SPV1040 20160322

Works much better with 2v 200mA solar cell!

Keeping things tighter on the board and moving the tvs diode closer made the difference. Changes made in schema as well.

Made circuit with 0.05R, never reached above 35mA so didn't try lower resistance.

The resistance for Rs should be U=R*I => 5.6=R*0.1 => R=5.6/0.1=56

Tested with resistive load in series:

1. 100R voltage after load 2.66V 25mA, 66mW
2. 56R voltage after load 1.91V 35mA, 66mW

Tested with max1555 and gave load at 16mA, Vin was measured at 3.96, 63mW.

For next circuit (PCB):
Lower Vout to 5V in next circuit, R1 should be in the region of 1M R
1000/300 = Vout/1.25-1
Vout=1.25(1000/300+1)
So R1=1M, R2=330 should be better for vout 5V.

Test with larger 2V panel

1. 56R gave 31mA, ~2V, 62mW
2. 10R gave 117mA, ~1.56V, 180mW

Test with thin panel, voc ~1.66V, ioc 95mA, 186mW

1. 56R gave 27mA, 1.61V, 43mW
2. 10R gave 86mA, 0.9V, 77mW
3. Connected to spv1040 saw:
    1. Ioc 81mA, Voc 5.6V
    2. 56R V1.08, 17.6mA,
    3. 10R V0.7, 52mA
4. Spv1040 connected to max1555 and battery saw 8mA charge without optimal mpp-set resistor, with optimal grev to 16mA.

Saw no difference in 0R Rs1 for these panels.

Tested with 4700uF cap, slightly improved charging voltage, should be beneficial in real use but hard to test without scope or long term real test.

Mpp-set resistor set to almost 0R gives 19mA on direct charge and 14-16mA through max1555. Big difference for small solar panel. Almost 60mW to battery. Putting a 1kR in front as pull up should be better to make sure spv1040 is on.

With improved mpp-set saw 32mA charging battery at 3.8v for larger panel, through max 1555 24mA. Almost 120mW.