Solving SSI2130/2131 Oscillator "Hang-Up" from Asymmetrical Power-Up

The SSI2130 and SSI2131 are designed for robust operation from non-ideal power supplies without special considerations. However, modular synthesizer power design is outside control of the module designer so special measures may be called for. In other cases, power supplies may not be fully vetted for audio systems.

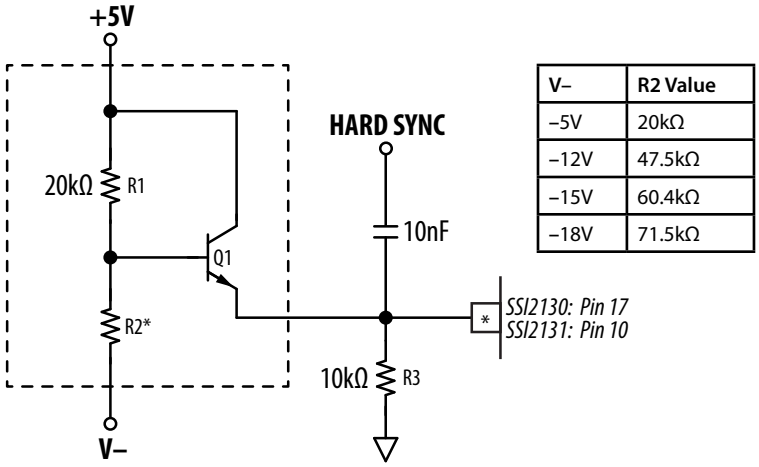
When there's a significant interval between power-up of the positive and negative rails, the SSI2130/2131's oscillator may not start up. This is easily resolved with a Hard Sync reset. Of course, a manual sync isn't always practical at start-up, so below are two workarounds.

MCU-Based Systems

If an MCU is available then a short sync pulse 100-200 ms after power-on can kick-start the SSI2130/2131. This requires a Schottky diode connected from a spare GPIO (anode) to the STROBE/HARD SYNC pin (cathode). The diode passes the sync pulse into the SSI2130/2131 but blocks any sync pulses back into the MCU during normal operation.

Pure Analog Systems

If the MCU approach isn't possible, two resistors and an NPN transistor are added to the Hard Sync network as shown in Figure 1. Refer to the inset table for correct R2 value, and Q1 can be a common NPN type such as 2N2222 or similar. Resistor R1 turns on the transistor while the +5V rail is "up" and the negative rail not yet stable, forcing the Hard Sync pin high and resetting the SSI2130/2131. Once the negative rail is stable R2 brings the voltage at the transistor's base close to 0V and it turns off. The transistor must have a V_{EBO} of at least 5V; otherwise add a series Schottky diode between the emitter and Hard Sync pin to protect it from sync pulses.



V–	R2 Value
–5V	20kΩ
–12V	47.5kΩ
–15V	60.4kΩ
–18V	71.5kΩ

Figure 1: Workaround for Analog-Only Systems