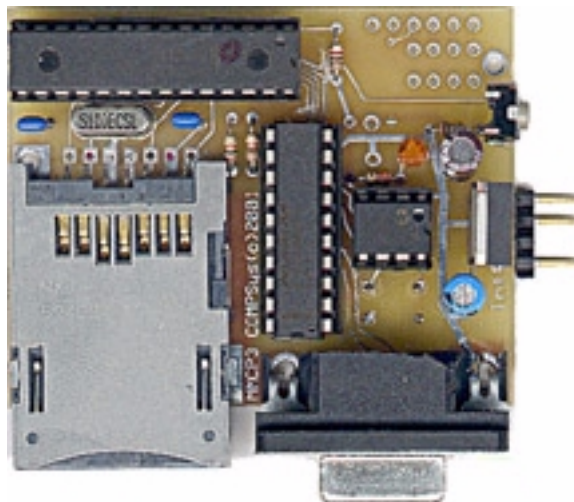


Multimediacard Interface Kit

MMC3K



The MMC3K is complete development kit interfaced to an MMC (multimediacard). MMCs can store vast amounts of data (from 8mb to 128mb) which makes this board ideal for projects that involve long term data logging. Shown with a shielded Molex(TM) MMC socket.



**Sandisk(TM)
32mb MMC**
(not included in kit)



The board can accept Molex(TM) or similar MMC shielded or unshielded sockets

The printed circuit board (pcb) accommodates an MMC socket, a PIC16F876 micro controller, a 24LC64 I2C eeprom or a FRAM FM24CL64 (on model MMC3B pcb), and a Max233A RS232 transceiver. The circuit runs on 3.3 volts which is provided by an LM2937 3.3 voltage regulator. Only PORTC of the 16F876 controller are used, the remaining pins of PORTA & PORTB are brought out to headers and can be used for any purpose. The DB9 female connector provides serial I/O as well as a means of in-circuit programming of the PIC, providing the PIC has a bootloader installed.

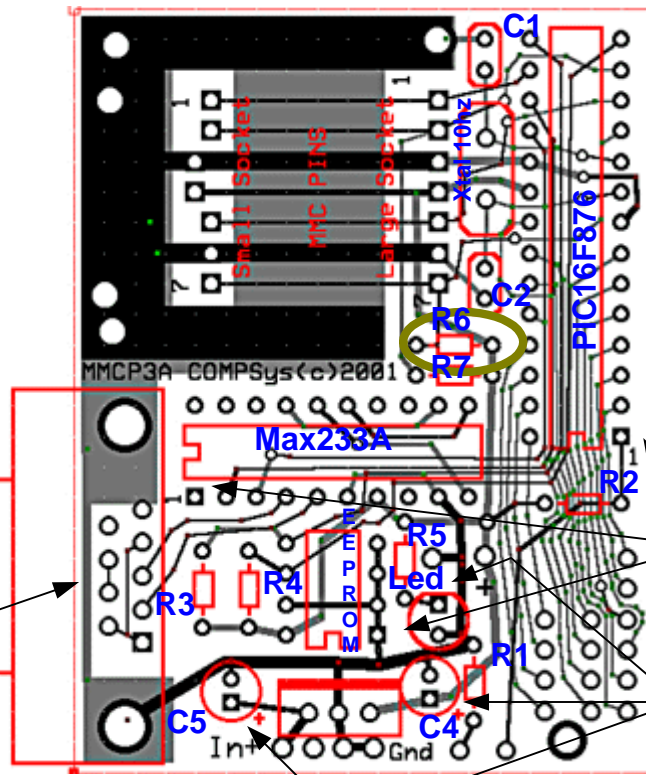
Disclaimer and Terms of Agreement

As with any kit, only the individual parts supplied are guaranteed against defects and not the user assembled unit. All kit parts are purchased from reputable sources such as Digikey Inc, Allied Electronics and Mouser Inc, however, should a kit part be ascertained to be defective it will be replaced at no charge within 30 (thirty) days of the purchase date. Beyond that, COMPSys Workbench and / or the COMPSys developer(s) assume no liability and WILL NOT be held liable nor be held responsible wholly or in part for any damages caused by the construction of and / or use of their products sold .

MMC3PA Component Layout

NOTE: The RS232 does not provide hardware handshaking. If you plan on using the CTS/RTS handshake you will need to cut the trace between pins 7 and 8 and then wire from those pins to which ever pins on the PIC16F876 are to be used for handshaking.

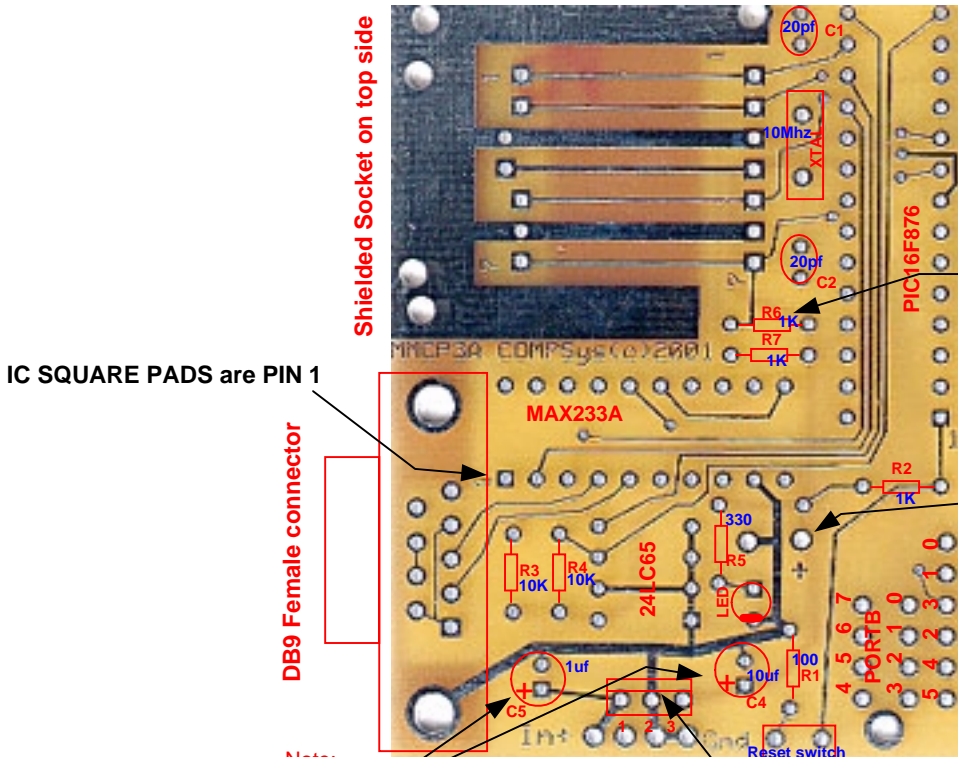
Pins 7 and 8



PIN 1

Square Pads + Polarity

MMC3A PCB



IC SQUARE PADS are PIN 1

DB9 Female connector

Shielded Socket on top side

IMPORTANT

IF the MMC socket is mounted on the top, you should solder R6 on the bottom side of pcb ONLY APPLIES TO MMC3A PCB

3.3v source for other devices

* PORTA Pins are not in sequence

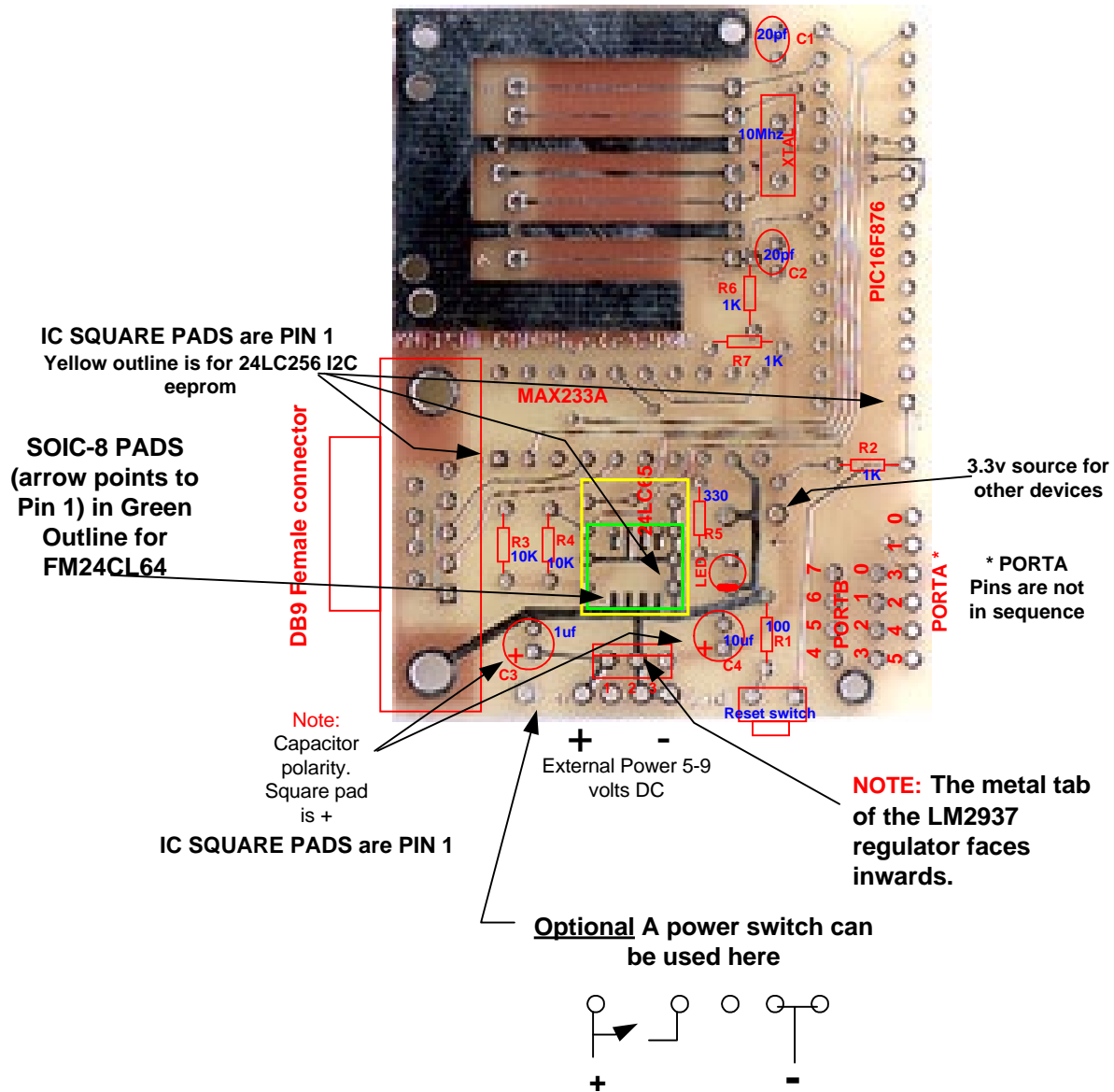
Note: Capacitor polarity. Square pad is +

External Power 5-9 volts DC

NOTE: The metal tab of the LM2937 regulator faces inwards.

MMC3B PCB

The MMC3B pcb can accommodate either an 8 pin DIP I2C eeprom or a SOP-8 I2C eeprom or Ramtron's 3.3volt FRAM.



Parts List

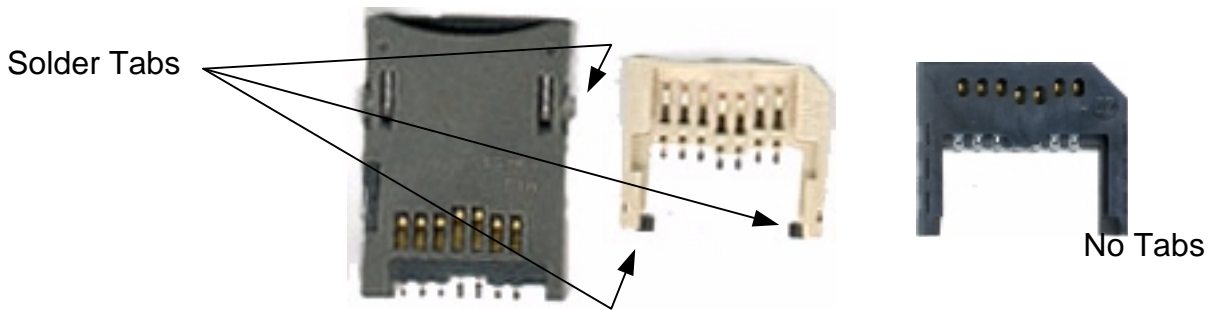
R2,R6,R7 -- 1K 1/4W resistor
R3,R4 --- 10K 1/4W resistor
R1 --- 100 ohm 1/4W resistor
R5 --- 330 ohm 1/4W resistor
C1,C2 --- 20 or 22pf non-polarized capacitor
C3 --1uf polarized capacitor
C4 -- 10uf polarized capacitor

1 - LED
1 - 10Mhz crystal
1 - LM 2937 3.3 regulator
1 - 24LC256 **OR** FM24CL64 eeprom
1 - Max233 or equivalent IC
1 - PIC16F876 IC
1 - 20 pin IC socket
1 - 28 pin IC socket
1 - 8 pin IC socket (**only if 24LC256 is supplied**)

1 - Double sided PCB
1 - DB9 rt angled female socket
1 - Momentary switch
1 - MMC socket
1 - 4 pin rt angle pin connector

MMC3 Kit Construction Notes

Possible socket types provided depending on availability

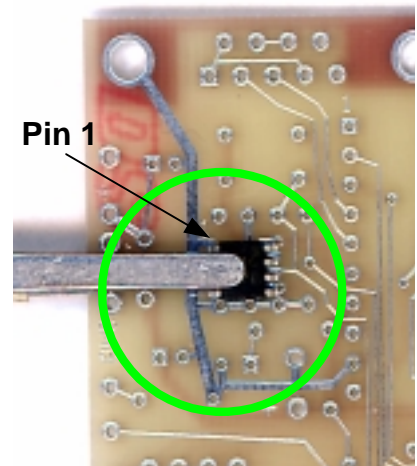
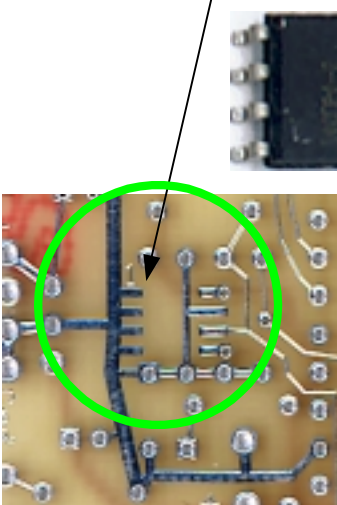


Accommodates large shielded (left) and the small unshielded (right) sockets. The **shielded socket** is soldered to the **TOP** side of the pcb, the **unshielded socket** is soldered to the **BOTTOM** side of the pcb. Some unshielded sockets do not have solder tabs(Far Right picture)

FM64CL FRAM mounting

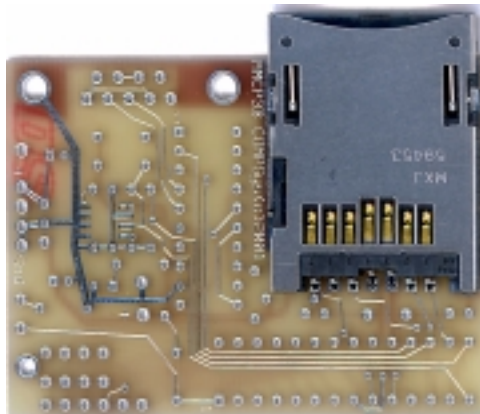
Use a **fine tip (15-20W maximum) soldering iron** . **DO NOT use acid core or corrosive solder**. Fine (.022 or less diameter) silver-lead solder works the best. Make sure you identify the Pin 1 location on the IC as well as the pcb. One method of holding the IC in place is to use tweezers. Another method is to apply a dab of contact cement to the bottom of the IC and then position it in place. The pads on the pcb are pre-soldered, therefore simply applying heat to the IC leg as it sits on top of the pad will suffice. **If you find that it is necessary to apply more solder please do so very carefully and in very small amounts.**

Pin 1 is identified by a dimple or a dot on the top left corner



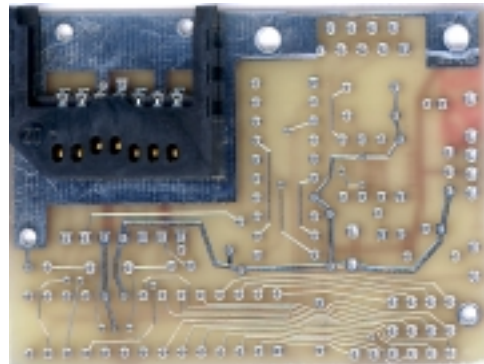
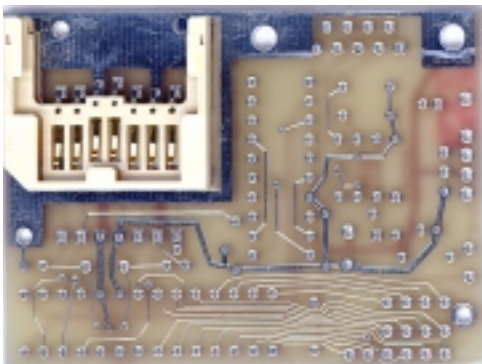
MMC3 Kit Construction Notes

MMC socket mounting



Shielded socket mounts on the TOP (component side) of the pcb

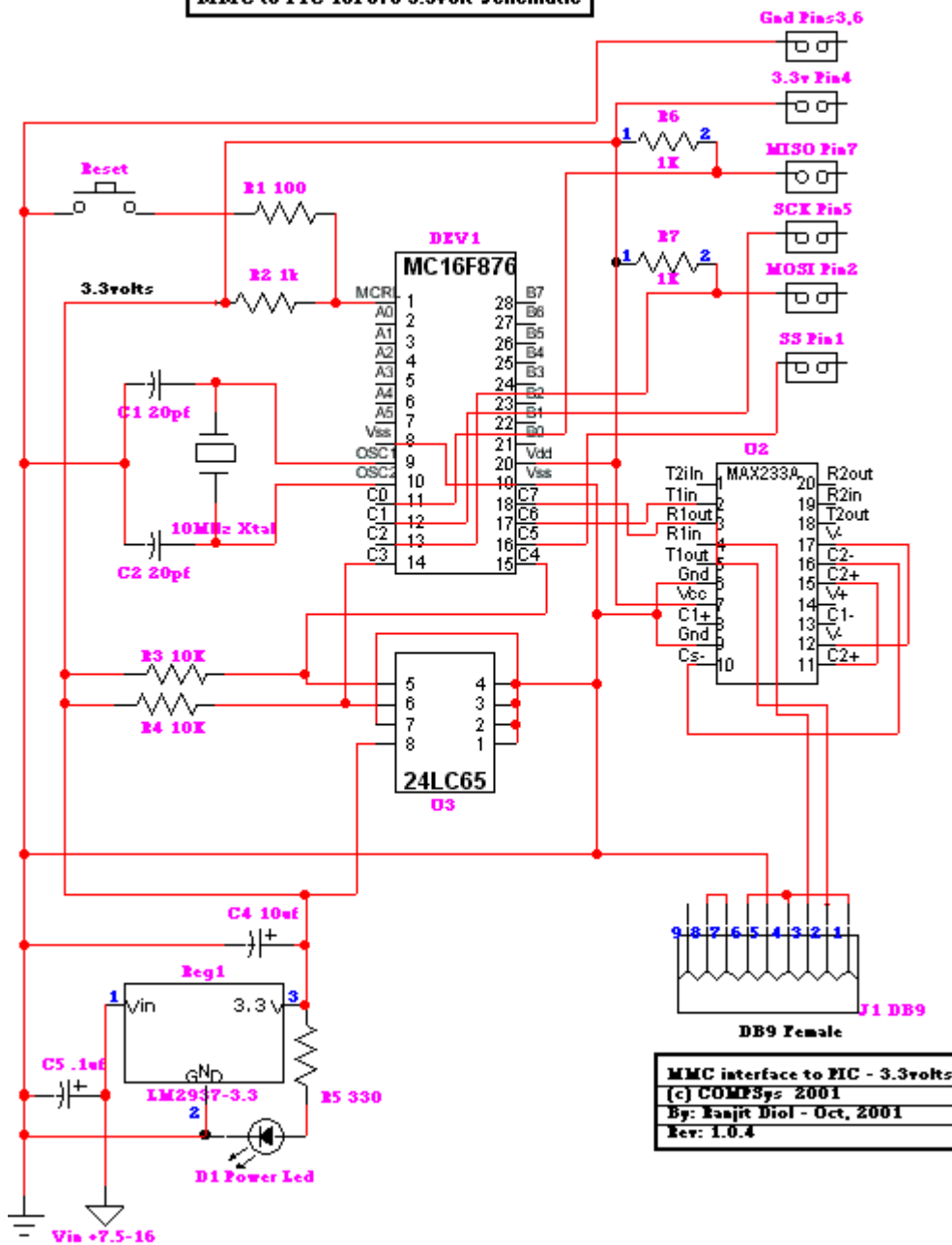
Unshielded sockets mount on the BOTTOM side of the pcb



Suggested Construction Steps

- 1. If using a FRAM FM24CL64 soic, mount it first.
- 2. Mount the MMC socket
- 3. Mount the 20pin and 28pin sockets (and the 8 pin socket if using a 24LC256 eeprom)
- 4. Mount the resistors, capacitors, xtal ,led and voltage regulator (**observe polarity on capacitors and LED**)
- 5. Solder the 4 pin right angle power connector (if used)
- 6. Before placing any of the ICs in their sockets connect a 5-12 volt DC power source. Make sure you observe the correct polarity. The power LED should light up. Check voltage with a multimeter to make sure it is approx 3.3volts DC
- 7. **IF YOU PLAN ON USING THE CTS/RTS** handshake you will need to cut the trace between pins 7 and 8, see the note on page 2.
- 8. Mount the DB9 female connector to the TOP side of the pcb. See note below:
- 9. Place the ICs in their sockets.

MMC to PIC 16F876 3.3volt Schematic



MMC interface to PIC - 3.3volts
 (c) COMPSys 2001
 By: Ranjit Diol - Oct, 2001
 Rev: 1.0.4

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