

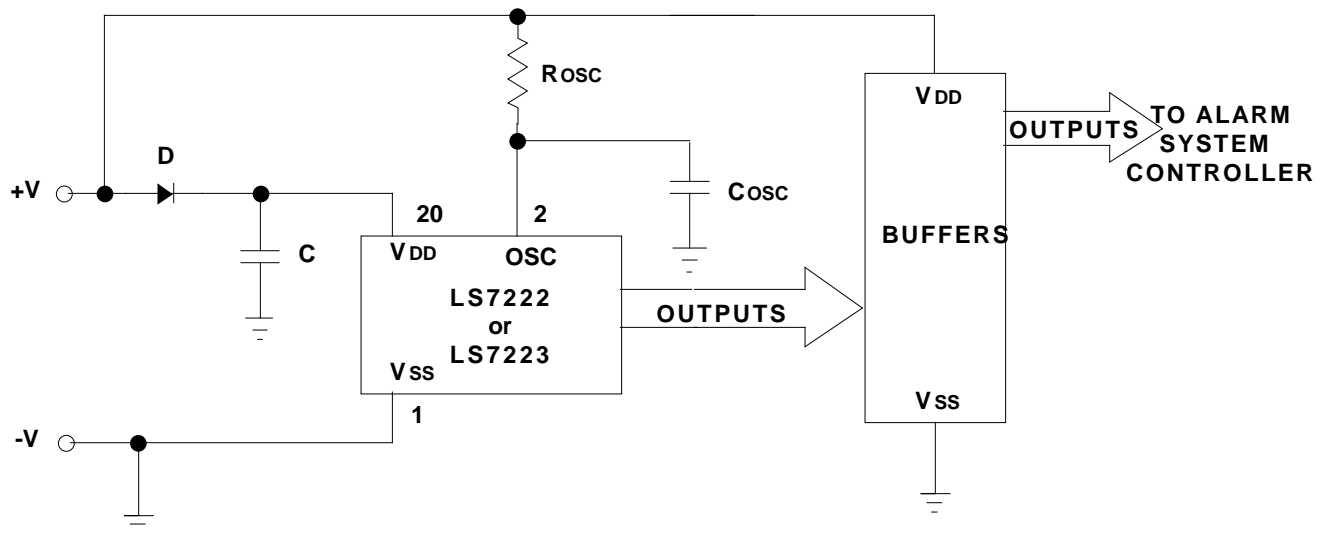
## PROGRAMMED CODES MEMORY BACK-UP FOR THE LS7222/LS7223 USING ENERGY STORAGE CAPACITORS

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Figure 1 indicates a method for extending the time the programmed memory is retained by the LS7222/LS7223 when power is removed. When the circuit is operating normally, the IC typically draws 12 $\mu$ A at a DC power supply of 9V. Without the oscillator running, the DC current draw is 1 $\mu$ A or less. Referring to FIGURE 1, when power is removed the energy storage capacitor supplies current only to the IC. The external circuitry and the RC oscillator do not draw any current. Using a current of 1 $\mu$ A, and a capacitor value of .47F,

the back-up voltage will decrease approximately 1V every 6 days. Since the IC will retain its memory down to 2V, this means that the back-up will last for approximately 42 days, or 6 weeks.

A typical example of energy storage capacitors is made by NEC. These are called Double Layer Capacitors (DLC) and range from .047F to 2.2F at 5V and from .022F to .47F at 10V.



**FIGURE 1. PROGRAMMED CODES MEMORY BACK-UP CIRCUIT**

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