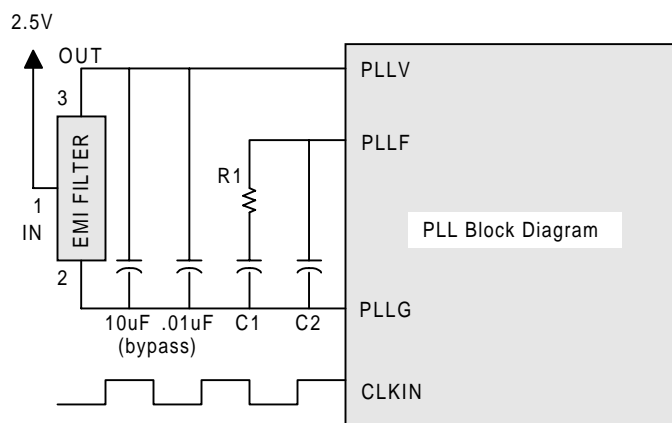


TMS320C6201 PLL Circuit Modification

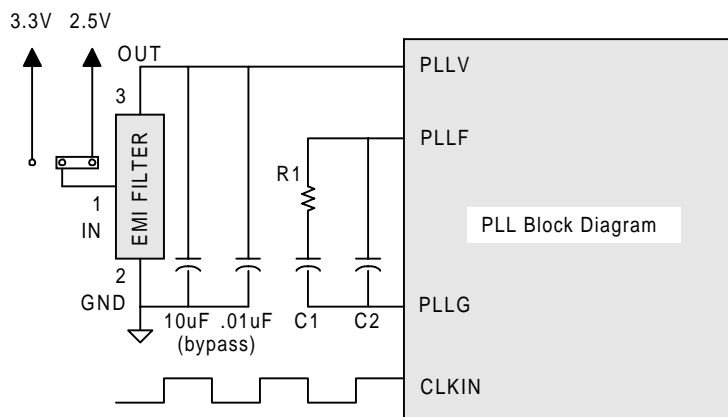
Due to the change in the TMS320C6201 PLL circuit design specifications, it will be necessary for some existing board designs to be modified in order for the PLL to function properly. The original circuit design for the PLL filter was as shown in Figure 1.

Figure 1: Original PLL Filter Circuit Design



Due to coupling effects associated with tying the bypass capacitors and EMI filter to the PLLG pin (which connects to ground through the 'C6201), the filter design has been revisited. Instead of connecting these components to PLLG, it is now recommended that they be tied directly to system ground, as shown in Figure 2. Also, for revision 3 silicon, the EMI filter will be tied to 3.3V, rather than to the core supply. The circuit should be built to allow for future compatibility.

Figure 2: Current PLL Filter Circuit Design



This re-definition of the circuit does not aid with existing board designs, due to the fact that it may not be feasible to simply cut the trace between the bypass capacitors (and EMI filter) and the PLLG pin. The question remains as to how to “fix” the existing circuit such that the PLL may function properly. The simplest solution to the problem is to simply not solder the bypass capacitors or the EMI filter to the board, and to connect the PLLV pin directly to the 2.5V supply. In the large majority of the systems, a EMI filter is NOT necessary because seldom is there power supply noise in the frequency range of the PLL. The resulting “fixed” PLL filter circuit is shown in Figure 3 for revision 2 silicon, and in Figure 4 for revision 3. Note that revision 3 unlike revision 2 requires pin 1 of the EMI filter to be connected to the 3.3V I/O supply plane rather than the core plane (1.8V). This is a simple fix to most board designs. However, to fully re-utilize a current design the user should connect the via for pin 3 of the EMI filter to any via for a 3.3V supply pin.

Figure 3: PLL Filter Circuit "Fix" Revision 2

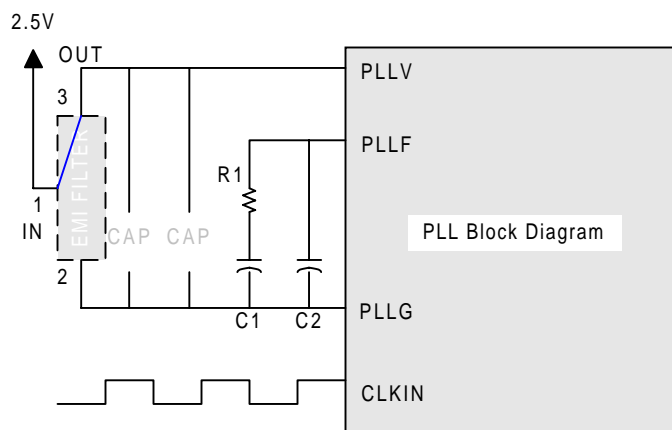
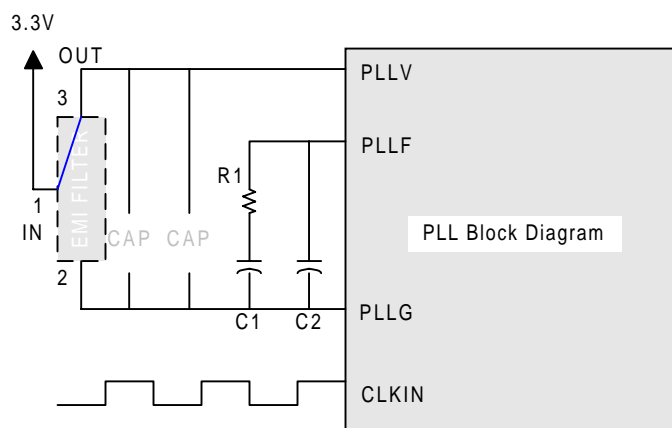


Figure 4: PLL Filter Circuit "Fix" Revision 3



Although the modified circuit will not perform as well as the new design, the performance is greatly improved over that of the old design. This should be viewed as a fix for current designs only, and should not be used for reference in future designs. For future 'C6201 applications, the circuit shown in Figure 2 should be used.