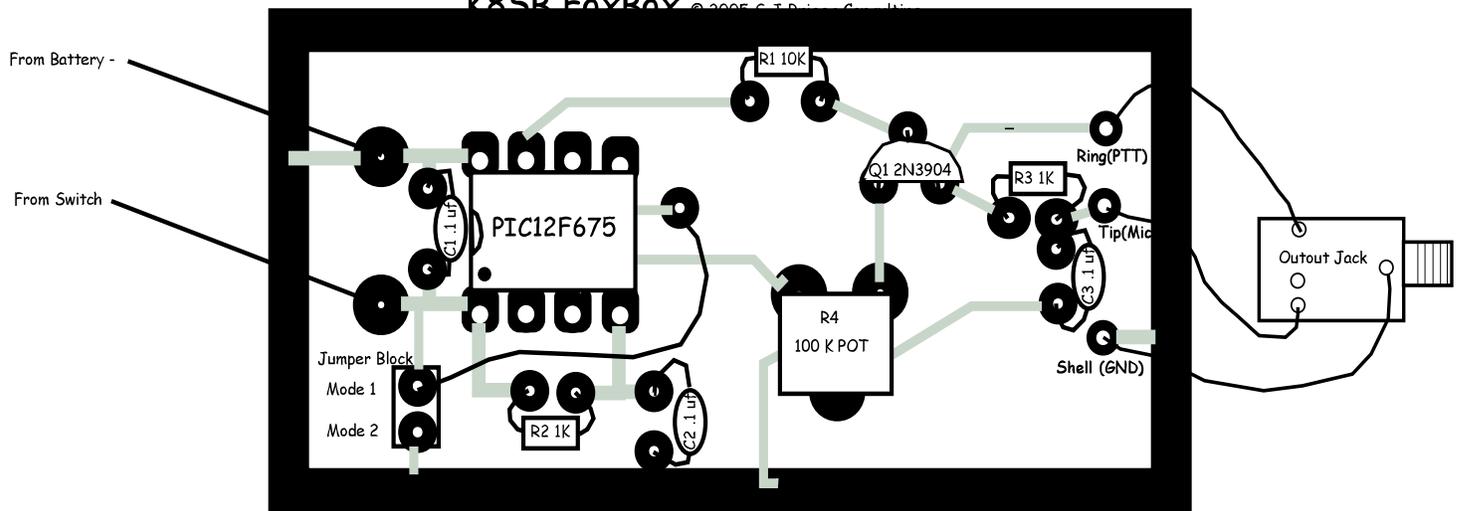
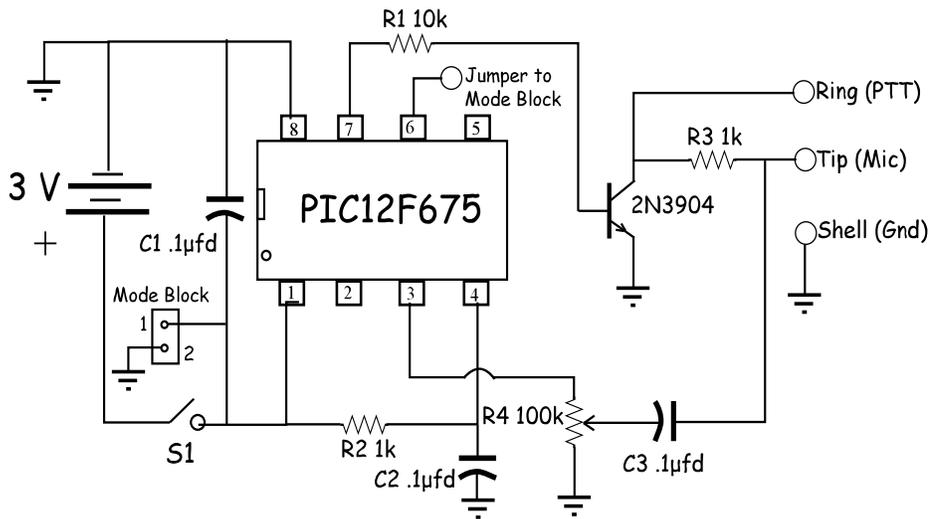


K8SB  
FoxBox  
Transmitter  
Controller  
Project

Motor City Radio Club  
Construction Bee  
December 17, 2005



Top View Parts Layout



# K8SB FoxBox Transmitter Controller Project ©K8SB 2005

## Parts List

Quantity	Description	Identified ✓
1	Plastic Project Box	
1	Battery Holder 2 cell AAA 6" Leads                      2469K-ND	
1	SPST Toggle Switch	
1	Audio Jack 3.5 mm Stereo                                      CP-3544-ND	
1	K8SB FoxBox Etched and Drilled Circuit Board	
1	IC Socket 8 Pin Low Profile                                      ED580383-ND	
1	2 pin Female Jumper Socket	
1	PIC12F675 Microcontroller Chip	
1	Trimpot 100K Carbon R4    D4AA15-ND	
1	2N3904BU Transistor NPN 200mA                      2N3904FS-ND	
3	.1 µFD Ceramic Capacitor C1, C2, C3                      478-2477-ND	
2	1.0k 1/4 Watt Resistor R1, R2                                      1.0KQBK-ND	
1	10k 1/4 Watt Resistor R3    10KQBK-ND	
1	$\frac{1}{2}$ " length of white heat shrink tubing.	

## Procedure:

1. Identify and check off each of the components on the parts list above.

Referring to the diagram of the Top View Parts Layout. The foil side of the board is down.:

2. Install the 8 pin IC socket. Be sure the little cutout is toward the left as shown.

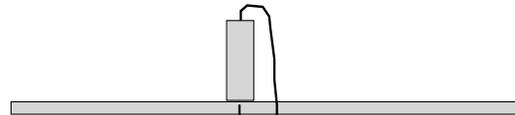
3. Solder all 8 pins of the socket to the solder foil.

4. Install R4, the 100 K Pot and solder the three leads.

5. Install the jumper header socket. Solder the two leads.

6. Install Q1 2N3904 transistor. The Transistor body should be about 1/8 " above the board. Solder all three leads and trim the wires flush to the board.

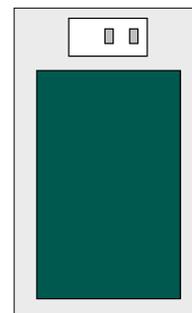
7. Install resistors R1, R2 and R3 in the board as indicated on the parts layout. Place one end directly into the hole and bend over the other wire next to the resistor body and place into its hole as shown on the sketch to the right. Solder the wires to the foil and trim flush to the board. Save one of the bare wires for step 16.



8. Install ceramic capacitors C1, C2 and C3 in the board and pull carefully on the wires until the capacitor bodies are close to the board. Solder the wires to the foil and trim flush to the board.

9. Install the output jack into the project box using the nut provided with the jack.

10. Install the SPST toggle switch into the hole in the box cover using the nut provided with the switch. Be sure that the terminals of the switch are as shown. Use a 5/16" socket wrench to tighten the nut.



11. Cut off the black wire  $2 \frac{1}{2}$  " from the battery clip. Save the wire that was just removed. Strip  $\frac{1}{8}$  " of insulation from the free end of the black wire attached to the battery clip. Install and solder this wire into the hole in the board labeled From Batt Neg.

12. Cut off the Red wire  $1 \frac{1}{4}$  " from the battery clip. Save the wire that was just removed. Strip  $\frac{1}{8}$  " of insulation from the free end of the red wire attached to the battery clip. Solder this red wire to the center terminal of the switch.

13. Cut a 2 " length of Red wire removed in step 12. Strip  $\frac{1}{8}$ " of insulation from each end. Install and solder one end of this wire to the remaining terminal of the switch. Install and solder the other end of the wire to the circuit board hole labeled From Switch.

14. Prepare two 1 " lengths of the remaining Red wire, stripping  $\frac{1}{8}$ " insulation from each end. Install and solder these between the circuit board holes Ring(PTT) and Tip(Mic) to the appropriate terminals on the output jack.

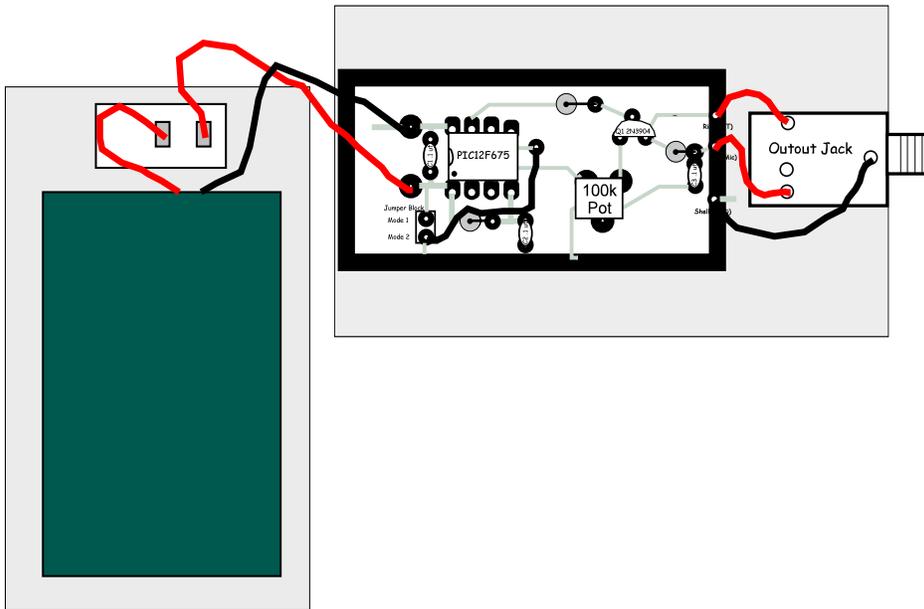
15. In like manner install a 1 inch length of black wire between hole marked Shell(GND) and the appropriate terminal on the output jack.

16. Prepare a  $1 \frac{1}{2}$ " length of the remaining black wire as follows. Strip  $\frac{1}{8}$ " of insulation from each end. Solder a  $\frac{1}{2}$ " length of solid wire directly to one end of the black wire as shown in the sketch. Slip a  $\frac{1}{2}$ " length of heat-shrink tubing over the solder connection so that  $\frac{1}{4}$ " of bare wire is remains. Carefully heat the tubing to shrink it in place. Solder the other end of the wire in the hole toward the center of the board from the IC Socket. Plug the bare wire into the Mode 2 connection on the jumper socket.



17. Place two fresh AAA batteries in the battery holder observing the polarity markings.

18. Make sure that all wires are trimmed flush with the foil side of the board. Use a length of double stick tape to hold the circuit board to the bottom of the box as shown.



This completes the construction of the K8SB FoxBox.

Operation:

Use the jumper wire to select the desired message, Message 1 or Message 2.

## Output Connector Considerations.

The output connector uses a 3.5 mm (1/8") stereo plug. The tip carries the audio and push to talk (PTT) control for handheld transceivers such as the Radio Shack, ICOM, Yaesu and ADI. The ring is for PTT for mobile rigs. The shell is the ground return.

Radio Shack, Icom, Yaesu and ADI handheld transceivers use a 2.5 mm (3/32") mono plug. The tip is the audio and PTT control and the shell is the ground return.

Kenwood TH Series requires two plugs. A miniature stereo plug (3.5 mm) is used for transmit audio and PTT. Connect the middle "ring" of the plug to the audio out through a 0.2 uf cap (for DC isolation). Connect the sleeve (shell) of the plug to the PTT. The plug's tip is unused. A sub-miniature plug (2.5 mm) is used for receive audio. The tip of this plug is audio out (Not used for FoxBox); the sleeve (shell) of this plug is the common ground for PTT, transmit audio, and receive audio.

A good reference for audio and PTT connections for a lot of other amateur radio transceivers can be found at: <http://homepage.ntlworld.com/rg4wpw/date.html>

