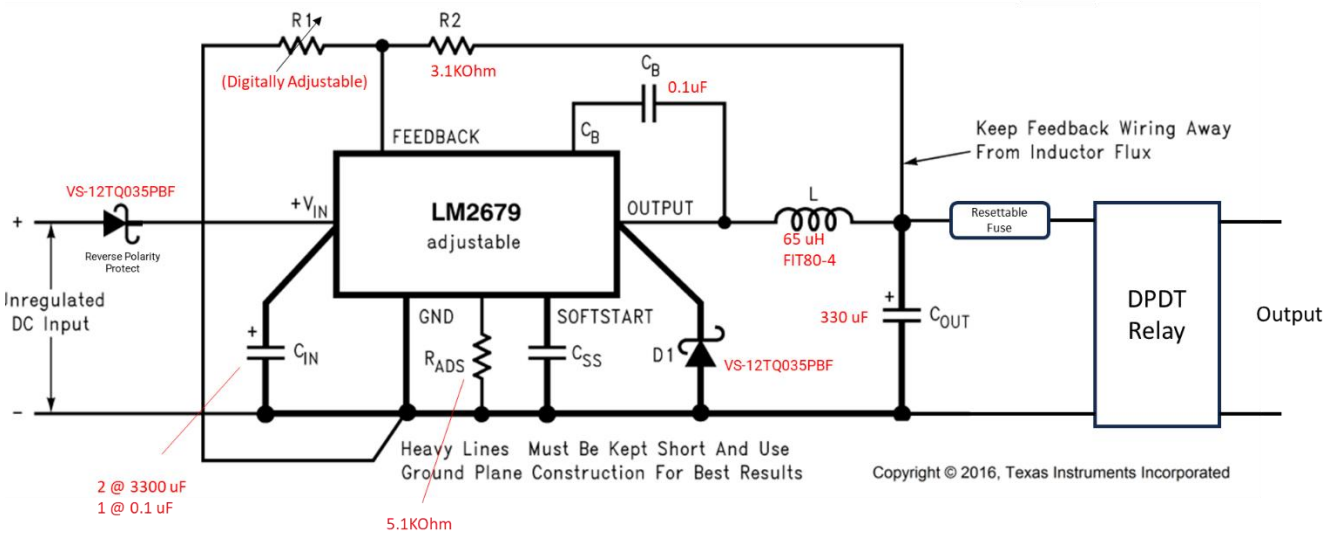
To TI Support:

Below please find the “schematic” and PCB layout you requested. Unfortunately, this design was performed more than 20 years ago, and the schematic entry and PCB layout were both carried out using tools that are now lost to the ages. As a result, the full schematic is no longer available. Likewise, for the PCB artwork, a print of the resulting Gerber data is all that remains. The board doesn’t have a silkscreen, but I’ve highlighted the component placement as best I could on the attached Gerber plots (see below).

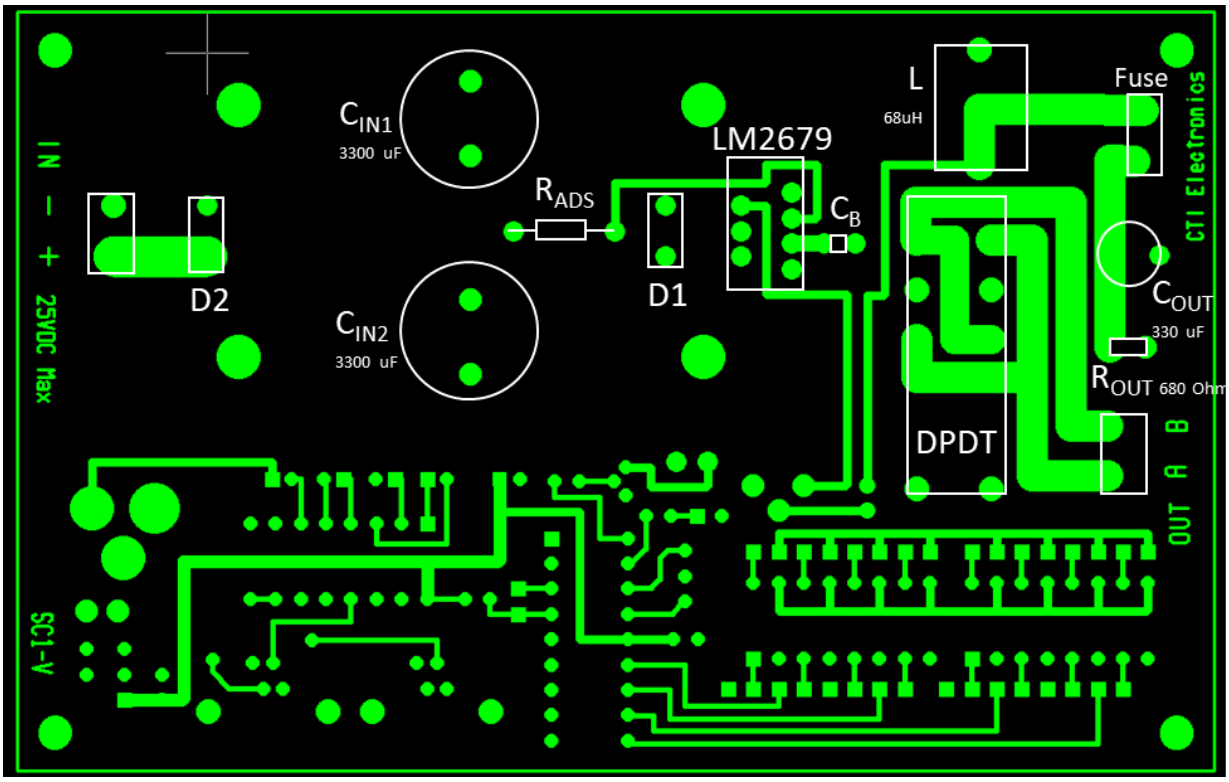
I’ve drawn the portion of the “schematic” most pertinent to the current discussion by “penciling in” the values for the various components using the block diagram from your datasheet. This portion of the design was ostensibly copied from your example in the data sheet, followed by a DPDT relay to select output polarity and a resettable fuse for short circuit protection. This portion occupies the upper half of the attached PCB drawing.

The remainder of the design (not shown here), occupying the lower half of the board, consists of a digital portion to communicate with the module remotely, to set the output voltage (by adjusting the value of R1) and control the polarity select relay. That section is completely optically isolated from the regulator section, so hopefully is not pertinent to this discussion. If you do need it, I can reproduce the full schematic, but that will take some time. If it helps to visualize things, I’ve also included photos of an assembled board. I apologize for the incompleteness of what I’m able to provide.

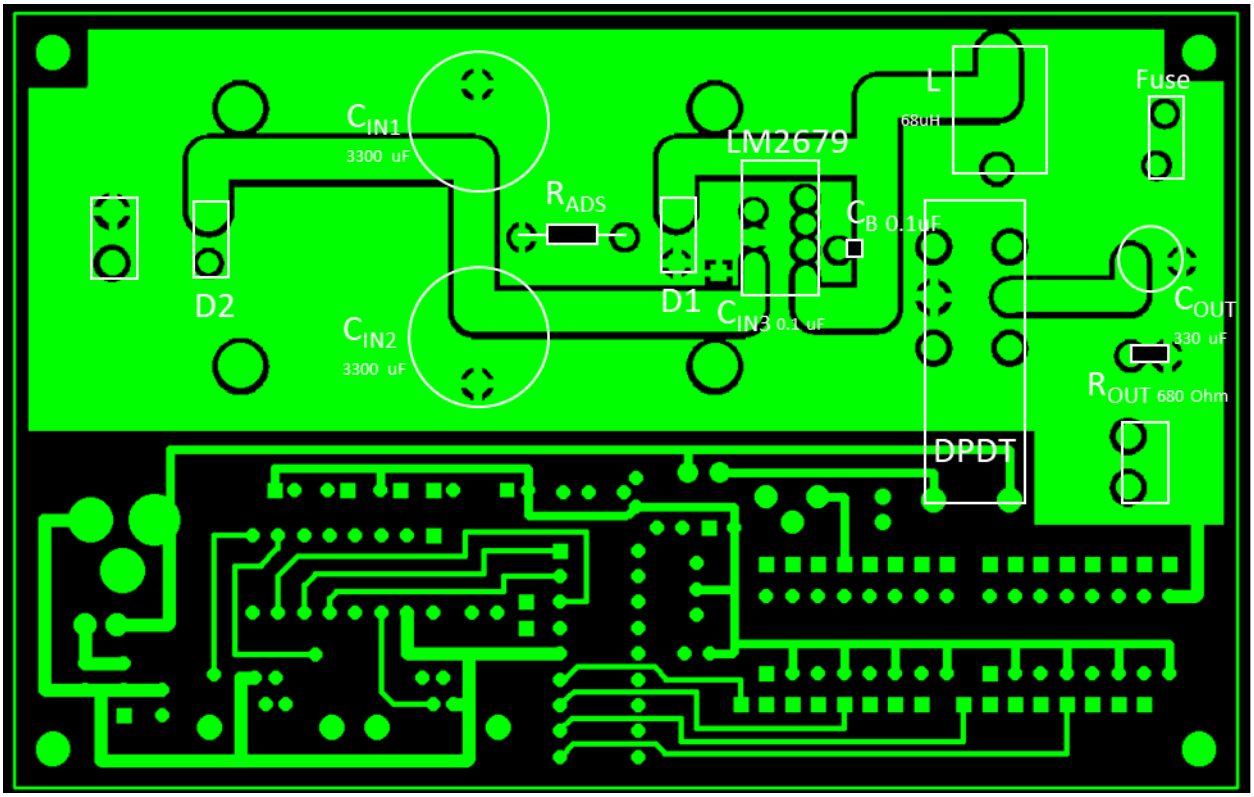
Three scope traces are attached. The first shows the switch output of the LM2679. This capture was taken after the board was running for ~1 hour. The switch output remained stable throughout that time. The 2nd scope trace came as a result of probing the current limit adjust pin of the LM2769 at the end of the 1 hour. As soon as the scope probe comes in contact with the current limit adjust pin, the part immediately goes into what appears to be an all-out current limit. The third trace shows the switch output after the scope probe on the current limit adjust pin was removed. The LM2679 was unwilling/unable to return to a stable switching state. But, if the scope probe on the switch output is then removed for an instant, and immediately put back in place, the switch output has now returned to the stable state as shown in the first capture. I can probe other pins on the LM2679, but any attempt to examine the current limit adjust pin has a quite detrimental effect on the switch waveform. Putting a capacitor between the current limit adjust pin and ground per your suggestion has the same effect. So, for whatever reason, something in my design is making the LM2679 current adjust circuit extremely sensitive. Thanks for any thoughts or suggestions you might have.


R1
(Digitally Adjustable)
R2
3.1KOhm
C_B
0.1uF
C_B
FEEDBACK
Keep Feedback Wiring Away
From Inductor Flux
VS-12TQ035PBF
+
Reverse Polarity
Protect
$+V_{IN}$
LM2679
adjustable
OUTPUT
L
65 uH
FIT80-4
Resettable
Fuse
DPDT
Relay
Output
Inregulated
DC Input
-
C_{IN}
GND
R_{ADS}
SOFTSTART
C_{SS}
D1
VS-12TQ035PBF
330 uF
C_{OUT}
Heavy Lines Must Be Kept Short And Use
Ground Plane Construction For Best Results
Copyright © 2016, Texas Instruments Incorporated
2 @ 3300 uF
1 @ 0.1 uF
5.1KOhm

Component Side:

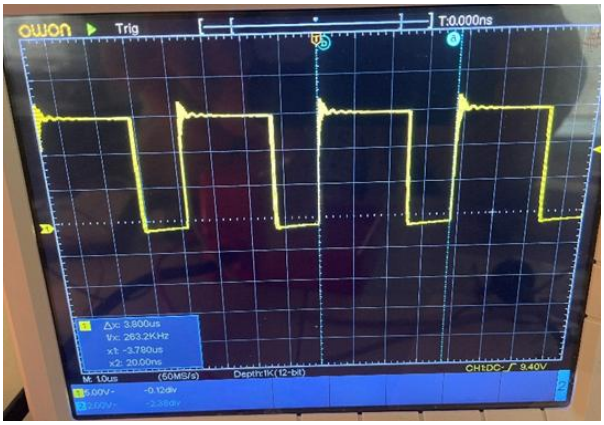


Solder Side:



Scope Traces:

Trace 1) Stable switch output waveform (after 1 hour run time)



Trace 2) Switch output while scope probe is on current limit adjust pin (all-out current limit ??)

Trace 3) Unstable switch output after scope probe on current limit adjust pin is removed. (subsequently removing scope probe from the switch output for an instant returns the switch output to the stable state shown in Trace 1)