

# BEAM SOLARROLLER CIRCUITS

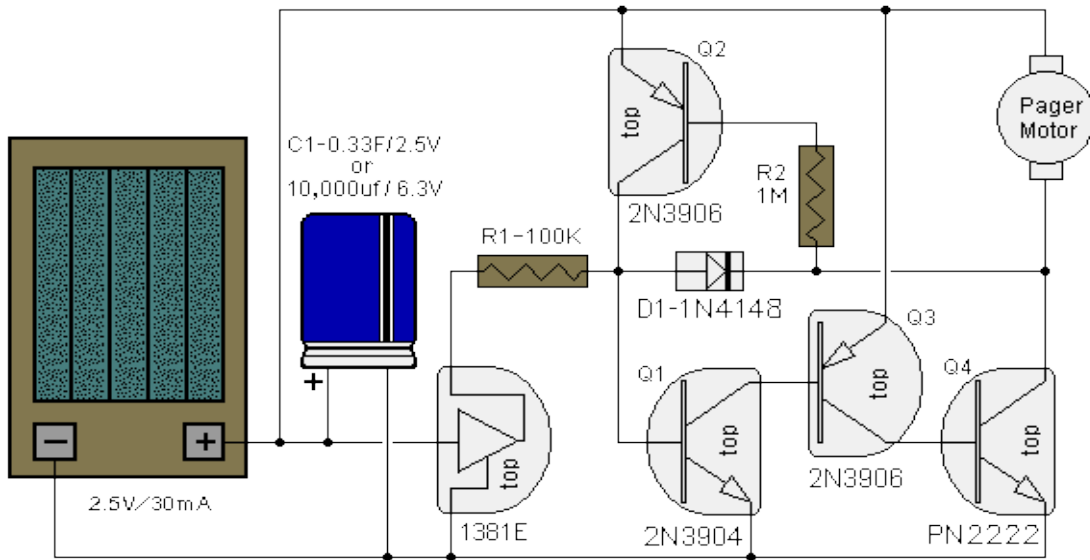
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So far just one circuit is hosted locally in PowerSmart Solar Speeder.

- A single-chip solarroller circuit with reverse and turning capability; based on a 1381 SE.

## **The PowerSmart Solar Speeder, V2**

This must be the most efficient bipolar transistor motor driver design for this application and I recommend it for the solar roller competitions. A 1381E is used to trigger at 2.4V. While it takes a total of 10 components plus motor compared to the stock circuit's 6 components, you will clearly get better performance compared to a stock Solar Roller/Speeder circuit.



High Efficiency Competition Power Smart Solar Speeder V2 - wilf rigter 10/2002

There are no losses during charging and the output transistor has a guaranteed low voltage drop under all motor load conditions while the normally wasted base current is absolutely minimized. To demonstrate the difference in wasted base current, measure the voltage on the main cap without a motor connected. After the stock circuit triggers, the storage capacitor voltage quickly drops as it discharges despite the fact there is no load current (no motor). That's caused by wasted base current in the stock circuit. With the P3S2 design, the capacitor voltage drops very slowly as the base current is dynamically minimized for zero load current. That saved energy will be used by the motor which will help your Solar Roller cross the finish line.

I suggest using two machine sockets for the main storage cap giving you a choice of using a large (0.33F/2.5V) gold cap or a smaller (10,000uF/6.3V) electrolytic cap depending on the lighting conditions. Use the large cap if there is just one lamp at the starting line. Use the smaller cap if the illumination is uniform over the whole length (1M) of the course.

Source: [http://www.solarbotics.net/library/circuits/bot\\_roller\\_psst.html](http://www.solarbotics.net/library/circuits/bot_roller_psst.html)