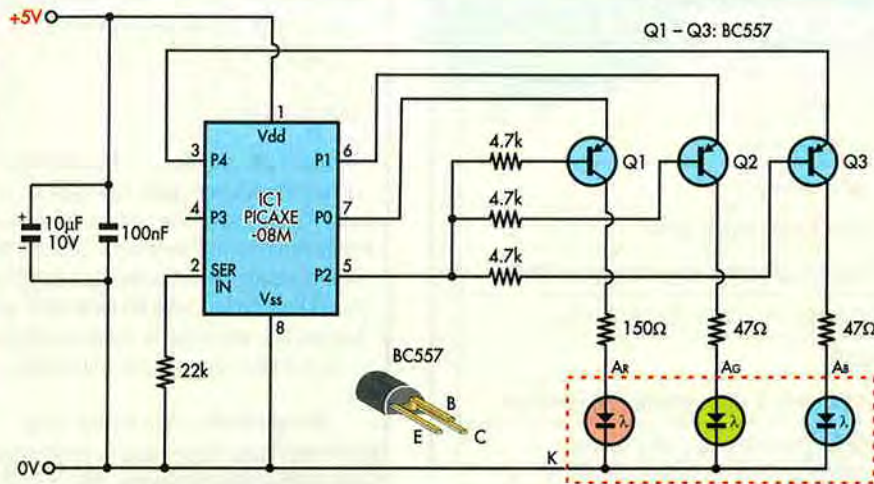


Circuit Notebook – Continued



Improved PICAXE RGB LED Display

As described in the “PICAXE RGB LED Display” item in Circuit

Notebook (September 2005), a very simple multi-colour display can be created with little more than an 8-pin PICAXE and an RGB LED.

The simplicity of the original

design means that there is a lot of flickering and a full spectrum of colour is difficult to achieve. However, by adding a few components and rewriting the code (see Listing 1), the visual effects can be considerably improved.

As shown in the circuit, three transistors (Q1-Q3) allow PWM control of the three LEDs from a single PICAXE output pin (*out2*). In addition, each LED can be individually enabled or disabled by setting outputs *out0*, *out1* and *out4* high or low.

If desired, the values of the LED current-limiting resistors can be adjusted to achieve a good white balance. Suitable RGB LEDs are available from Jaycar Electronics (Cat. ZD-0270) and Altronics (Cat. Z-0999).

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Listing 1: PICAXE RGB LED Display

'RGB LED Display PICAXE-08M

let dirs = %00010111 'set all used pins to outputs

main:

let pins = %00000101 'power Q1 emitter to drive red LED
 gosub fade
 let pins = %00000110 'power Q2 emitter to drive green LED
 gosub fade
 let pins = %00010100 'power Q3 emitter to drive blue LED
 gosub fade
 let pins = %00000111 'red & green combination
 gosub fade
 let pins = %00010110 'green & blue combination
 gosub fade
 let pins = %00010101 'red & blue combination

gosub fade
 let pins = %00010111 'red, green & blue combination
 gosub fade
 goto main 'repeat forever

'Create a fading in and out effect using pulse-width modulation.

fade:

for b1 = 255 to 0 step -1
 pwm 2,b1,1 'increasing brightness
 next b1
 for b1 = 0 to 255 step 1
 pwm 2,b1,1 'decreasing brightness
 next b1
 return