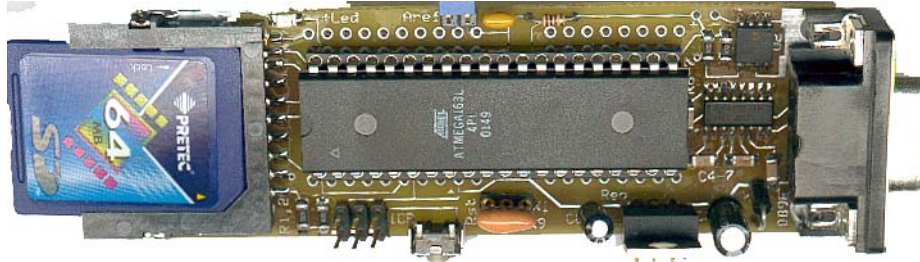# AVRSD3 Development Board

The AVR_SD3 is a very compact 3.3v AVR controller board with an SD/MMC card socket. It can work with most 40 pin AVR-L mcus such as the can use a Mega323L, Mega163L, Mega16L, Mega32L or a AT90LS8535 .Other "L" (low power) series AVRs can also be used with 40 pin carrier boards. The board has a standard Atmel 6 pin ISP programming header. It can be programmed using Atmels serial ISP hardware which is also compatible with the BascomAVR compiler.

Shown assembled, SD card not supplied with kit

Parts List

7 - 4.7k resistor (SMD) R1-R7
1 - 330 ohm resistor (SMD) R8
5 - 0.1uf capacitors (SMD)
1 - 1m resistor (SMD) R9
1 - 0.1uf (0r 1uf) ceramic cap C8
1 - 100 ohm resistor R10
1 - 10uf capacitor (radial) C3
1 - 0.1 or 1.0 uf capacitor (radial) C2
1 - LED (SMD)
1 - 4mhz resonator X1
1 - LM2937 3.3v regulator 220case

1 - ATMEGA163L or optional ATMEGA32L mcu
1 - Max3232 (or equiv) 16 pin SOIC
1 - Ramtron 64kbit I2C FRAM or 24LC256 eeprom
1 - DB9F RS232 female connector
1 - SD9 SD/MMC socket (top mount)
1 - Momentary reset switch (normally open)
1- Printed circuit board

Optional: 1N4001 diode for reverse voltage protection
Misc: header pins

Construction Hints

Assembly of this kit requires that the user has the necessary tools and skills to work with SMD (surface mount device) components. If you are not comfortable with soldering miniature parts, then please seek assistance from someone who is capable to do so. Small mistakes can cause many frustrating hours of grief in trouble shooting!

Minimum tools required:
A fine point low power (25w max) soldering iron and thin solder. Ideally, 0.022" diameter (or less) silver-bearing non-corrosive rosin core should be used. In addition. narrow needle nose pliers, diagonal cutting pliers, good quality tweezers, large magnifying glass, volt-ohm meter, and a 7 to 12 vdc power supply.
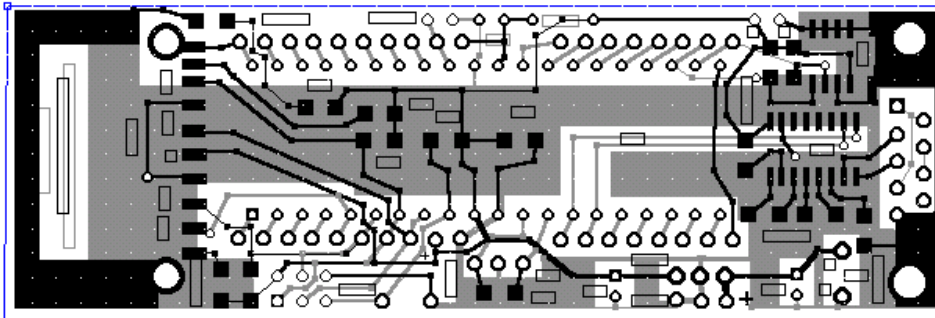
Make sure that you work in a clean well lighted area and have adequate desk area. If you have carpeting then please be aware of static discharge as well as accidentally losing tiny components in the carpets fiber. SMD capacitors and resistors are very tiny and can quickly become lost in the carpeting.
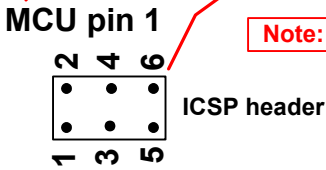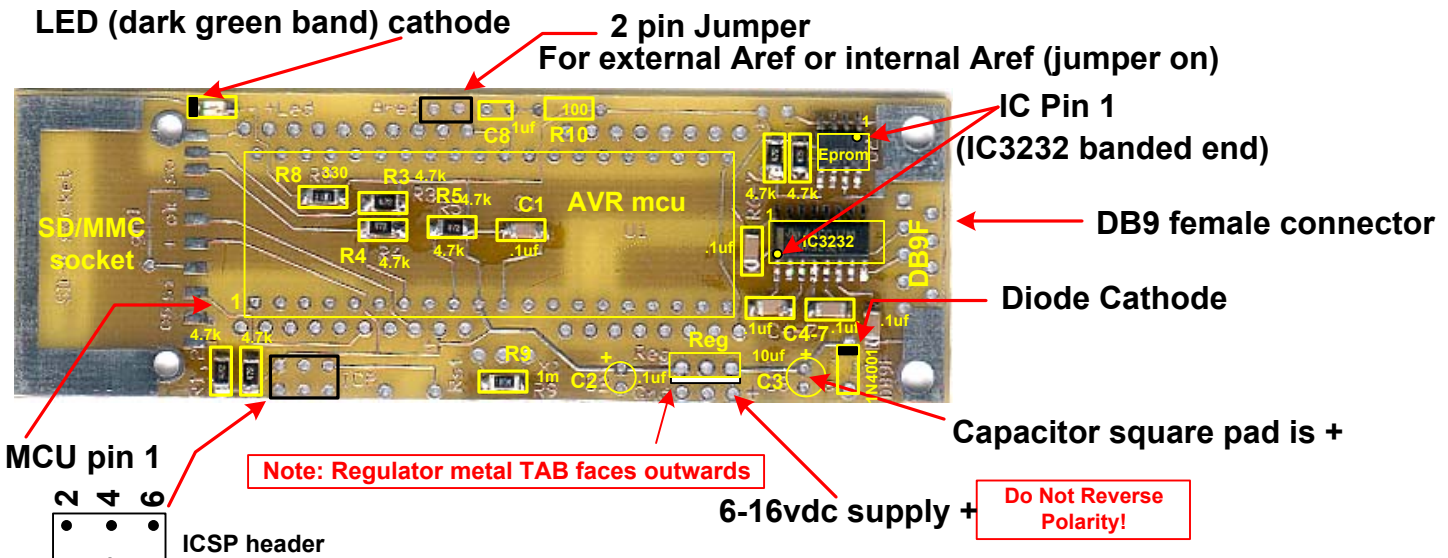
Disclaimer and Terms of Agreement

Construction

Printed circuit board layout

LED (dark green band) cathode

2 pin Jumper
For external Aref or internal Aref (jumper on)

IC Pin 1
(IC3232 banded end)

DB9 female connector

Diode Cathode

SD/MMC socket

AVR mcu

Capacitor square pad is +

MCU pin 1

ICSP header

Note: Regulator metal TAB faces outwards

6-16vdc supply +

Do Not Reverse Polarity!
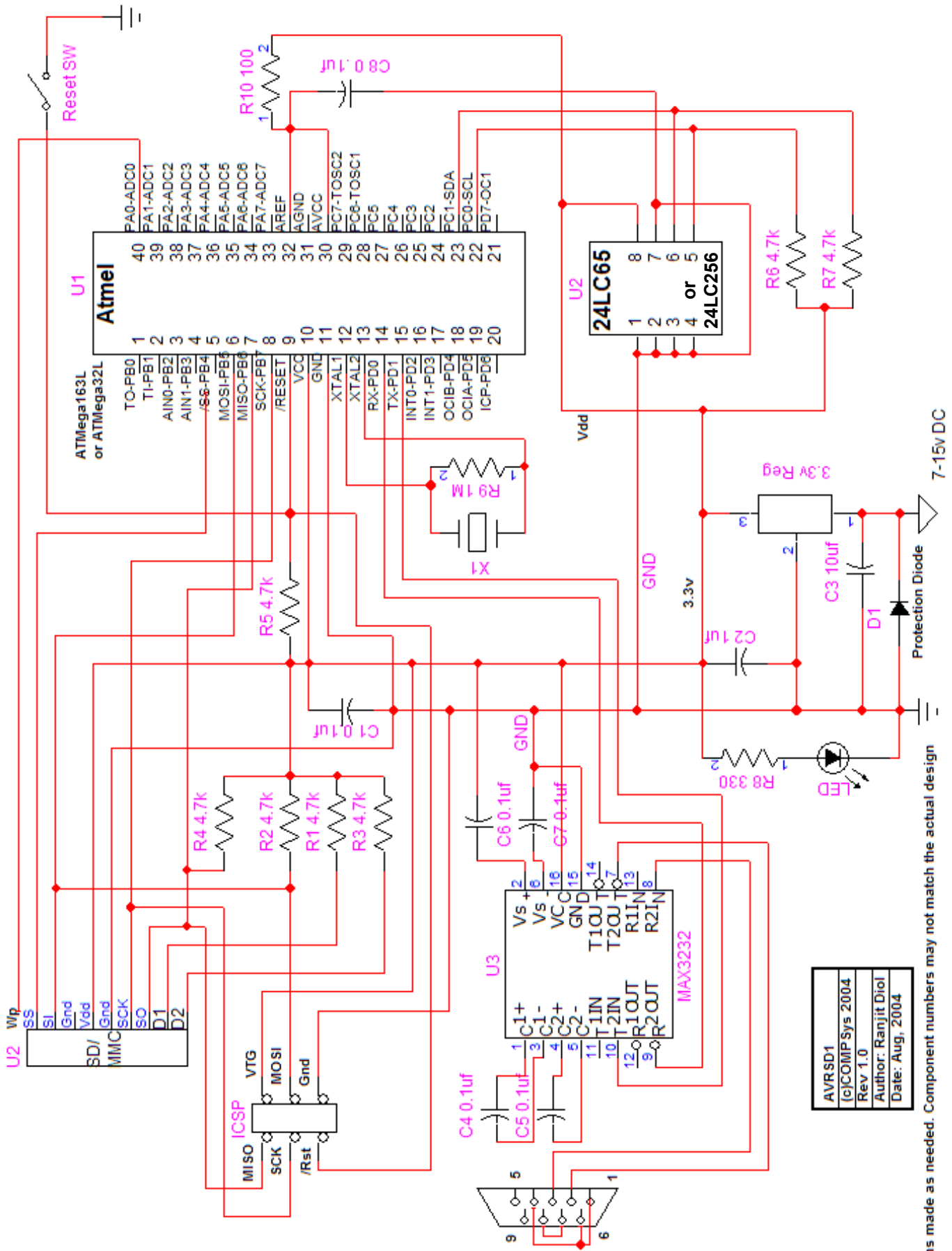
1 - MISO
2 - VTG
3 - SCK
4 - MOSI
5 - /RST
6- GND

1. Mount and solder all SMD resistors and capacitors.
C1-C7 are 0.1uf SMD caps, R1-R7 are 4.7k resistors, R8 is 330 ohm. Note: C4-C7 mount on the backside of the pcb

2. Carefully align and solder the I2C FRAM (mounted on the backside of the pcb). Make sure to orient the SOIC correctly! Use very little solder!

3. Do the same with the IC3232 SOIC (topside of pcb)

4. Solder the LED. The square pad on the pcb is + and the longer lead of the LED is the anode (+)

5. Mount and solder the 3.3v regulator and. Make sure that the metal**TAB faces the outer edge** of the pcb.

6. Orient and mount the 10uf and 1uf (or .1uf) radial caps. The longer lead is +. Square pads on the pcb are +

7. Mount the reset switch with the button facing outward and also mount the 10Mhz resonator

8. Carefully align and solder the SD/MMC socket to the top side of the pcb. Make sure that the two plastic bosses mate with the two holes on The pcb. Also tack solder the "ears" for added support.

9. Mount and solder the DB9F and 28 pin IC socket in place.

10. Optionally, solder any header pins that you plan to use.

11. *DOUBLE CHECK ALL YOUR WORK*. Inspect for solder bridges and cold solder joints.

AVRSD1 Circuit

AVRSD1
(c)COMPSys 2004
Rev 1.0
Author: Ranjit Diol
Date: Aug, 2004

Revisions made as needed. Component numbers may not match the actual design