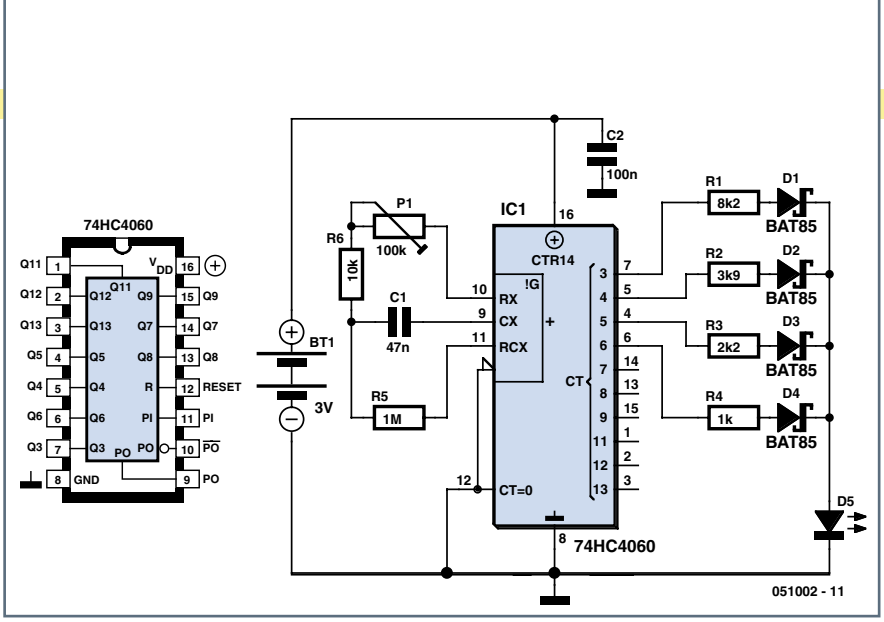

Figure 1. A binary counter (IC1) raises the current through LED D5 from zero to the maximum value in 16 steps.

Want to attract attention at bling-bling parties? That's not so easy, since all the party animals there are doing their best to grab attention. The more bling, the more looks you get. An electronic disco brooch with a cool skin as an eyecatcher can certainly help. If you make it yourself, your chances of success lie entirely in your own hands. And it's certainly not all that difficult!

A touch more bling, perhaps?

Disco brooch

The disco brooch described here is a small but attention-getting bit of electronic circuitry. It lights up a LED in steps until it reaches maximum brightness and then goes out, after which the entire process repeats itself, so you can attract attention at discos and parties. If you solder all the components on a small piece of perforated prototyping board, possibly along with a small battery, you can keep the whole thing nice and compact. We'll come back to that later.

First let's have a brief look at how the circuit works. It is built around IC1 (see **Figure 1**), which is a binary counter chip. A digital pattern of ones and zeros appears at its outputs. Only the outputs on pins 4 to 7 are used in this particular case. They thus generate a count from 0 (binary 0000) to 15 (binary 1111). All outputs are zero at the start, and the LED is dark. Resistors R1–R4 are dimensioned such that the current flowing through LED D5 increases in steps to its maximum value during the following 15 states of the counter. This all happens at a rate that is controlled by the RC network connected to pins 9–11 of the IC. At the end of the cycle, the counter goes back to zero and the LED goes dark. You can use trimpot P1 to adjust the duration of each of the steps. The maximum length of the full step cycle is 1.5 seconds, and the minimum length is 0.14 seconds. At the minimum time setting, it appears that the LED just blinks.

Diodes D1–D4 isolate the individual outputs of IC1 so they do not interfere with each other. They are Schottky diodes, which have a lower forward voltage drop than normal diodes. As a result, there will be enough voltage to provide adequate current through resistors R1–R4 (and thus through the LED) even when the battery voltage is low. Of course, the brightness of the LED still depends on the battery voltage. In practice, a battery voltage of 3 V gives very nice results. This voltage can be provided by a button cell, since the maximum current at this supply voltage is only around 2 mA. If you use a suitable battery holder designed for PCB mounting, you can tuck the button cell away nicely on the circuit board (see **Figure 2**).

Of course, you also have to be able to switch the brooch on and off. You can use a safety pin for this purpose, and at the same time it can do what it is designed for, which is to attach the brooch to your clothing. To prepare the safety pin for this purpose, cut a piece out of the fixed leg. That represents the opened switch. The easiest way to do this is to first solder the pin in the proper position on the circuit board (see **Figure 3**). Use a bit of sandpaper to roughen the surface of the pin first so the solder will stick better. After the pin is soldered securely in place, cut out a piece in the middle and your DIY switch is ready to use.

Figure 2. Fit the components as close together as possible on a piece of perforated circuit board to keep the finished circuit compact.

Figure 3. You can make an on/off switch from a safety pin, which also serves to pin the brooch to your clothing.