SPX3819: FAQ

Part Number: SPX3819
Date: Sept14-06

Question:
Assuming a nominal load of 250mA @ 3V DC, how much ground current will be consumed? With a 6V input, will the part even get warm? How about with a 12V input?

Answer:
The SPX3819 data sheet contains a graph of ground current vs load current for your review.

Also we suggest that you download the Thermal Considerations application note which includes a few example calculations from the SPX3819:
http://www.sipex.com/files/ApplicationNotes/LDOThermal.pdf

The Linear Regulator Heat Calculator could also prove helpful:
http://www.sipex.com/files/ApplicationNotes/ThermalCalculator.xls

Customer bench testing is strongly recommended using intended application circuit to ensure proper operation.

Question:
Is this part similar to your SP6203 CMOS part in the above regard? Or, is it like a conventional regulator (LM7805) where the excess voltage turns into heat?

Answer:
All LDO's will transfer most of its energy to heat. To minimize this temperature rise keep the input to output voltage difference slightly above dropout voltage. See the applications note mentioned above.

Question:
Can ceramic capacitors be used on the output?

Answer:
Ceramic capacitors may be used for this part. For Tantalum or Aluminum Electrolytic types, keep the Equivalent Series Resistance (ESR) as small as possible.

Question:
Considering the PSRR is 70db, what is a better strategy for filtering the 60Hz ripple from the wall cube? A big high voltage electrolytic on the input or a smaller, low voltage ceramic on the output? Or, a combination of both?

Answer:
A small common mode choke would be best for filtering this ripple. Variations / combinations of input capacitance might also help but bench testing would be required.

Question:
Is there any practical limit to how much capacitance is used on the input or output?

Answer:
Input and output capacitance may be increased without limit.

Question:
It would appear, from the data sheet, increasing the Bypass capacitor above 0.01uF has little improvement in terms of noise. We use a special low ESL/ESR 0.1uF ceramic as standard for RF bypassing. Any concerns about using these on your Bypass pin as well?

Answer:
If the bypass pin is to be used a 10nF ceramic capacitor is suggested. You may also use the value / type mentioned. The only concern with the bypass feature is that startup time is increased. If startup time is a concern then the bypass pin should be kept open. Different values of bypass capacitor will result in different startup times.

Question:
A portion of this application involves modulating a IR LED with a 400KHz signal having a 50% duty cycle or less. Assumming a drive level of 1 AMP per 25µS pulse, will your device even see this as an overload and go into current limiting? If so, should a large electrolytic be employed on the output?

Answer:
This is a little difficult to answer not knowing how you plan on modulating the LED. If the enable input is used for modulation it is possible that the device may not react fast enough to provide an output. This is very much true if the Bypass pin is used. If the output load exceeds the current limit trip point then the output will be turned off to protect the device. However. if the output is always on and modulation is done with some external circuitry, then adding extra capacitance to the output could satisfy the current demand of the LED so as not to cause current limit activation.

Question:
This part is quite attractive in terms of its Reverse Battery Protection feature. Do you have any other more current/better alternatives?

Answer:
For a 500mA output current device this is the best Sipex offers for package size and performance. Check our LDO products page for all of Sipex LDO offerings.
http://www.sipex.com/productselector.aspx?family=LowDropOut

Question:
If a 3V battery pack was connected to the output, without a “wall wart” connected to the input, would any current flow back through the device?

Answer:
The datasheet does not state that this device is operable in a pre-biased output condition; therefore, leakage may occur.

Question:
If the 3V battery pack was connected to the input, what would the output voltage be with a 250mA load?

Answer:
If the input voltage is above dropout voltage then the part will regulate for the entire output current range up to 500mA.

