

Specification Change Notice

Product Affected: NU801

Version before change: V01.6

Version after change: V01.7

Description:

In application $V_{DD} < 5V$, the 1uF capacitor which is connected between V5 and GND would result the V5 slow start-up due to the loading effect.

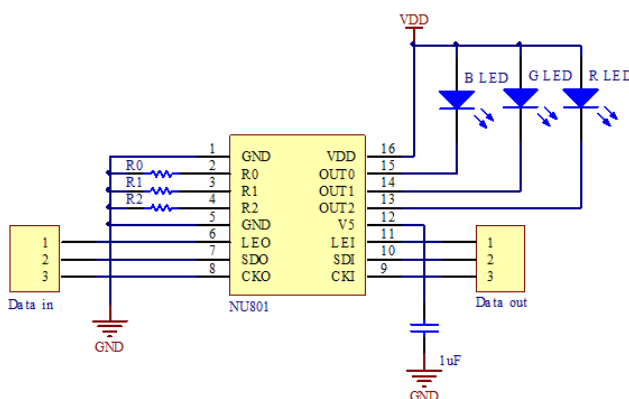
Choose one of the following suggestions for improvement.

1. The capacitor which is connected between V5 and GND need no more than 0.1uF.
2. Tie the VDD and V5 together to decrease the loading effect and speed up the start-up sequence if needed.

Content:

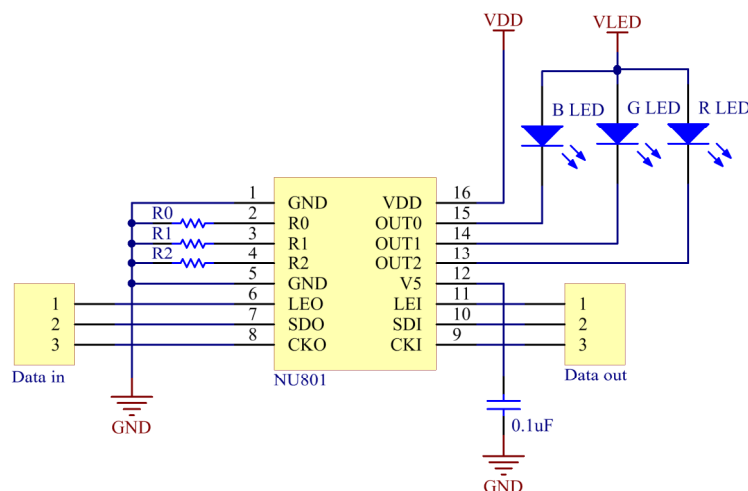
Before Change (V01.6, P9):

For the sake of noise immunity on VDD pin, it is suggest that a 1uF capacitor is connected between V5 and GND pin.



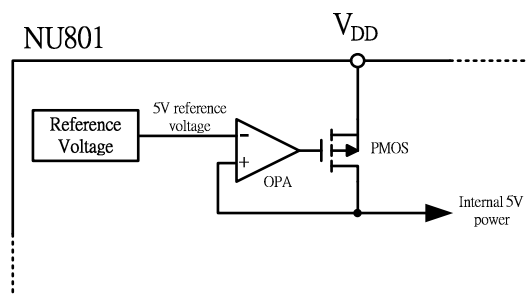
After Change (V01.7 P9):

For the sake of noise immunity on VDD pin, it is suggested that a 0.1uF capacitor is connected between V5 and GND pin.



Symptom:

The output voltage of internal voltage regulator in NU801 is designed at 5 volts. The structure of the voltage regulator is as the following diagram.



When the V_{DD} power is under 5V, the OPA will drive the PMOS to fully turn on state. Due to the variation of the chip fabrication process, the driving capability of PMOS and OPA will also vary and decrease in different chips. That will prolong the establishing of internal power of chip when V_{DD} is under 5V. The delay time will be longer if the capacitor connected to V5 pin of NU801 is larger. The recommended capacitance is listed in the following table.

V_{DD} \ V5 pin Cap.	0.1uF	1uF	2.2uF	4.7uF	10uF
3V	Normal	Delayed	Delayed	Delayed	Delayed
3.3V	Normal	Delayed	Delayed	Delayed	Delayed
5v	Normal	Normal	Delayed	Delayed	Delayed
10V	Normal	Normal	Normal	Normal	Normal

For example in 3.3V V_{DD} application, if the capacitor connect to V5 is 1uF, some NU801 will late activate. The latency is from hundreds milliseconds to few seconds. If the capacitance is under or equal to 0.1uF, there is no latency at power-on stage. The normal start up time is under 20 milliseconds.

The function of V5 capacitor is to stabilize the internal power of NU801. In general, if no other load connected to V5 pin except the 0.1uF capacitor, it is enough to stabilize the internal power.

There is another way, just short VDD and V5 pin in circuit, to skip internal voltage regulator when V_{DD} is under 5V. That will activate NU801 and get into work state faster.