Upgrading to Next Generation Single Chip Modem

Application Note 8/14/01

This Application Note describes how to modify designs to accept the next generation SmartSCM. The advantages of migrating to the new device are: V.92 support and lower power consumption. The CX818xx device is footprint and component compatible with the few exceptions listed below.

PCB Changes

The current design (RD00-X970 Rev. C) has the following power pins, 2, 15, 20, 40, 53, 58, 78, 85, 100, 108, 116 and 124 which are decoupled by C138 – C147 capacitors. See Figure 1.

The new design (See Figure 2) with the CX818xx Single Chip Modem, pins 20, 53 and 85 are no longer power pins. They are the internal core voltage pins that need decoupling. C141, C143, C146 and an additional capacitor, C171 are used as the decoupling caps for VCORE. Please note that C171 is a 47uF capacitor with a maximum voltage rating of 5V.

When using the CX88168 device, R206 is installed and C171 is omitted. When using the CX818xx device, C171 is installed and R206 is omitted.

Current Design

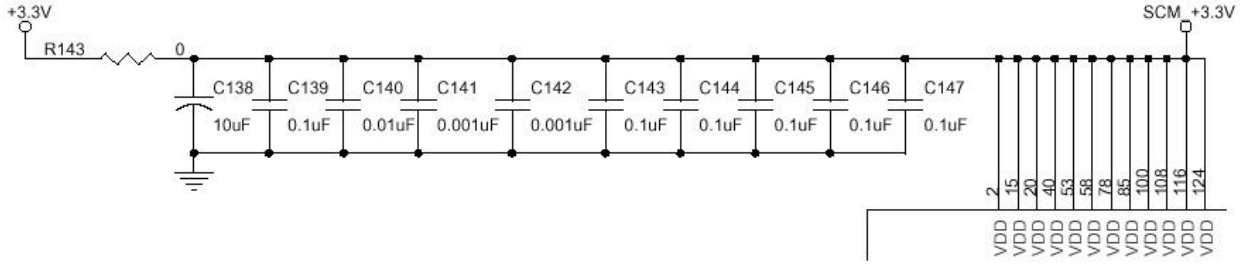

Figure 1: CX88168 Power Pins and Decoupling Capacitors

New Design

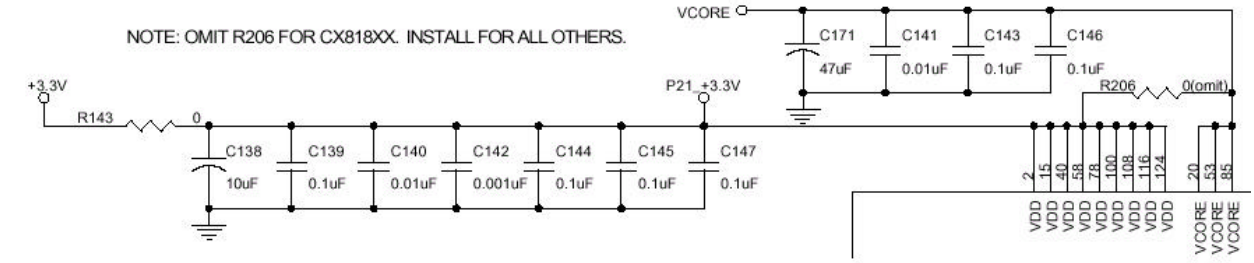

Figure 2: CX818XX Power Pins and Decoupling Capacitors

These are the only changes required, on the PC board, to ensure compatibility for the CX88168 and the CX818xx devices.

Component Changes

Most of the components on both designs are the same, except for R186 and T2.

R186
When using the CX88168 device, R186 is a 0 ohm resistor.
When using the CX818xx device, R186 is a 240K-ohm resistor.

T2
When using the CX88168 device, T2 is a 1:2.6 transformer.
When using the CX818xx device, T2 is a 1:2.0 transformer.
Both transformers have the same footprint.