



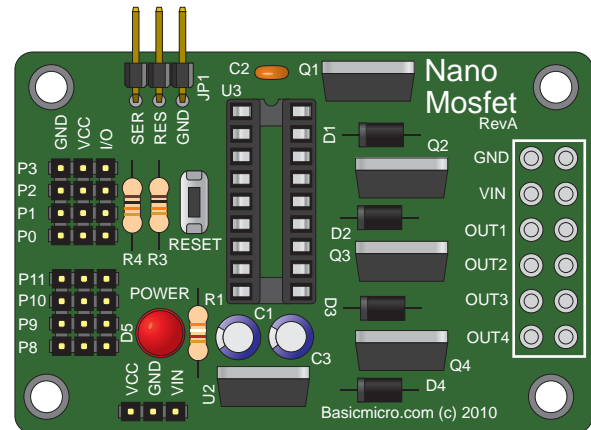
# BASIC MICRO

TECHNOLOGY AT WORK

Nano Mosfet Board  
Data Sheet

**Feature Overview:**

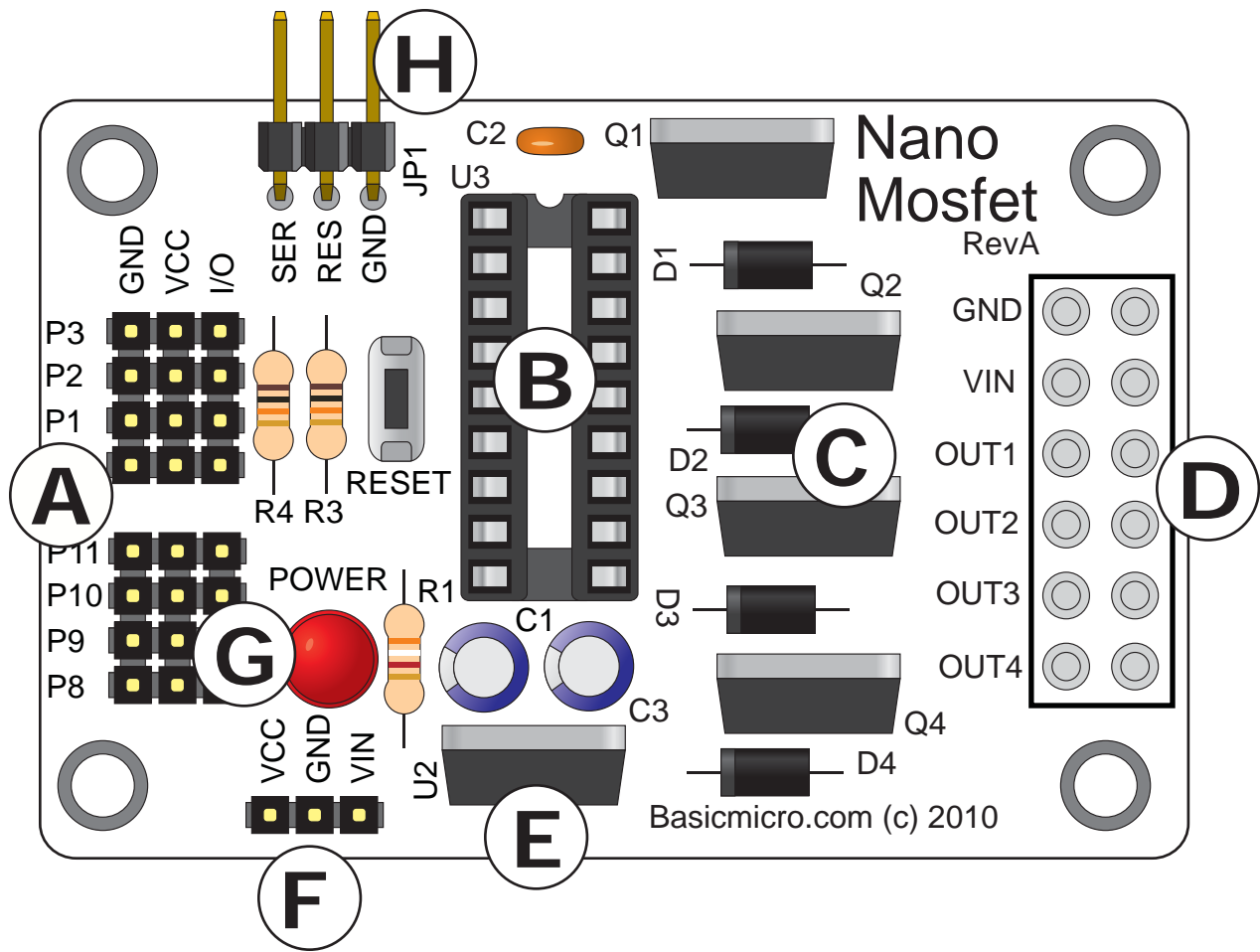
- Power LED
- 3.5mm Screw Terminal Compatible
- Battery Connector
- LDO Power Regulator
- 8 Servo or I/O Headers
- 4 High AMP MOSFET Switches
- In Circuit Nano Programming

**Basic Description**

The Nano Mosfet board is a great platform for controlling high current peripherals like DC motors, stepper motors, servo motors, solenoids and relays. The Nano Mosfet board was designed with beginners or advance users in mind. Its easy setup and programming make it a great solution for your next project.

The Nano Mosfet board is ideal for a low cost robotics controller platform. The board makes it easy to drive continuous rotation servos or DC motors for the drive train.

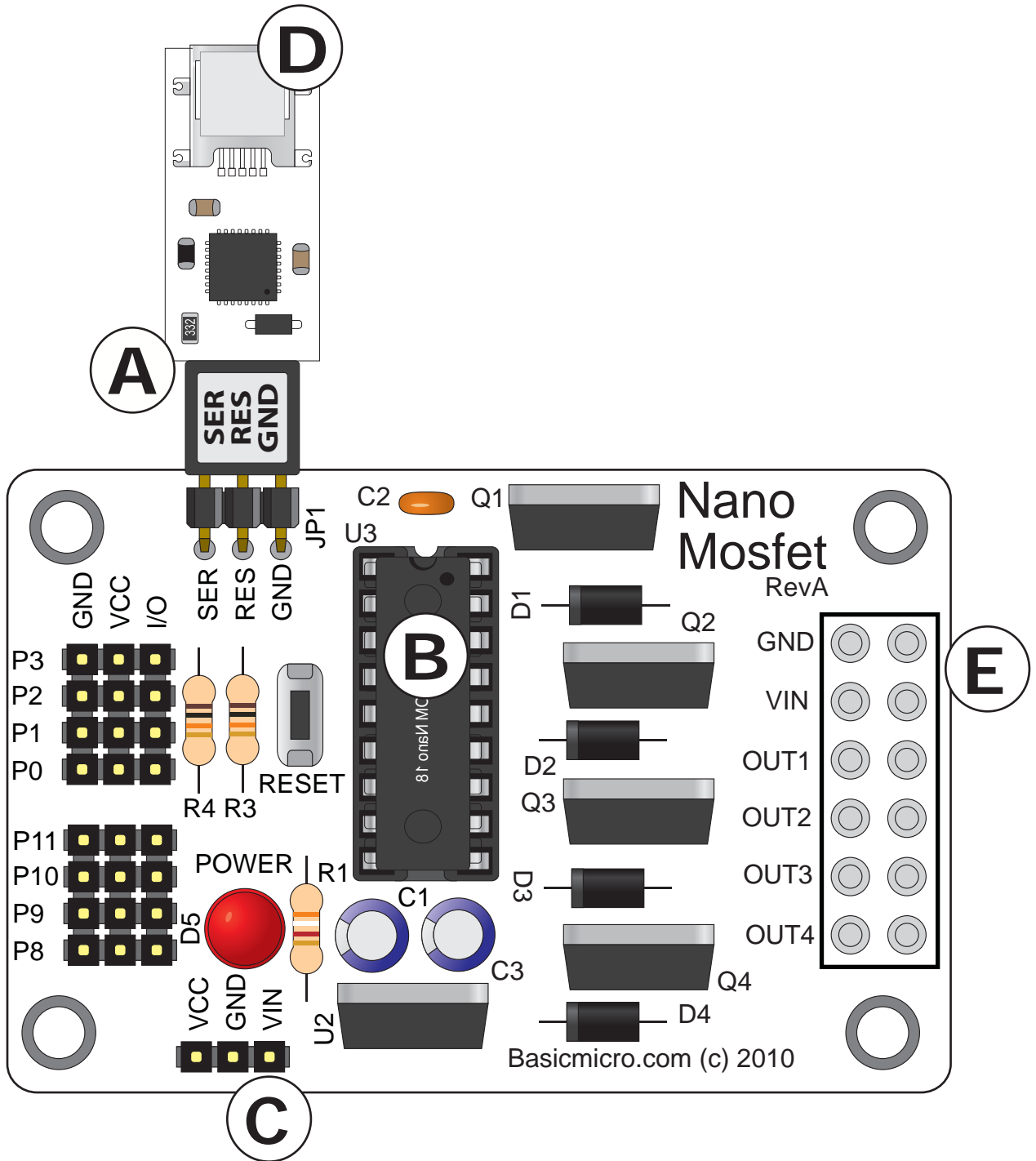
Hardware Overview:



- A:** I/O or servo headers. Corresponding Nano pin is shown.
- B:** Nano 18 socket.
- C:** High current Mosfets.
- D:** Output header. Compatible with 3.5 screw terminals.
- E:** Low drop out regulator.
- F:** Battery input.
- G:** Power LED.
- H:** In circuit program header.

**Nano Mosfet Board Setup**

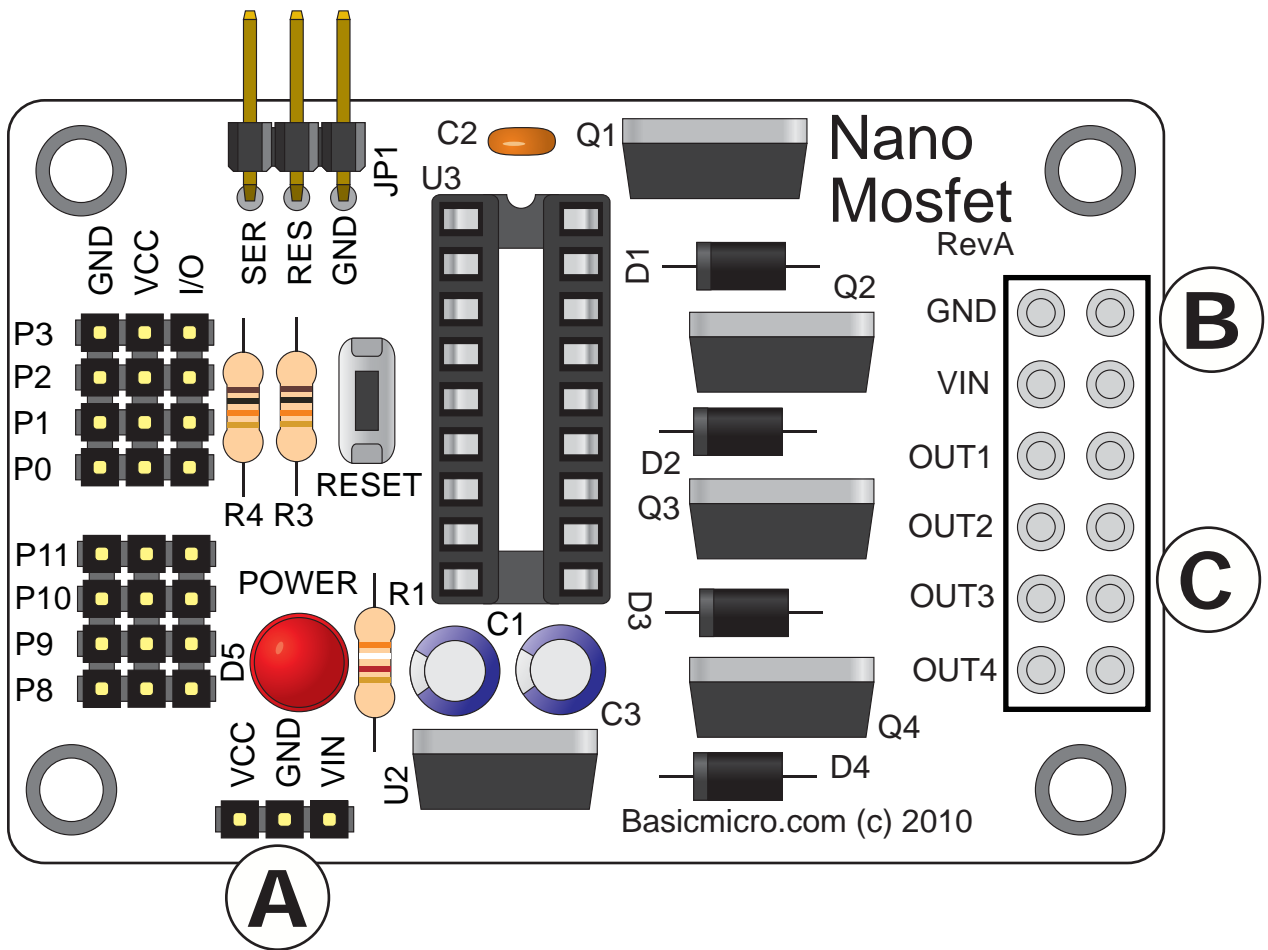
Insert a Nano 18 pin chip in the Nano Mosfet board (B) socket labeled U3. Be careful to note Nano orientation. If the Nano is placed in the socket backwards, you will damage it. Insert the USB2Serial adapter as shown (A). Supply power (C or E). Then plug a mini B USB cable (D). Plug the other end of the USB cable into your pc. If you're using the USB2Serial adapter for the first time you will need to download the drivers from [basicmicro.com](http://basicmicro.com). To program the Nano you will also need to download Basic Micro Studio software from [basicmicro.com](http://basicmicro.com).



**Power**

The Nano Mosfet board can be powered from as little as 4 AA batteries, RC 8.4V battery or up to a 24VDC wall adapter. The VIN input pins will supply the on board regulator. The on board regulator will stop working once the battery output voltage drops below 5.5VDC. The on board regulator can source up to 1A.

The board can be powered using the VIN connection from 2 places (A or B). The hole pattern (C) is compatible with a standard 3.5 screw terminal block. You can purchase this separately from Basicmicro.com.



### Mosfets

The IRF520 mosfets can control high current loads up to 9 Amp per MOSFET. These are ideal for heavy loads such as solenoids or larger DC motors. MOSFET outputs are OUT1 through OUT4.

Nano Pin	Mosfet Output
P4	= OUT1
P5	= OUT2
P6	= OUT3
P7	= OUT4

When driving an inductive load the IRF520 supplies the ground. One side of the coil will have voltage on it, while the other side is connected to the IRF520. When the IRF520 is turned on it will complete the circuit, sinking up to 9.2Amps.

### Headers

There are 8 headers on the Nano Mosfet board which are labeled P0 to P3 and P8 to P11. These headers can be used for digital inputs or outputs. P8 - P11 can be used as analog inputs. The analog input pins are used to read analog voltages with an output range between 0 to 5VDC. An example would be potentiometers, accelerometers or temperature sensors to name just a few. To access the analog pins you can use the code snippet shown below.

```
;Start program

Temp Var Word           ;Setup a variable

Main
  Adin P8, Temp         ;Read analog pin P8 can change P8 to any analog pin
  Serout S_Out, i9600, [DEC TEMP,13] ;Send value to the terminal window
Goto Main               ;Loop forever
```

The headers 3-pin configuration is setup to conveniently drive servos. When driving a servo you should power the board from a 6VDC source, such as a battery pack. Typical a single servo will draw more than 1Amp which is the max output of the on board regulator. To drive a servo you can use the code snippet shown below.

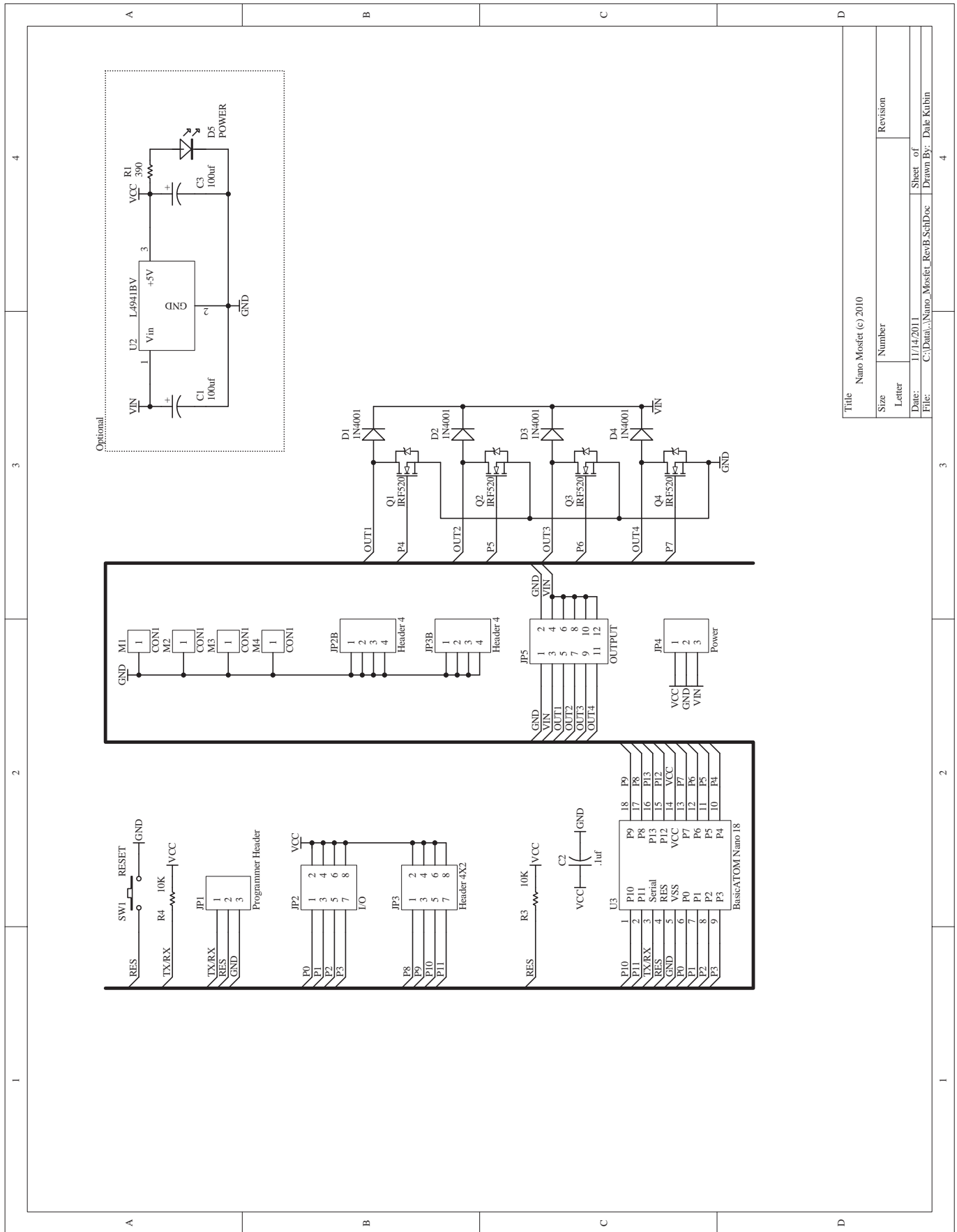
```
;Start program

Main
  Servo P8,700,40       ;700 represents position, this is the max range for HiTec 5645
  Pause 17              ;Pause minimum delay between next command
  Servo P8,-700,40     ;-700 full swing in opposite direction
  Pause 17
Goto Main               ;Loop forever
```

Each servo will have a different maximum range. The HiTec 5645 digital servo, this is around 700 / -700. An analog servo like a HiTec 422 this number will be around 1400 / -1400. The 40 in the servo command is how long the command will output the pulse. This gives the servo time to travel. If you exit the command too quickly the servo may not have time to travel to the correct position.

**Electrical Characteristics**

<b>Characteristic</b>	<b>Value (Units)</b>
<b>VIN Range (min - max)</b>	6 – 18VDC
<b>Regulator Max Current</b>	1A
<b>Mosfet Max Load Per Channel</b>	9A
<b>Current Draw (Idle)</b>	50 mA



Title		Nano Mosfet (c) 2010	
Size	Number	Revision	
Letter			
Date:	11/14/2011	Sheet of	
File:	C:\Data\...\Nano_Mosfet_RevB.SchDoc	Drawn By:	Dale Kubin

## Warranty

Basic Micro warrants its products against defects in material and workmanship for a period of 1 year. If a defect is discovered, Basic Micro will, at our discretion, repair, replace, or refund the purchase price of the product in question. Contact us at [support@basicmicro.com](mailto:support@basicmicro.com). No returns will be accepted without the proper authorization.

## Copyrights and Trademarks

Copyright© 2009 by Basic Micro, Inc. All rights reserved. PICmicro® is a trademark of Microchip Technology, Inc. The Basic Atom and Basic Micro are registered trademarks of Basic Micro Inc. Other trademarks mentioned are registered trademarks of their respective holders.

## Disclaimer

Basic Micro cannot be held responsible for any incidental, or consequential damages resulting from use of products manufactured or sold by Basic Micro or its distributors. No products from Basic Micro should be used in any medical devices and/or medical situations. No product should be used in a life support situation.

## Contacts

Email: [sales@basicmicro.com](mailto:sales@basicmicro.com)  
Tech support: [support@basicmicro.com](mailto:support@basicmicro.com)  
Web: <http://www.basicmicro.com>

## Discussion List

A web based discussion board is maintained at <http://www.basicmicro.com>

## Technical Support

Technical support is made available by sending an email to [support@basicmicro.com](mailto:support@basicmicro.com). All email will be answered within 48 hours. All general syntax and programming questions, unless deemed to be a software issue, will be referred to the on-line discussion forums.