Electronic circuit replaces mechanical push-push switch

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Mechanical push-pushbutton switches (also known as alternate-action or push-on/push-off switches) can be bulky and expensive. As an alternative, an electronic version uses a cheaper, NO (normally open), momentary-on switch (Figure 1). A supervisory microprocessor, IC1, serves as a combination switch debouncer and intelligent controller. Applying power holds IC1's LBC output (Pin 4) low, which in turn resets flip-flop IC2's output to a logic-low state (off) (Figure 2). Pressing the NO momentary-contact switch, S1, evokes a pulse from the \( \text{RESET} \) output (IC1, Pin 5), which triggers IC2's CK input (Pin 1) and toggles IC2's output to a logic-high state (on). Pressing the switch a second time triggers another \( \text{RESET} \) pulse that toggles flip-flop IC2's output to a logic-low state (off).

You can add an optional watchdog timer, IC3, to reset IC2's output to the logic-low state after a user-selectable interval as long as 60 sec. You can select shorter reset times using IC3's programming pins: SET0, SET1, and SET2. The entire circuit costs about $2 (1000) and occupies a pc-board area that's no larger than its mechanical counterpart.