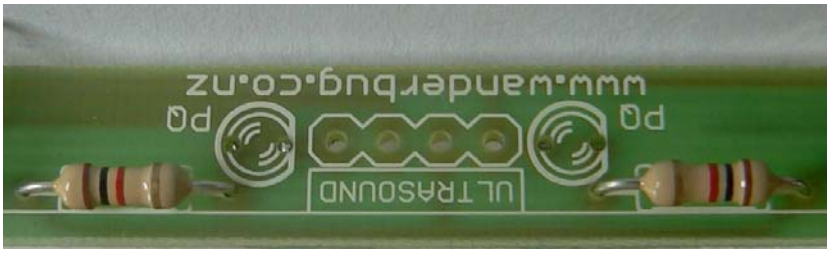
Wanderbug Line Follower Assembly Instructions

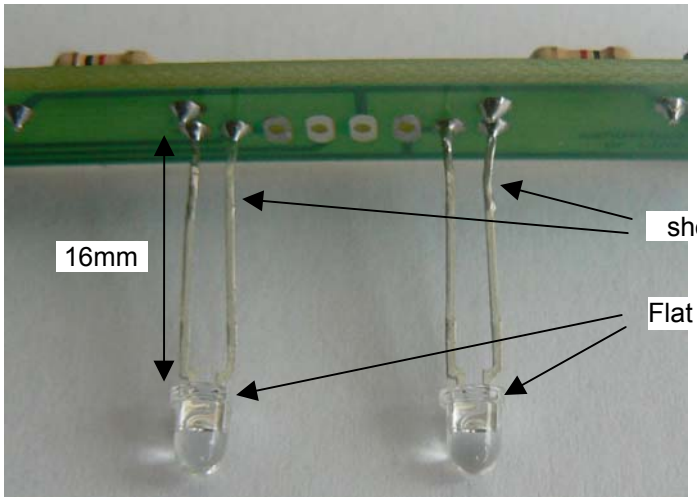
1. You will need:

   Soldering iron, solder, side cutters.

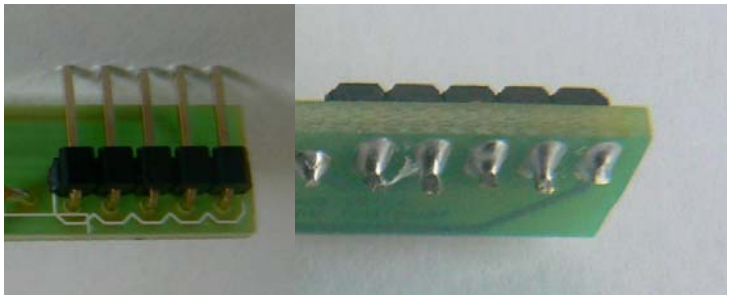
2. Solder the two 1.0kΩ resistors in place on the daughterboard (1.0kΩ is brown-black-red). Snip off the excess leads.



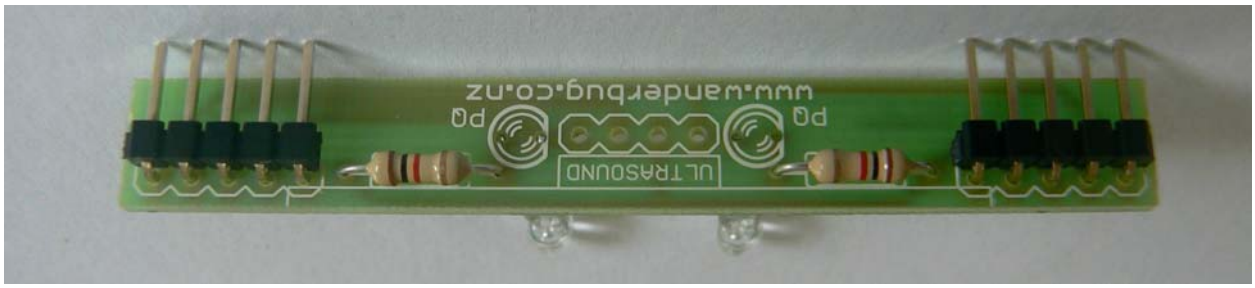
3. Solder the two phototransistors on the bottom (solder side) of the board leaving 16mm of lead showing. The short leads must match the flat side of the IRled footprint, facing right, looking from the front of the board. Snip off the leads as close as possible to the top of the board.



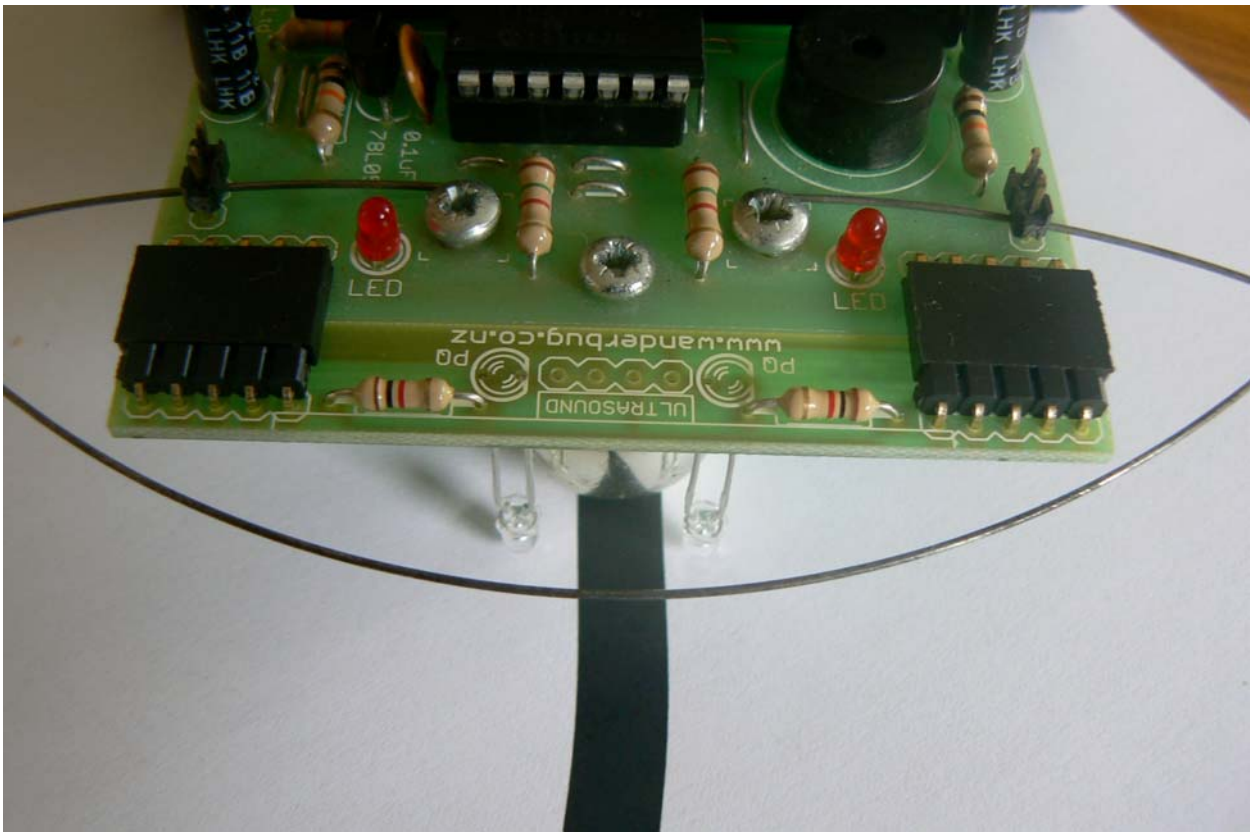
4. Fit the right-angle headers in place, solder and snip off the excess pins.



From the top it looks like this:



Fitted, it looks like this:



Wanderbug Line Follower kit parts list		
Item No.	**Qty**	**Description**
1	1	PCB
2	2	Phototransistors
3	2	Resistors 1.0k
4	2	5M R/A Pin Header

Sample Code

```
                                    'Wanderbug line follower
                                    'PICAXE 14M2

'input pin c.0 = shade  'automatically calibrates for light level

let dirsb = %00111111   'configure Port B pins as outputs (see P15 of manual 2)
let dirsc = %00000110   'configure Port C pins as inputs except C.1(see P15 of manual 2)
symbol speed = 160      'set the speed, 120 is real slow, 200 is fast.

symbol shade = w0                   'shade value
symbol minsh = w1                   'minimum shade value
symbol maxsh = w2                   'maximum shade value
minsh = 512                         'start between 0 and 1024
maxsh = 512                         'start between 0 and 1024

start:                              'forward
low c.1:low b.0:low b.1             'buzzer off, LEDs off
readadc10 c.0, shade                'read shade into w0

if shade <= minsh then              'calibrate minimum
      minsh = shade + 8
endif
if shade >= maxsh then              'calibrate maximum
      maxsh = shade - 8
endif
if shade >= minsh and shade <= maxsh then       'both PQs straddling black line
      pwmout b.2, 100, speed:low b.3            'right wheel forward
      pwmout b.4, 100, speed:low b.5            'left wheel forward
endif                                           'go straight ahead

if shade < minsh then               'right PQ on black line
      pwmout b.4, 100, speed        'left wheel forward
      pwmout b.2,0,0                'right wheel stopped
endif                               'turn right back on line

if shade > maxsh then               'left PQ on black line
      pwmout b.2, 100, speed        'right wheel forward
      pwmout b.4,0,0                'left wheel stopped
endif                               'turn left back on line

if pinc.3 = 0 then right            'left bumper has hit an object
if pinc.4 = 0 then left             'right bumper has hit an object

goto start                          'no object detected, continue forward

left:                         'reverse turn left
high b.0                      'right LED on
low b.2:high b.3              'right wheel backward
low b.4:high b.5              'left wheel backward
pause 300                     'reverse for 300 milliseconds
low b.3                       'stop right wheel,
high c.1                      'sound the buzzer
pause 200                     'turn for 200 milliseconds
goto start                    'continue forward

right:                        'reverse turn right
high b.1                      'left LED on
low b.2:high b.3              'right wheel backward
low b.4:high b.5              'left wheel backward
pause 300                     'reverse for 300 milliseconds
low b.5                       'stop left wheel
high c.1                      'sound the buzzer
pause 200                     'turn for 200 milliseconds
goto start                    'continue forward
```