall Power (5V) Adapter :

- 1) Set the VCC Jumper (Jx) to 3.3 Volts (left position as shown)
- 2) Using either a thingSoC USB power cable, connect a 5V power source to the Grovey One as shown below :



- 3) Note that this is the preferred combination for using 3.3 Volt Grove and Mikrobus peripherals, as it provides the correct voltage levels for all 3.3 Volt peripherals.
- 4) LED2 will illuminate (indicating VCC is powered), and LED1 (D13) will begin to blink slowly.

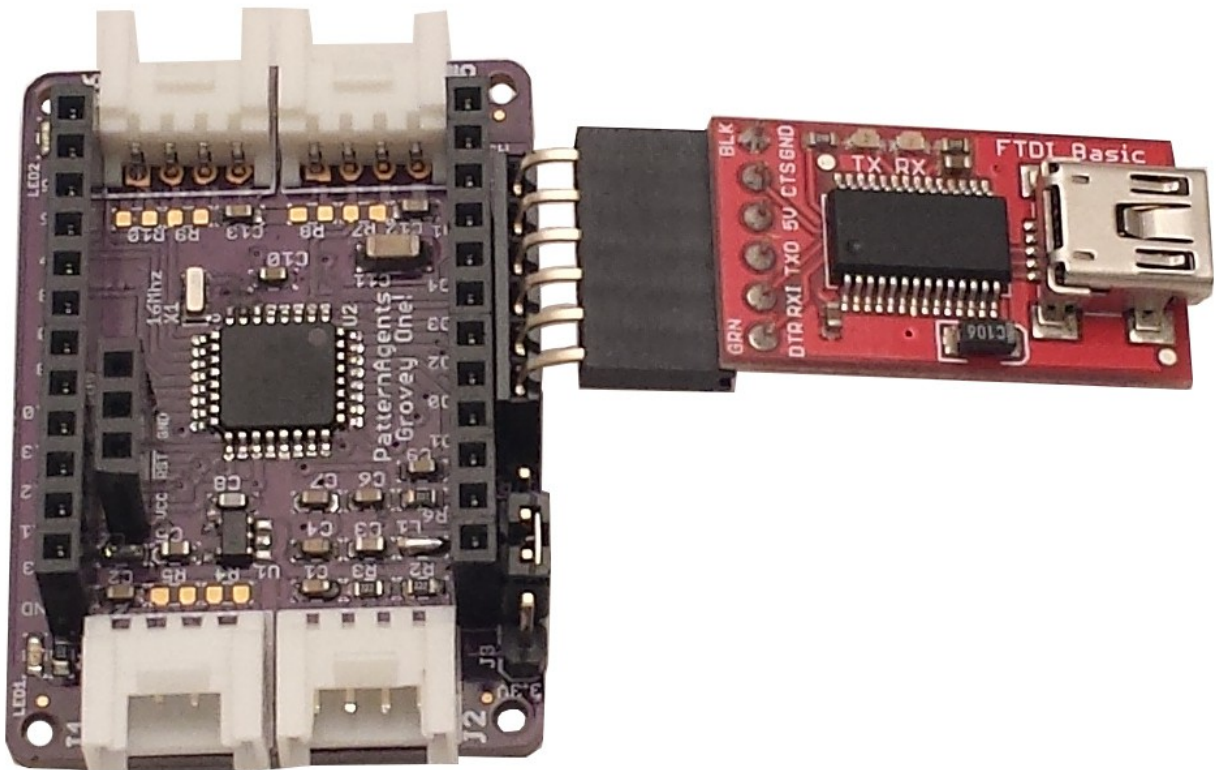
## Using a Standard "FTDI" USB to UART Adapter :

- 1) Set the VCC Jumper (Jx) to either 3.3 Volts (bottom position) or 5.0 Volt (top position) depending on your choice of peripherals.

**Note that you can't mix voltages, the system is either 3.3 Volts or 5.0 Volts on ALL pins.**

- 2) Plug an "FTDI" type USB to UART into the Grove One such as the Sparkfun 5.0 Volt "FTDI Basic" for 5.0 Volt VCC, or the Sparkfun 3.3 Volt "FTDI Basic" for 3.3 Volt VCC, and connect the USB cable to your computer.

Note that we use a six (6) pin right angle connector below, or you can just plug it in vertically.

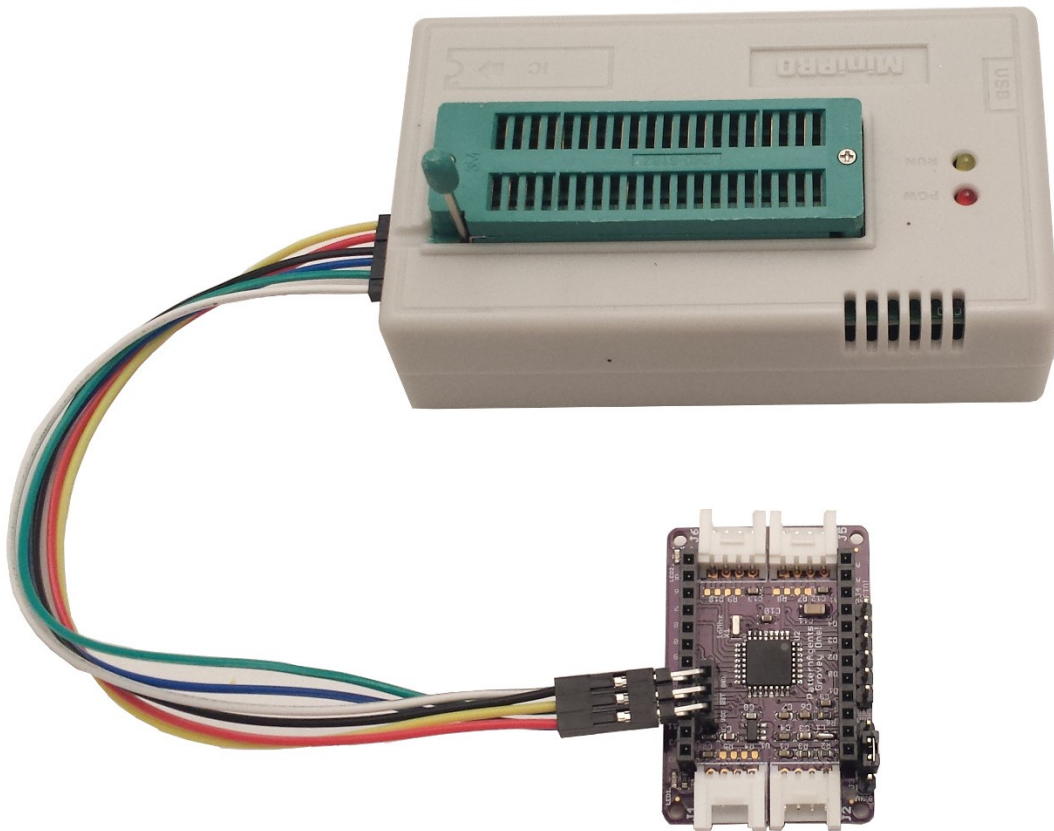


- 3) In the Arduino IDE, select the "Tools -> Board" type as "Arduino Pro or Pro Mini"
- 4) In the Arduino IDE, select the "Tools -> Processor" type as either "ATMEGA328 5V 16Mhz" or "ATMEGA328 3.3V 8Mhz" depending on your VCC jumper setting.
- 5) In the Arduino IDE, select the "Tools -> Port" as COMx: where X is your FTDI adapter.
- 6) Now you are ready to program your Grove One using the Arduino IDE.

## Using an ICSP Programmer for Bare Metal Programming :

The TSOC\_GROVEY\_ONE board comes preloaded with the OPTIBOOT bootloader for Arduino, but if you prefer to do bare metal programming, connect an ICSP programmer as shown below.

**NOTE:** the pinout is **NOT** the same as the default Arduino Pro board (due to space limitations).



Grovey One  
ICSP Pinout

-----  
VCC -	- D11
RST -	- D12
GND -	- D13
-----

### Safe Handling Precautions :

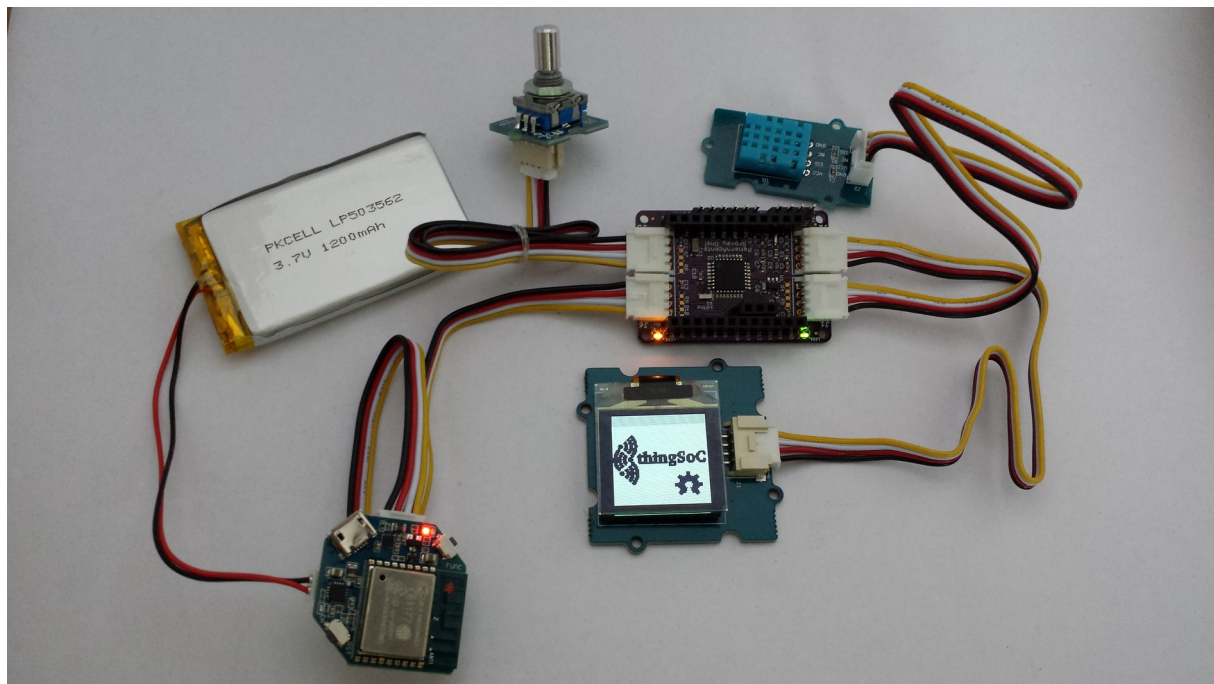
- 1) Always remove/unplug all power before inserting or removing peripherals.
- 2) Always ground yourself by touching a ground point before handling your boards.
- 3) Use a static safe bag when transporting your TSOC\_GROVEY\_ONE board.



## Adding Grove Peripherals :

The TSOC\_GROVEY\_ONE board supports both Grove and Mikrobus peripherals.

- 1) Grove connectors are polarized, and can only be plugged in one way.

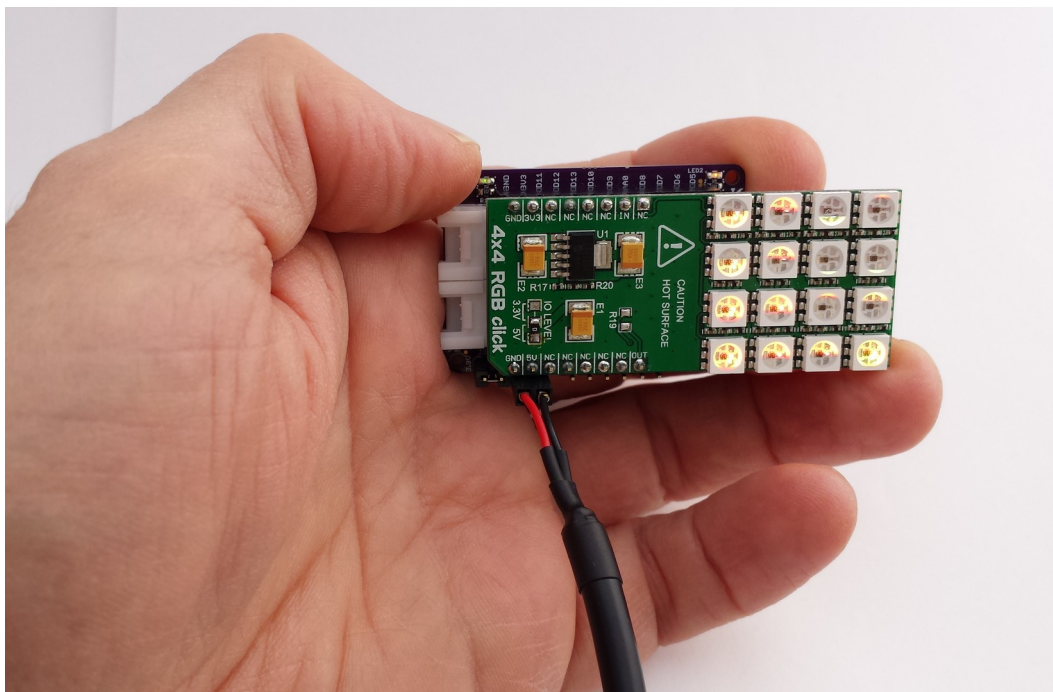
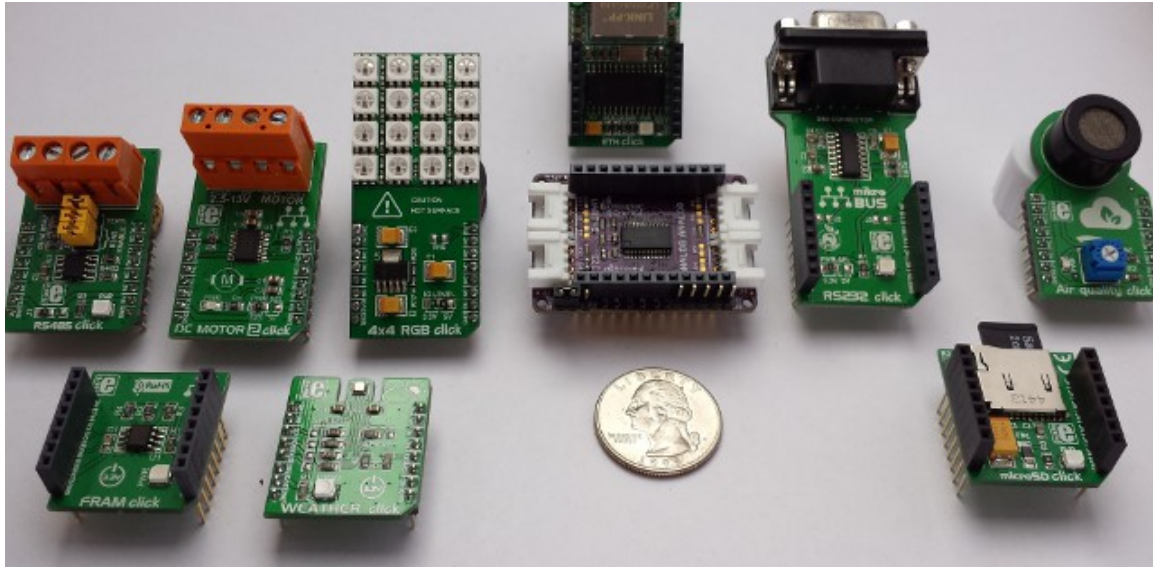




## Adding Mikrobus Peripherals :

The TSOC\_GROVEY\_ONE board supports both Grove and Mikrobus peripherals.

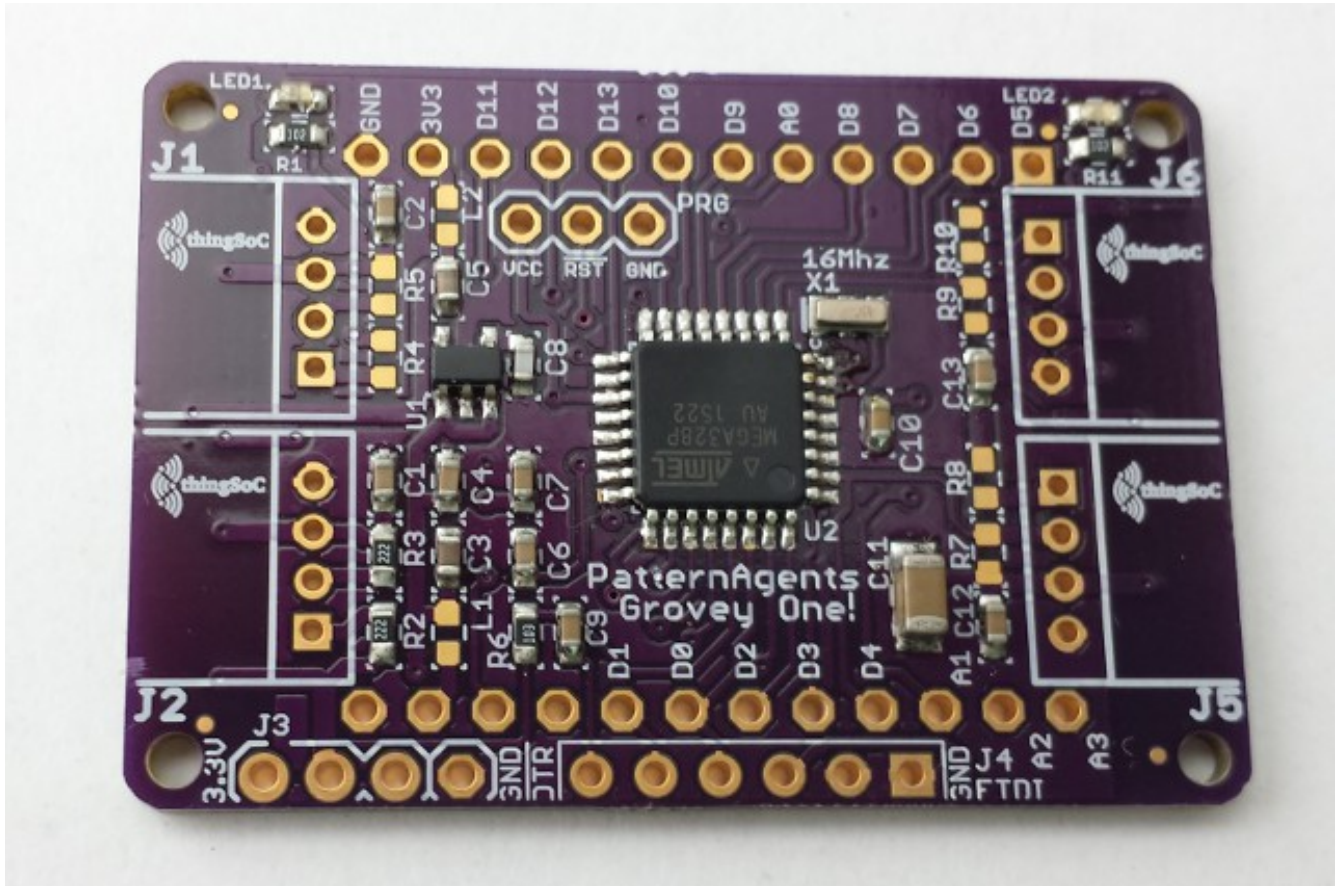
- 1) **Make sure to align the SQUARE/CUT edges** of the Mikrobus board together to insure that the polarity is correct. Push down **evenly** to seat the boards in the socket.
- 2) Note that the "stacking pins" are somewhat longer by design, and there will be some extra space between the boards when using stacking connectors.



## thingSoC® Grovey One Arduino Examples :

### Default Firmware :

- 1) The Grovey One comes preloaded with the basic "Blink" project.  
LED1 will blink slowly, indicating the sketch is running.



### For more information and examples :

Complete documentation, including schematics, layouts, gerbers, and Bill of Materials (BOM) are available on the thingSoC website at :

[https://github.com/thingSoC/TSOC\\_GROVEY\\_ONE/tree/master/TSOC\\_GROVEY\\_ONE](https://github.com/thingSoC/TSOC_GROVEY_ONE/tree/master/TSOC_GROVEY_ONE)

There is also a project Wiki available for asking questions and more information at :

[https://github.com/thingSoC/TSOC\\_GROVEY\\_ONE/wiki](https://github.com/thingSoC/TSOC_GROVEY_ONE/wiki)

## **thingSoC® Grovey One Features :**

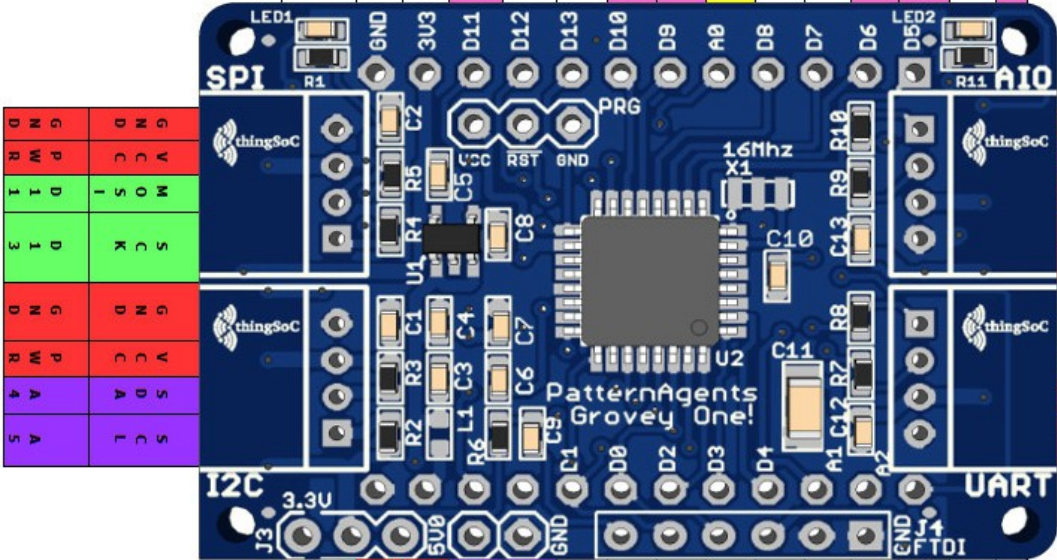
The TSOC\_GROVEY\_ONE is a low cost, embeddable module featuring an ATMEGA328P device :

- Atmel ATMEGA328P (AVR) Processor
- 8 or 16 Mhz operation
- 3.3 Volt or 5.0 Volt operation
- 32 KiB FLASH memory
- 2 KiB SRAM
- 1 KiB EEPROM
- 3.3 Volt onboard voltage regulator
- 10-bit Analog to Digital Converter (8 Channels)
- Touch Sensing (8 Channels)
- SPI (1 Channel)
- I2C (1 Channel)
- UART (1 Channel)
- Power and USER LEDs
- thingSoC Compliant Module
- [Mikrobus Compatible Module](#)



A	D	P	G	D	D	P	G
3	5	R	0	1	R	D	D
A	P	V	G	R	T	V	G
N	W	C	N	X	X	C	N
A	M	C	D	D	C	D	D

DEFAULT	PORT	ADC	PWM
USER LED	D13		
IO2	D5		D5
IO1	D6		D6
SS2	D7		
SS1	D8		
IRQ	A0	A0	
ATN	D9		D9
SSEL	D10		D10
SCK	D13	(Pgm)	
MISO	D12	(Pgm)	
MOSI	D11	(Pgm)	D11
3.3VOLTS	3V3		
GROUND	GND		
POWER LED	VCC		



DEFAULT	PORT	ADC	PWM
R1	A6	A6	
DCD	A2	A2	
DSR	A1	A1	
DTR	D4		
RTS	D3		D3
CTS	D2		
RXD	D0		
TXD	D1		
SCL	A5	A5	
SDA	A4	A4	
5.0VOLTS	5V0		
GND	GND		

LEGEND
POWER/GROUND PINS
DIGITAL PINS
ANALOG/ADC PINS
PWM PINS
TOUCH PINS
UART PINS
PROGRAM/JTAG/DEBUG PINS
I2C BUS PINS
SPI BUS PINS



PatternAgents  
 thingSoC  
 GrovePy One Pin Out  
<http://github.com/thingsoc/>