

Instructions for RS232↔SKP Interface Assembly and Use

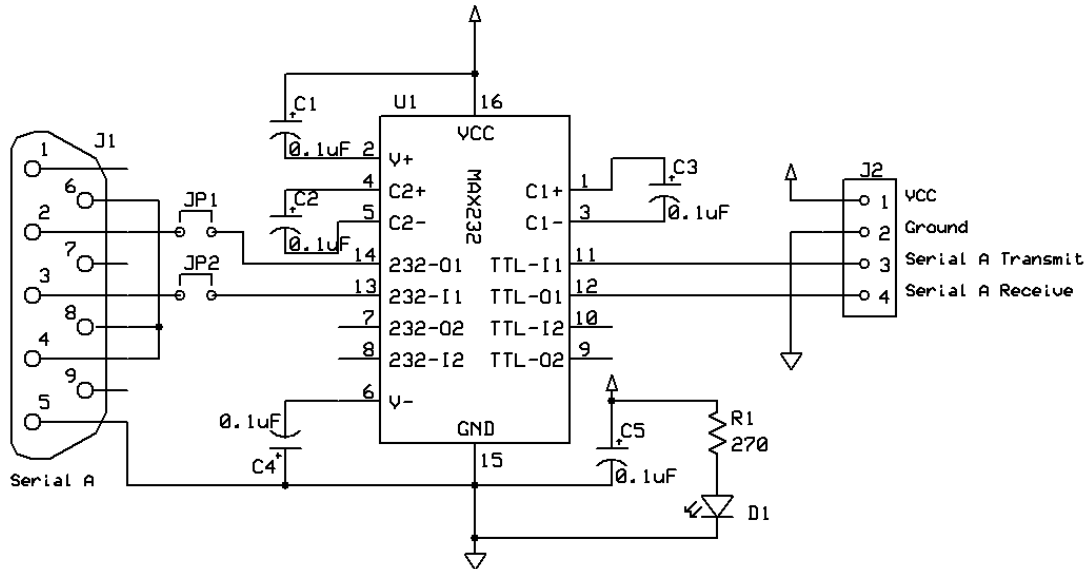


Figure 1. Schematic diagram

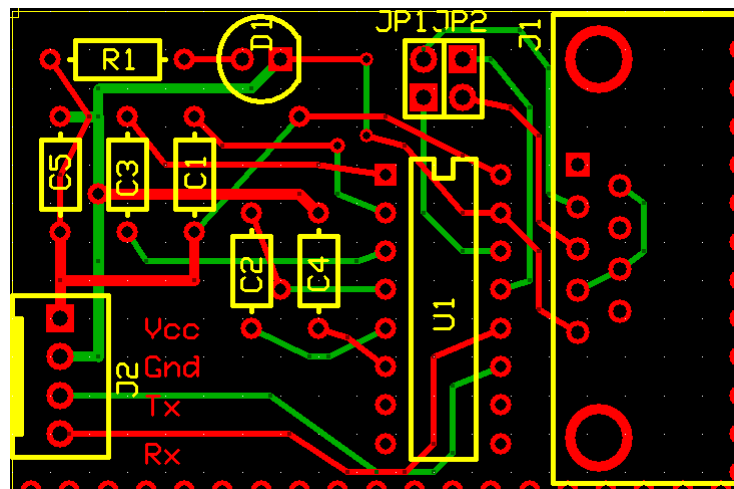


Figure 2. Printed circuit board layout

General Assembly Tips

1. Identify the *component side* of printed circuit board (PCB), which has text labels (Vcc, Gnd, Tx and Rx). Other printed circuit boards may have silk-screened printing with labels and component outlines. This side will have the components mounted on it. The other side (*solder side*) is the side where soldering is performed.
2. When mounting a component...
 - a. Verify it is oriented in the correct direction. Some components (diodes, ICs, transistors, some capacitors, some connectors, etc.) are polarized and will malfunction or fail if inserted in the wrong direction. A square pad on the PCB identifies pin 1 of an IC or connector or the negative end of the device such as a diode.
 - b. Insert it into the PCB from the component side.

- c. Secure it in place temporarily by bending its leads or using tape or a clip to hold it to the board.
- d. Solder each connection by...
 - i. Tinning the tip of the soldering iron if needed,
 - ii. Then heating both the PCB pad and the component lead simultaneously,
 - iii. Then feeding solder into the connection until a small cone of molten solder has formed.
 - iv. Remove the soldering iron and solder and leave the connection still until it has cooled. Moving the component before the solder has cooled may lead to a *cold solder joint*, which is dull grey rather than shiny silver.
3. Assemble from the shortest to the tallest components to simplify holding them in place.

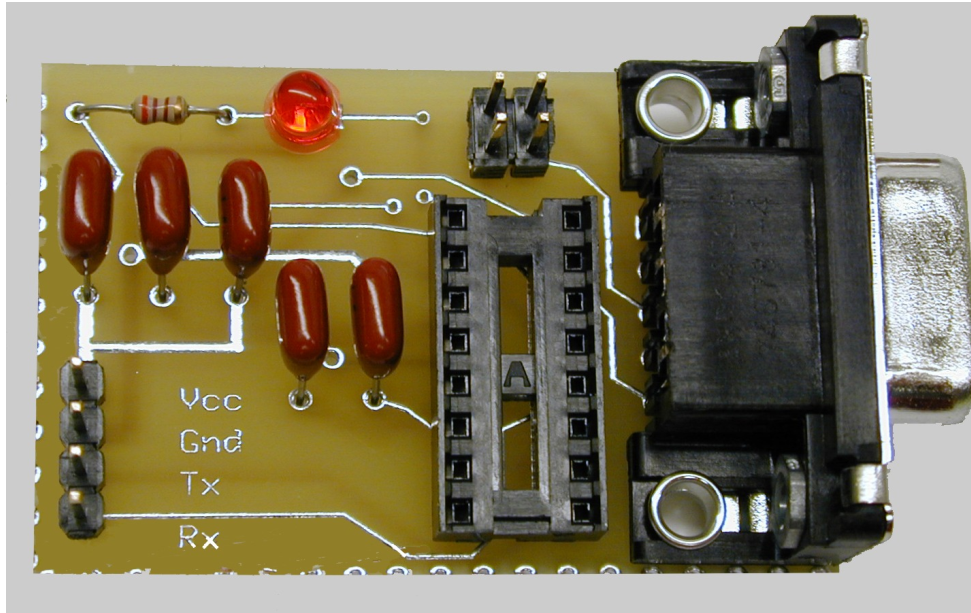


Figure 3. Assembled circuit board before U1 (MAX232) is inserted

Assembly Sequence

1. Mount resistor R1 (270 ohms, red-purple-brown-(gold|silver) stripes).
2. Mount the IC socket in position U1. This socket is polarized, so ensure the notch in the socket is next to the square pad which indicates pin 1.
3. Mount jumpers JP1 and JP2. Polarization does not matter for these connectors. A single 2x2 or two 1x2 headers can be used.
4. Mount capacitors C1-C5. Observe polarity requirements if the capacitors are polarized. The capacitors shown in Figure 3 are metal film and are not polarized.
5. Mount light-emitting diode D1, observing polarity. The flat side is the cathode (negative) and should be inserted in the square pad.
6. Mount connector J2.
7. Mount connector J1.
8. Insert the MAX232 IC into socket U1.
 - a. Align pin 1 (indicated by the dot on the IC package) with pin 1 of the socket. See figure 4. The notch between pins 1 and 16 will be aligned with the notch of the IC socket.
 - b. Be careful that all pins line up with the socket receptacles BEFORE pushing. ICs typically have pins spread out slightly; this can be fixed by rolling the IC gently on a hard surface.

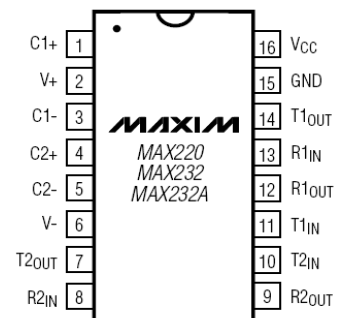


Figure 4: MAX232 Pin-out

Connecting the Interface

1. Connect a pair of jumpers from J2 pins 1 (Vcc) and 2 (Gnd) to the SKP pins to provide power and ground. The LED on the RS232 Interface board should glow when power is applied.
2. Connect another pair of jumpers from J2 pins 3 (Tx) and 4 (Rx) to the SKP pins for the appropriate UART. Examine the Hardware Manual for the MCU to identify these pins. For the M30260F8A, these are the port assignments:
 - a. UART0: TxD0 P6_3, RxD0 P6_2
 - b. UART1: TxD1 P6_7, RxD1 P6_6
 - c. UART2: TxD2 P7_0, RxD2 P7_1
3. Mount jumpers at JP1 and JP2 to select whether the interface will operate normally or with a null-modem function, enabling it to communicate with another RS232-SKP interface board
 - a. To communicate with a PC, connect jumpers vertically as in Figure 5.
 - b. To communicate with another RS232-SKP board (or to perform a null-modem crossover function), connect the jumpers horizontally on one board (as in Figure 6) and vertically on the other.

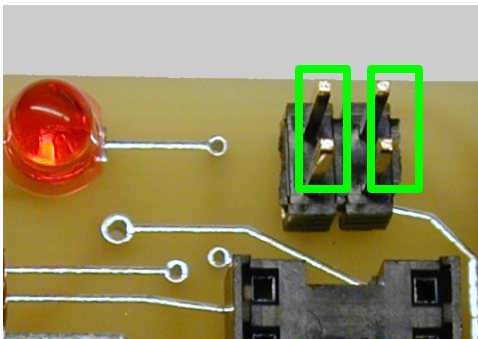


Figure 5: Jumper position for communication with PC

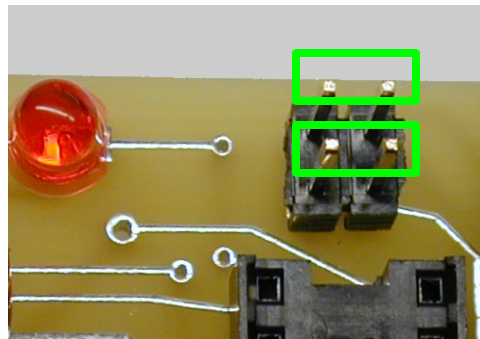


Figure 6: Cross-over jumper position

4. Connect a 9-pin RS232 cable between the PC's serial port and the RS232-SKP interface.