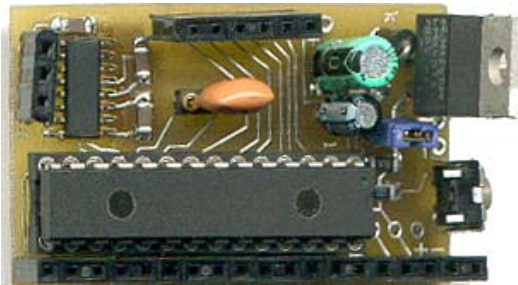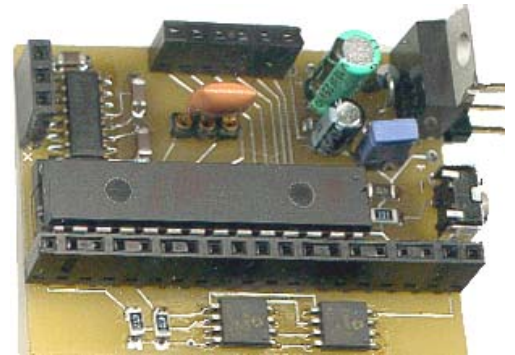# CB28 and CB28a Ver1

General purpose 28 pin PIC microcontroller boards

- On-board regulator and power LED
- On-board RS232 driver chip
- All PIC pins are brought to headers
- CB28A has room for 2 I2C eeproms
- Reset button
- Selectable power, on-board/external
- Small and economical

C28

C28A

Can be used as stand alone controllers for a variety of projects. For quick projects it takes the hassle of having to bread board all the parts. Includes, a 5v regulator, an RS232 transceiver, reset button, and the CB28A includes room for 2 I2C eeproms. All pins (PortA, PortB and PortC) are conveniently brought out to headers. One can use male or female headers. The 3 pin OSC sip socket makes easy to change resonators. RS232 pins are Rx,Tx and Gnd and are wired to Portc Pins 6 and 7. This makes it possible to program the PIC while on the board using a bootloader. Designed to work with PIC16F87x and PIC18F2x2 mcus.

Kits provided by COMPSys are designed for use by other developers and hobbyists to be incorporated in their own designs. The kits are not intended to be end user plug'n'play devices.

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.
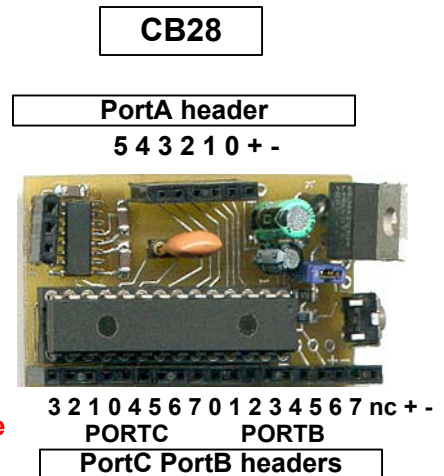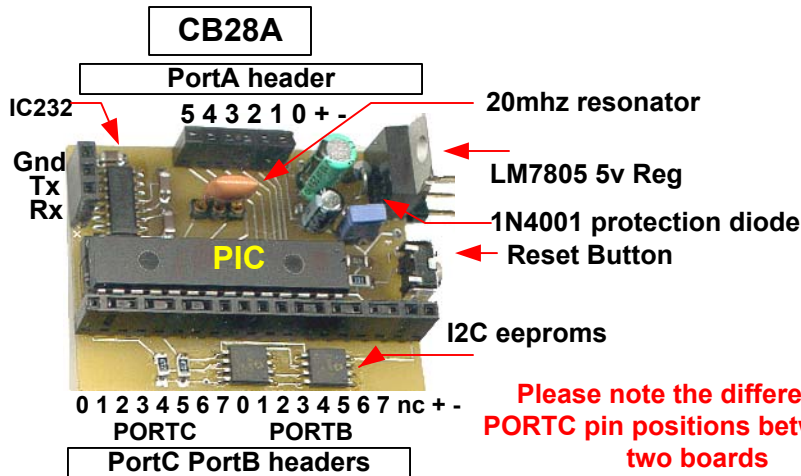
Make sure that you work in a clean well lighted area and have adequate desk area. If you have carpeting then please be aware of static discharge as well as accidentally losing tiny components in the carpets fiber. SMD capacitors and resistors are very tiny and can quickly become lost in the carpeting.
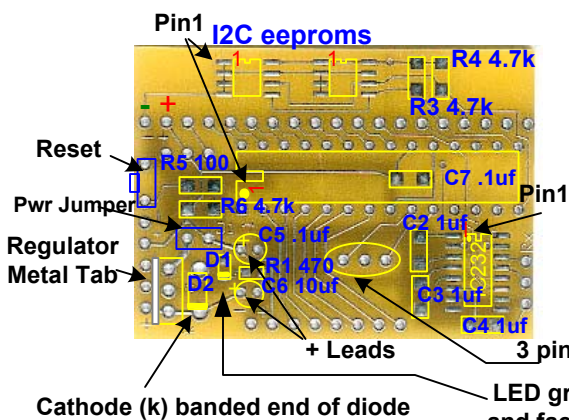
Disclaimer and Terms of Agreement

CB28 /CB28a Assembly

MCU: PIC16F87x or PIC18F2x2 (kit supplied with a PIC16F876)

CB28A

PortA header

5 4 3 2 1 0 + -

IC232

Gnd
Tx
Rx

20mhz resonator

LM7805 5v Reg

1N4001 protection diode

Reset Button

I2C eeproms

PIC

0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 nc + -
PORTC   PORTB
PortC PortB headers

CB28

PortA header

5 4 3 2 1 0 + -

3 2 1 0 4 5 6 7 0 1 2 3 4 5 6 7 nc + -
PORTC   PORTB
PortC PortB headers

Please note the difference in PORTC pin positions between the two boards

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Pin1   **I2C eeproms**

R4 4.7k

R3 4.7k

Reset

R5 100

C7 .1uf

Pwr Jumper

R6 4.7k

Pin1

Regulator
Metal Tab

C5 .1uf

C2 1uf

D1   **R1 470**

D2   **C6 10uf**

C3 1uf

C4 1uf

+ Leads

3 pin Resonator

Cathode (k) banded end of diode

LED green stripe is the cathode (k) and faces towards the board's edge

The 2 pin jumper can be removed to disconnect the LM7805 if a 5v supply is to be used instead. The 5v supply can be connected to + - pins as shown.

R5 100

C7 .1uf

R6 4.7k

C2 1uf

C5 .1uf

D1   **R1 470**

D2   **C6 10uf**

C3 1uf

C4 1uf
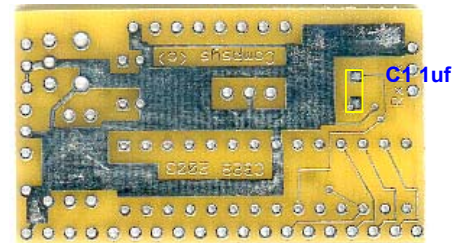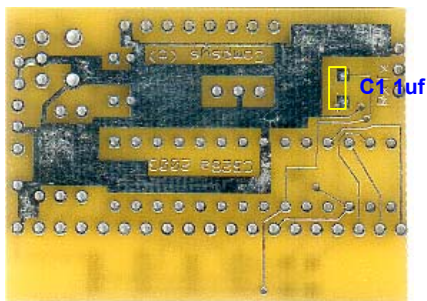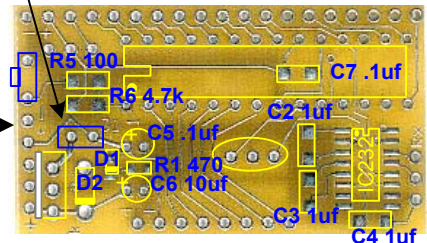
C1 1uf

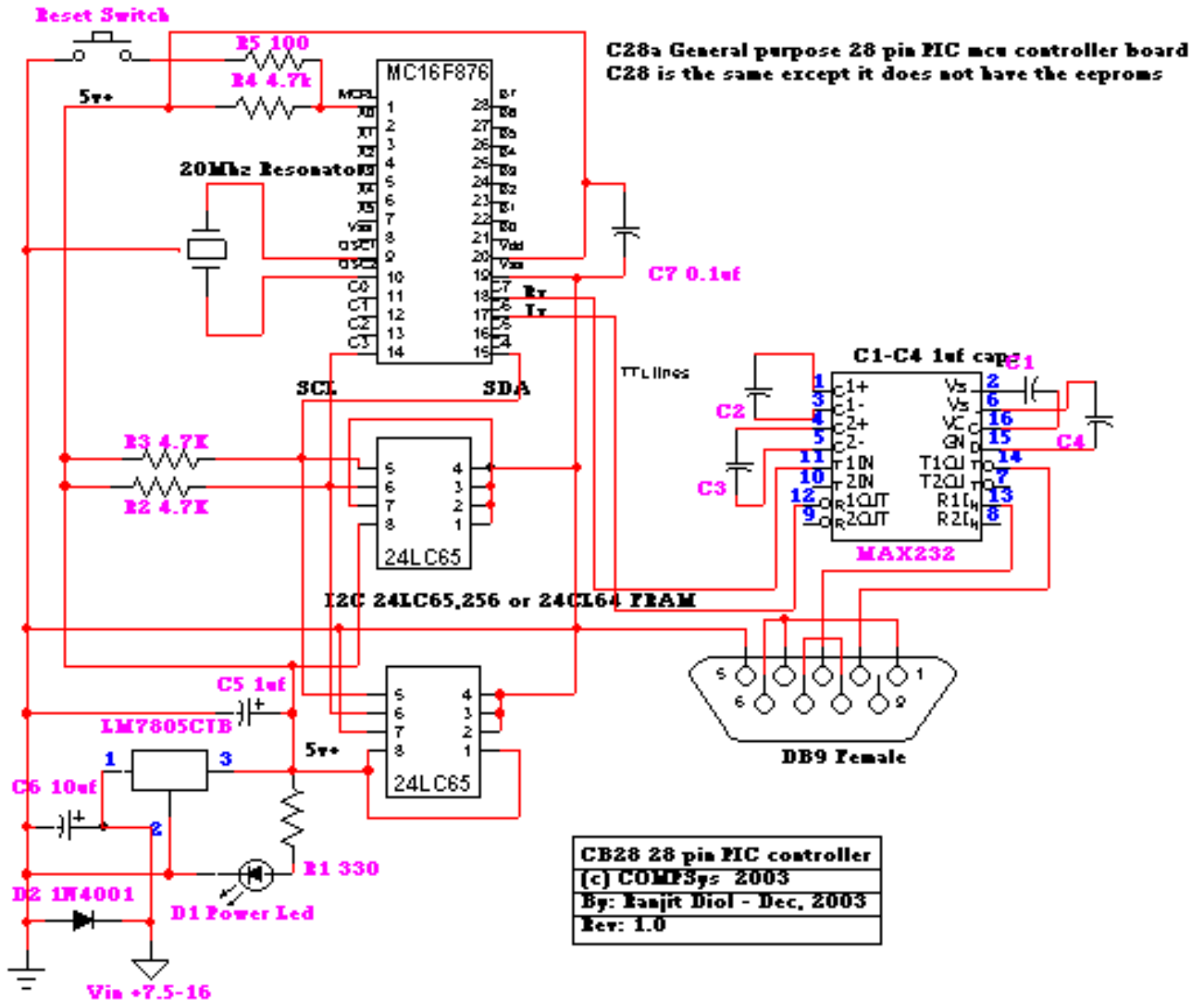**C1 1uf**

Note: Make sure to orient the diodes, radial capacitors, IC's and eeproms correctly!

1. Carefully prep the capacitor, resistor and LED pads with a small drop of solder.
2. Mount all the SMD capacitors and resistor on top side
3. Mount the LED (D1) NOTE: The cathode (-) end has a dark band and faces towards the edge of the board.
4. Carefully orient and mount the eeproms (CB28A board)
5. Carefully orient and mount the IC232. Note Pin 1 is at the banded end (beveled edge) of the IC
6. On the back side of the pcb, mount capacitor C1
7. Orient and mount the 1N4001 diode (D2), observe the banded end (cathode).
8. Mount LM78L05 Observe orientation of the LM78L05 IC (flat end faces out towards).
9 Orient and mount C5 1uf & C6 10uf radial capacitors
10. Double check all components for solder splashes, bridges etc.
11. Mount the reset switch, the 2 pin power jumper, IC socket & headers

PARTS

4 - 1uf SMD caps	1 - Max232SOIC
1 - .1uf SMD cap	1 - PIC16F876
1 - 10uf radial cap	1 - 20Mhz resonator
1 - 1or .1 uf radial cap	1 - LM7805 regulator
1 - 100 SMD resistor	1 - Reset switch
1 - 470 SMD resistor	1 - 2 pin jumper/header
1 - 1N4001 diode	1 - SMD LED
1 - circuit board	I2C eeproms CB28A board
*1 4.7k SMD resistor	*3 - 4.7k for CB28A board
Misc: pin headers	

CB28a Schematic

Reset Switch

R5 100

R4 4.7k

5v+

MCLR

MC16F876

C28a General purpose 28 pin PIC mcu controller board
C28 is the same except it does not have the eeproms

20Mhz Resonator

C7 0.1uf

C1-C4 1uf caps

C2

C1

SCL

SDA

TTL lines

C3

C4

R3 4.7K

R2 4.7K

24LC65

MAX232

I2C 24LC65,256 or 24CL64 FRAM

DB9 Female

C5 1uf

LM7805CTB

5v+

24LC65

C6 10uf

R1 330

D2 1N4001

D1 Power Led

Vin +7.5-16

CB28 28 pin PIC controller
(c) COMPSys 2003
By: Ranjit Diol - Dec, 2003
Rev: 1.0

Subject to change without notice