

# LED driver provides oscillator for microcontroller

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THE MAJOR BUILDING BLOCKS for a white-LED driver are an oscillator, a charge pump, and a regulated current source. National Semiconductor ([www.national.com](http://www.national.com)) produces a device that contains all these building blocks in the highly integrated LM2791/2 IC. You usually use white-LED drivers in tandem with cellular baseband controllers or microcontrollers. You can easily adapt the

LM2791/2 to provide a clock source. You can realize a simple yet useful circuit by accounting for the fact that a pseudo square wave is present across the flying capacitor's ( $C_f$ ) pins. You can take this pseudo square wave from these pins and clean it up.

To accomplish this task, you inject the signal, via a 330 $\Omega$  resistor,  $R_1$ , into a simple inverter gate, such as a DM7404 hex

inverter (Figure 1). The net signal is a clean, 2-MHz clock source. The oscilloscope graph depicts the pseudo square wave and the resultant square wave at the output of the inverters (Figure 2). You can use this signal as a simple clock source for a baseband controller or microcontroller to perform simple tasks such as keypad decoding or battery-identification detection. □

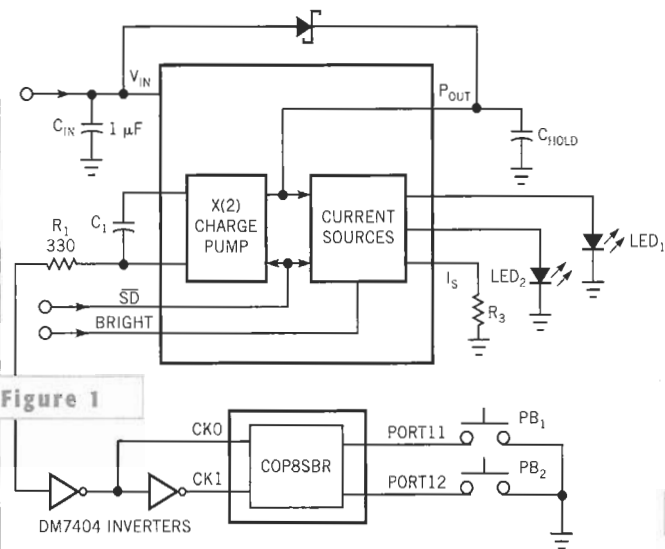


Figure 1

A white-LED driver doubles as a clocking source for a microcontroller.

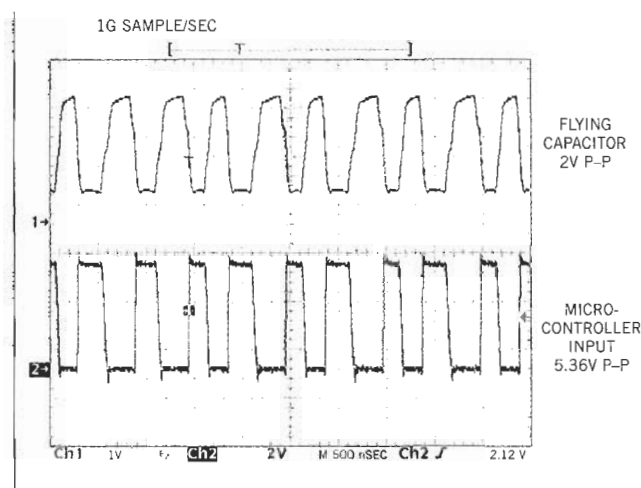


Figure 2

A logic inverter cleans up the pseudo square wave (top) from the flying capacitor; the result (bottom) is a stable clock source for the microcontroller.