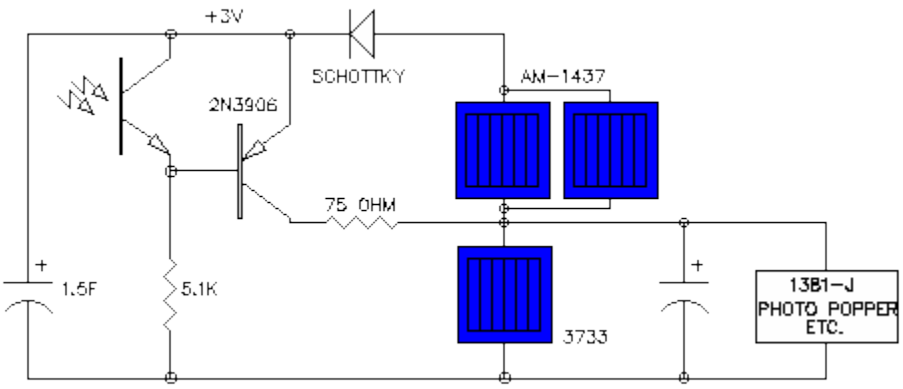
THE SMARTCAP SOLAR ENGINE

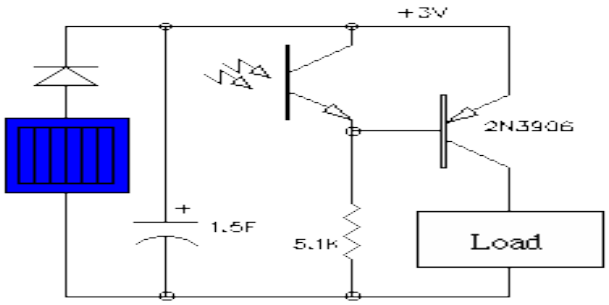
Bob Shannon originally designed the SmartCap solar engine for a specific purpose -- to provide a "burst" of energy to a 'bot right after its source of light goes away. The idea was to introduce a specific behavior -- when things got dark for the 'bot, it would have the energy to notice and scurry toward the next spot of bright light.

Here's a circuit diagram for Bob's "Vore-N-More" circuit containing the SmartCap solar engine:



In this diagram, the "SmartCap" is just the 1.5 F storage capacitor, phototransistor, 2N3906 transistor, and 5.1K bias resistor. The idea is that after charging, a loss of light causes the 1.5 F capacitor to be discharged through the 75 Ohm resistor -- this gives the photopopper a sudden "recharge," which it can use to get to a brighter spot.

I prefer to butcher Bob's design and just use the SmartCap circuitry to drive nocturnal circuits. Here's the circuit diagram for this:



This design can be used for BEAMbots that you only want to be active at night -- "crickets", night-lights, and such "pummers." Note that you could just as easily replace the phototransistor here with a photodiode and get the same effect.

Parts list for basic circuit			
Part	Solarbotics	Digikey	Radio Shack
Storage capacitor	various	various	various
Solar cell	various	N/A	N/A
Germanium diode (1N34A)	N/A	N/A	$0.36, #900-6232
5.1 KOhm Resistor			
Phototransistor			
2N3906 transistor	$0.15, #TR3906	$0.26, #2N3906-ND	$0.07, #900-5457

Source: http://www.solarbotics.net/library/circuits/se_noct_smartcap.html