

# 68HC11/Bidirectional-Compatible μP Reset Circuit

## ABSOLUTE MAXIMUM RATINGS

V<sub>CC</sub> ..... -0.3V to +6.0V  
 All Other Pins ..... -0.3V to (V<sub>CC</sub> + 0.3V)  
 Input Current (V<sub>CC</sub>) ..... 20mA  
 Output Current (RESET) ..... 20mA  
 Rate of Rise (V<sub>CC</sub>) ..... 100V/μs

Continuous Power Dissipation (T<sub>A</sub> = +70°C)  
 SOT143 (derate 4mW/°C above +70°C) ..... 320mW  
 Operating Temperature Range ..... -40°C to +85°C  
 Storage Temperature Range ..... -65°C to +160°C  
 Lead Temperature (soldering, 10sec) ..... +300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## ELECTRICAL CHARACTERISTICS

(V<sub>CC</sub> = +2.5V to +5.5V, T<sub>A</sub> = -40°C to +85°C, unless otherwise noted. Typical values are at T<sub>A</sub> = +25°C.)

| PARAMETER                                           | SYMBOL               | CONDITIONS                                         |                           | MIN                    | TYP             | MAX                    | UNITS  |
|-----------------------------------------------------|----------------------|----------------------------------------------------|---------------------------|------------------------|-----------------|------------------------|--------|
| Operating Voltage Range                             | V <sub>CC</sub>      | T <sub>A</sub> = 0°C to +70°C                      |                           | 1.0                    |                 | 5.5                    | V      |
| V <sub>CC</sub> Supply Current                      | I <sub>CC</sub>      | V <sub>CC</sub> = 5.5V, no load                    |                           | 5                      |                 | 12                     | μA     |
|                                                     |                      | V <sub>CC</sub> = 3.6V, no load                    |                           | 4                      |                 | 10                     |        |
| Reset Threshold (Note 1)                            | V <sub>TH</sub>      | T <sub>A</sub> = +25°C                             |                           | V <sub>TH</sub> - 1.8% | V <sub>TH</sub> | V <sub>TH</sub> + 1.8% | V      |
|                                                     |                      | T <sub>A</sub> = -40°C to +85°C                    |                           | V <sub>TH</sub> - 2.5% |                 | V <sub>TH</sub> + 2.5% |        |
| Reset Threshold Tempco                              | ΔV <sub>TH</sub> /°C |                                                    |                           | 60                     |                 |                        | ppm/°C |
| V <sub>CC</sub> to Reset Delay                      |                      | V <sub>CC</sub> = falling at 1mV/μs                |                           | 35                     |                 |                        | μs     |
| Reset Timeout Period                                | t <sub>RP</sub>      | MAX6314US_ _D1-T                                   |                           | 1                      | 1.4             | 2                      | ms     |
|                                                     |                      | MAX6314US_ _D2-T                                   |                           | 20                     | 28              | 40                     |        |
|                                                     |                      | MAX6314US_ _D3-T                                   |                           | 140                    | 200             | 280                    |        |
|                                                     |                      | MAX6314US_ _D4-T                                   |                           | 1120                   | 1570            | 2240                   |        |
| MANUAL RESET INPUT                                  |                      |                                                    |                           |                        |                 |                        |        |
| $\overline{\text{MR}}$ Input Threshold              | V <sub>IL</sub>      | V <sub>TH</sub> > 4.0V                             |                           | 0.8                    |                 | V                      |        |
|                                                     | V <sub>IH</sub>      |                                                    |                           | 2.4                    |                 |                        |        |
|                                                     | V <sub>IL</sub>      | V <sub>TH</sub> < 4.0V                             |                           | 0.3 × V <sub>CC</sub>  |                 |                        |        |
|                                                     | V <sub>IH</sub>      |                                                    |                           | 0.7 × V <sub>CC</sub>  |                 |                        |        |
| MR Minimum Input Pulse                              |                      |                                                    |                           | 1                      |                 | μs                     |        |
| $\overline{\text{MR}}$ Glitch Rejection             |                      |                                                    |                           | 100                    |                 | ns                     |        |
| $\overline{\text{MR}}$ to Reset Delay               |                      |                                                    |                           | 500                    |                 | ns                     |        |
| MR Pullup Resistance                                |                      |                                                    |                           | 32                     | 63              | 100                    | kΩ     |
| $\overline{\text{RESET}}$ Output Voltage            | V <sub>OL</sub>      | V <sub>CC</sub> > 4.25V, I <sub>SINK</sub> = 3.2mA |                           | 0.4                    |                 | V                      |        |
|                                                     |                      | V <sub>CC</sub> > 2.5V, I <sub>SINK</sub> = 1.2mA  |                           | 0.3                    |                 |                        |        |
|                                                     |                      | V <sub>CC</sub> > 1.2V, I <sub>SINK</sub> = 0.5mA  |                           | 0.3                    |                 |                        |        |
|                                                     |                      | V <sub>CC</sub> > 1.0V, I <sub>SINK</sub> = 80μA   |                           | 0.3                    |                 |                        |        |
| $\overline{\text{RESET}}$ INTERNAL PULLUP           |                      |                                                    |                           |                        |                 |                        |        |
| Transition Flip-Flop Setup Time (Note 2)            | t <sub>S</sub>       |                                                    |                           | 400                    |                 | ns                     |        |
| Active Pullup Enable Threshold                      |                      | V <sub>CC</sub> = 5V                               |                           | 0.4                    | 0.9             |                        | V      |
| $\overline{\text{RESET}}$ Active Pullup Current     |                      | V <sub>CC</sub> = 5V                               |                           | 20                     |                 | mA                     |        |
| $\overline{\text{RESET}}$ Pullup Resistance         |                      |                                                    |                           | 4.2                    | 4.7             | 5.2                    | kΩ     |
| $\overline{\text{RESET}}$ Output Rise Time (Note 3) | t <sub>R</sub>       | V <sub>CC</sub> = 3V                               | C <sub>LOAD</sub> = 120pF | 333                    |                 | ns                     |        |
|                                                     |                      |                                                    | C <sub>LOAD</sub> = 250pF | 666                    |                 |                        |        |
|                                                     |                      | V <sub>CC</sub> = 5V                               | C <sub>LOAD</sub> = 200pF | 333                    |                 |                        |        |
|                                                     |                      |                                                    | C <sub>LOAD</sub> = 400pF | 666                    |                 |                        |        |

**Note 1:** The MAX6314 monitors V<sub>CC</sub> through an internal, factory-trimmed voltage divider that programs the nominal reset threshold. Factory-trimmed reset thresholds are available in 100mV increments from 2.5V to 5V (see *Ordering and Marking Information*).

**Note 2:** This is the minimum time RESET must be held low by an external pull-down source to set the active pull-up flip-flop.

**Note 3:** Measured from RESET V<sub>OL</sub> to (0.8 × V<sub>CC</sub>), R<sub>LOAD</sub> = ∞.

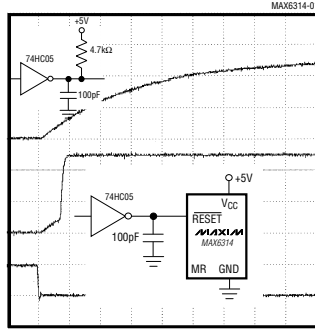
# 68HC11/Bidirectional-Compatible $\mu$ P Reset Circuit

## Typical Operating Characteristics

( $T_A = +25^\circ\text{C}$ , unless otherwise noted.)

MAX6314

**PULLUP CHARACTERISTICS**



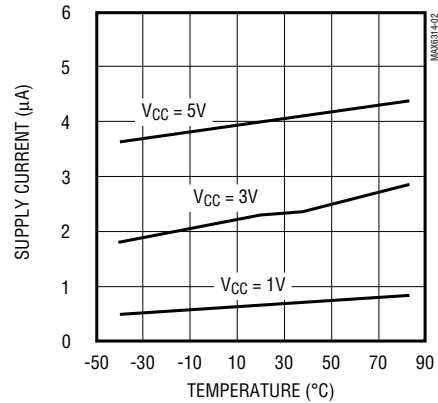
4.7k $\Omega$  PULL-UP  
2V/div

MAX6314 PULL-UP  
2V/div

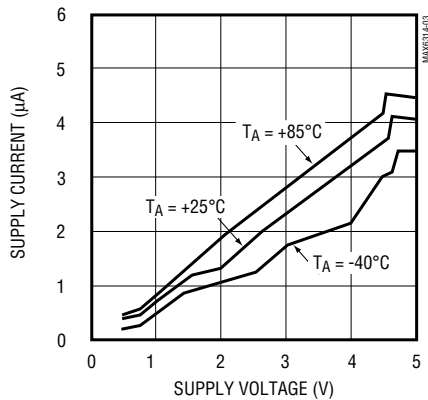
INPUT  
5V/div

200ns/div

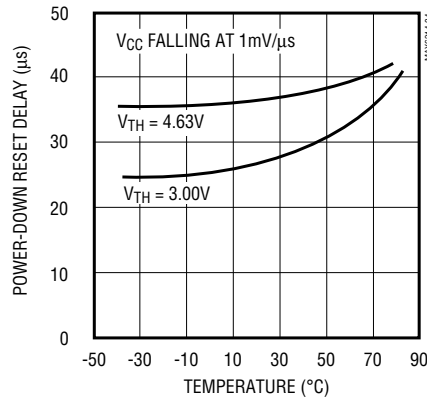
**SUPPLY CURRENT vs. TEMPERATURE**



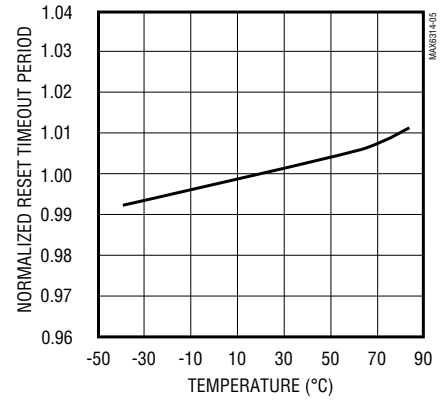
**SUPPLY CURRENT vs. SUPPLY VOLTAGE**



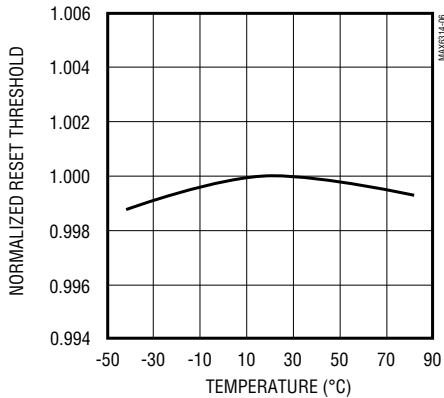
**POWER-DOWN RESET DELAY vs. TEMPERATURE**



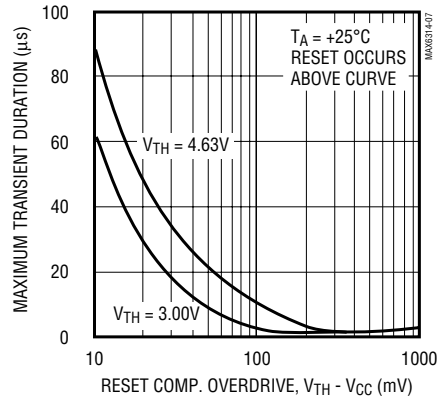
**NORMALIZED RESET TIMEOUT PERIOD vs. TEMPERATURE ( $V_{CC}$  RISING)**



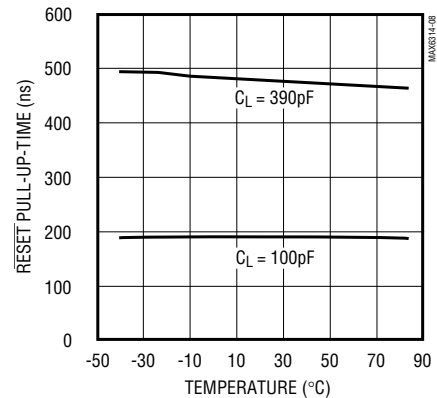
**NORMALIZED RESET THRESHOLD vs. TEMPERATURE ( $V_{CC}$  FALLING)**



**MAXIMUM TRANSIENT DURATION vs. RESET COMP. OVERDRIVE**



**RESET PULLUP TIME vs. TEMPERATURE**



# 68HC11/Bidirectional-Compatible μP Reset Circuit

## Pin Description

| PIN | NAME  | FUNCTION                                                                                                                                                                                                                                                 |
|-----|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | GND   | Ground                                                                                                                                                                                                                                                   |
| 2   | RESET | Active-Low Complementary Output. In addition to the normal n-channel pulldown, RESET has a p-channel pullup transistor in parallel with a 4.7kΩ resistor to facilitate connection to μPs with bidirectional resets. See the <i>Reset Output</i> section. |
| 3   | MR    | Manual Reset Input. A logic low on MR asserts reset. Reset remains asserted as long as MR is low, and for the reset timeout period (tRP) after the reset conditions are terminated. Connect to VCC if not used.                                          |
| 4   | VCC   | Supply Voltage and Reset Threshold Monitor Input                                                                                                                                                                                                         |

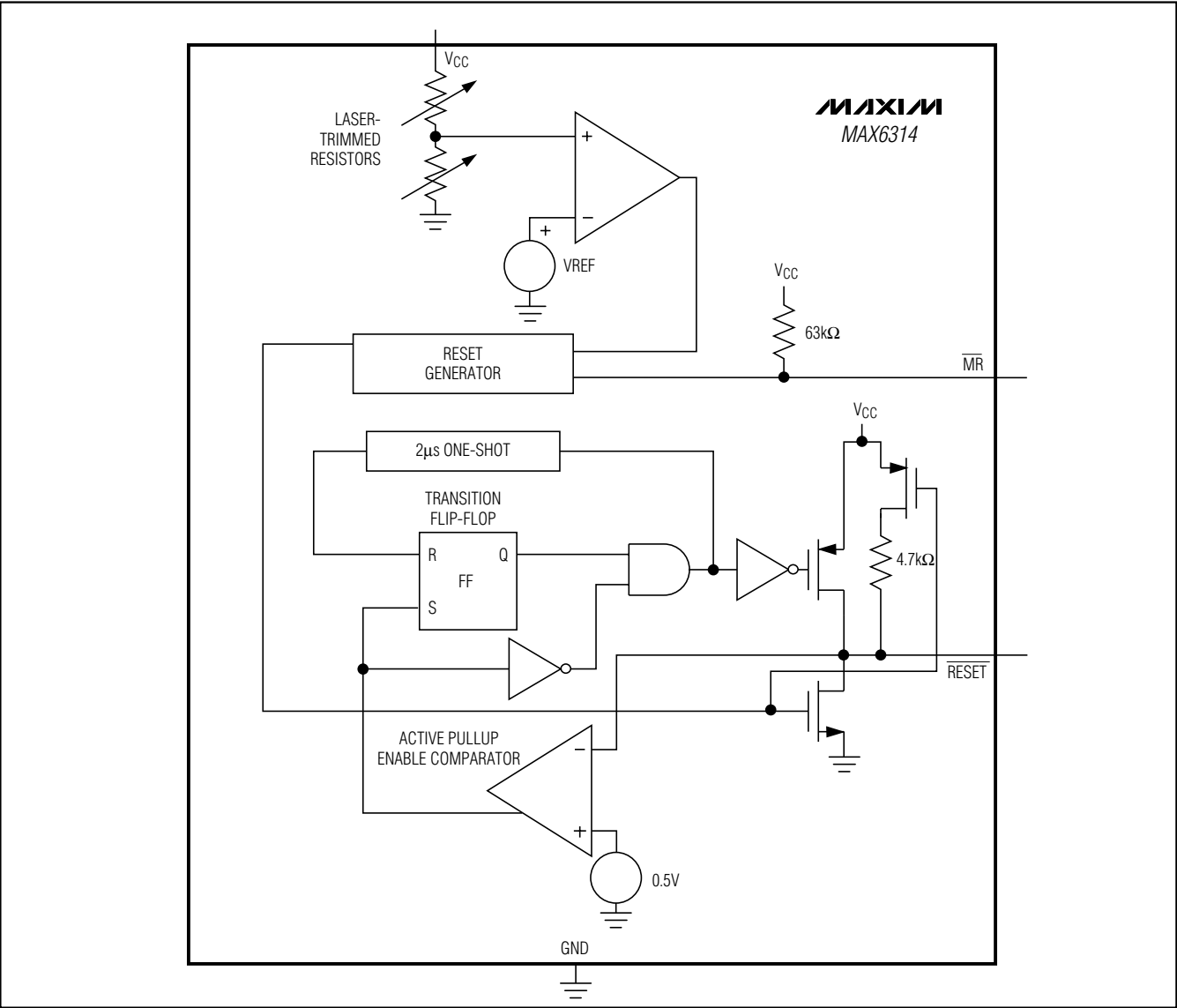


Figure 1. Functional Diagram

# 68HC11/Bidirectional-Compatible μP Reset Circuit

## Detailed Description

The MAX6314 has a reset output consisting of a 4.7kΩ pull-up resistor in parallel with a P-channel transistor and an N-channel pull down (Figure 1), allowing this IC to directly interface with microprocessors (μPs) that have bidirectional reset pins (see the *Reset Output* section).

### Reset Output

A μP's reset input starts the μP in a known state. The MAX6314 asserts reset to prevent code-execution errors during power-up, power-down, or brownout conditions.  $\overline{\text{RESET}}$  is guaranteed to be a logic low for  $V_{CC} > 1V$  (see the *Electrical Characteristics* table). Once  $V_{CC}$  exceeds the reset threshold, the internal timer keeps reset asserted for the reset timeout period (t<sub>RP</sub>); after this interval  $\overline{\text{RESET}}$  goes high. If a brownout condition occurs (monitored voltage dips below its programmed reset threshold),  $\overline{\text{RESET}}$  goes low. Any time  $V_{CC}$  dips below the reset threshold, the internal timer resets to zero and  $\overline{\text{RESET}}$  goes low. The internal timer starts when  $V_{CC}$  returns above the reset threshold, and  $\overline{\text{RESET}}$  remains low for the reset timeout period.

The MAX6314's  $\overline{\text{RESET}}$  output is designed to interface with μPs that have bidirectional reset pins, such as the Motorola 68HC11. Like an open-drain output, the MAX6314 allows the μP or other devices to pull  $\overline{\text{RESET}}$  low and assert a reset condition. However, unlike a standard open-drain output, it includes the commonly specified 4.7kΩ pullup resistor with a P-channel active pullup in parallel.

This configuration allows the MAX6314 to solve a problem associated with μPs that have bidirectional reset pins in systems where several devices connect to  $\overline{\text{RESET}}$ . These μPs can often determine if a reset was asserted by an external device (i.e., the supervisor IC) or by the μP itself (due to a watchdog fault, clock error, or other source), and then jump to a vector appropriate for the source of the reset. However, if the μP does assert reset, it does not retain the information, but must determine the cause after the reset has occurred.

The following procedure describes how this is done with the Motorola 68HC11. In all cases of reset, the μP pulls  $\overline{\text{RESET}}$  low for about four E-clock cycles. It then releases  $\overline{\text{RESET}}$ , waits for two E-clock cycles, then checks  $\overline{\text{RESET}}$ 's state. If  $\overline{\text{RESET}}$  is still low, the μP concludes that the source of the reset was external and, when  $\overline{\text{RESET}}$  eventually reaches the high state, jumps to the normal reset vector. In this case, stored state information is erased and processing begins from

scratch. If, on the other hand,  $\overline{\text{RESET}}$  is high after the two E-clock cycle delay, the processor knows that it caused the reset itself and can jump to a different vector and use stored state information to determine what caused the reset.

The problem occurs with faster μPs; two E-clock cycles is only 500ns at 4MHz. When there are several devices on the reset line, the input capacitance and stray capacitance can prevent  $\overline{\text{RESET}}$  from reaching the logic-high state ( $0.8 \times V_{CC}$ ) in the allowed time if only a passive pullup resistor is used. In this case, all resets will be interpreted as external. The μP is guaranteed to sink only 1.6mA, so the rise time cannot be much reduced by decreasing the recommended 4.7kΩ pullup resistance.

The MAX6314 solves this problem by including a pullup transistor in parallel with the recommended 4.7kΩ resistor (Figure 1). The pullup resistor holds the output high until  $\overline{\text{RESET}}$  is forced low by the μP reset I/O, or by the MAX6314 itself. Once  $\overline{\text{RESET}}$  goes below 0.5V, a comparator sets the transition edge flip-flop, indicating that the next transition for  $\overline{\text{RESET}}$  will be low to high. As soon as  $\overline{\text{RESET}}$  is released, the 4.7kΩ resistor pulls  $\overline{\text{RESET}}$  up toward  $V_{CC}$ . When  $\overline{\text{RESET}}$  rises above 0.5V, the active p-channel pullup turns on for the 2μs duration of the one-shot. The parallel combination of the 4.7kΩ pullup and the p-channel transistor on-resistance quickly charges stray capacitance on the reset line, allowing  $\overline{\text{RESET}}$  to transition low to high within the required two E-clock period, even with several devices on the reset line (Figure 2). Once the one-shot times out, the p-channel transistor turns off. This process occurs regardless of whether the reset was caused by  $V_{CC}$  dipping below the reset threshold, MR being asserted, or the μP or other device asserting  $\overline{\text{RESET}}$ . Because the MAX6314 includes the standard 4.7kΩ pullup resistor, no external pullup resistor is required. To minimize current consumption, the internal pullup resistor is disconnected whenever the MAX6314 asserts  $\overline{\text{RESET}}$ .

### Manual Reset Input

Many μP-based products require manual reset capability, allowing the operator, a test technician, or external logic circuitry to initiate a reset. A logic low on  $\overline{\text{MR}}$  asserts reset. Reset remains asserted while  $\overline{\text{MR}}$  is low, and for the reset active timeout period after  $\overline{\text{MR}}$  returns high. To minimize current consumption, the internal 4.7kΩ pullup resistor on  $\overline{\text{RESET}}$  is disconnected whenever  $\overline{\text{RESET}}$  is asserted.

# 68HC11/Bidirectional-Compatible μP Reset Circuit

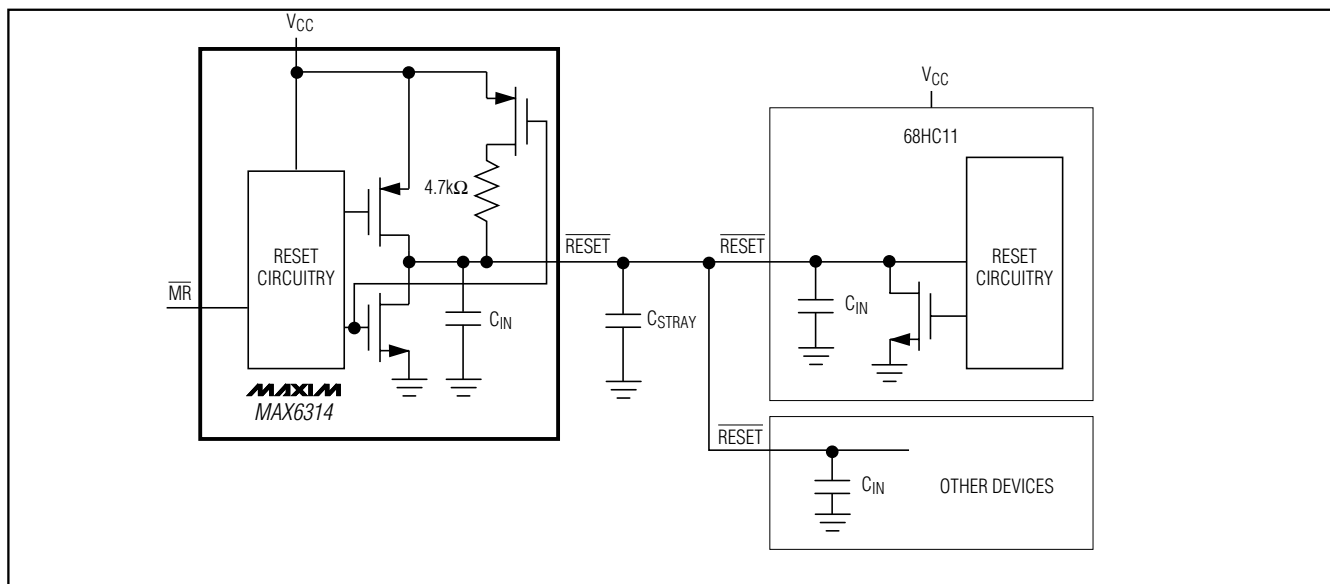


Figure 2. MAX6314 Supports Additional Devices on the Reset Bus

$\overline{\text{MR}}$  has an internal 63kΩ pullup resistor, so it can be left open if not used. Connect a normally open momentary switch from  $\overline{\text{MR}}$  to GND to create a manual reset function; external debounce circuitry is not required. If  $\overline{\text{MR}}$  is driven from long cables or if the device is used in a noisy environment, connecting a 0.1μF capacitor from  $\overline{\text{MR}}$  to ground provides additional noise immunity.

## Applications Information

### Negative-Going VCC Transients

In addition to issuing a reset to the μP during power-up, power-down, and brownout conditions, these devices are relatively immune to short-duration negative-going transients (glitches). The *Typical Operating Characteristics* show the Maximum Transient Duration vs. Reset Threshold Overdrive, for which reset pulses are not generated. The graph was produced using negative-going pulses, starting at  $V_{\text{RST max}}$  and ending below the programmed reset threshold by the magnitude indicated (reset threshold overdrive). The graph shows the maximum pulse width that a negative-going VCC transient may typically have without causing a reset pulse to be issued. As the amplitude of the transient increases (i.e., goes farther below the reset threshold), the maximum allowable pulse width decreases. A 0.1μF bypass capacitor mounted close to VCC provides additional transient immunity.

### Ensuring a Valid $\overline{\text{RESET}}$ Output Down to VCC = 0V

When VCC falls below 1V,  $\overline{\text{RESET}}$  no longer sinks current—it becomes an open circuit. Therefore, high-impedance CMOS-logic inputs connected to  $\overline{\text{RESET}}$  can drift to undetermined voltages. This presents no problem in most applications, since most μP and other circuitry is inoperative with VCC below 1V. However, in applications where  $\overline{\text{RESET}}$  must be valid down to VCC = 0V, adding a pull-down resistor to  $\overline{\text{RESET}}$  will cause any stray leakage currents to flow to ground, holding  $\overline{\text{RESET}}$  low (Figure 3). R1's value is not critical; 100kΩ is large enough not to load  $\overline{\text{RESET}}$  and small enough to pull  $\overline{\text{RESET}}$  to ground.

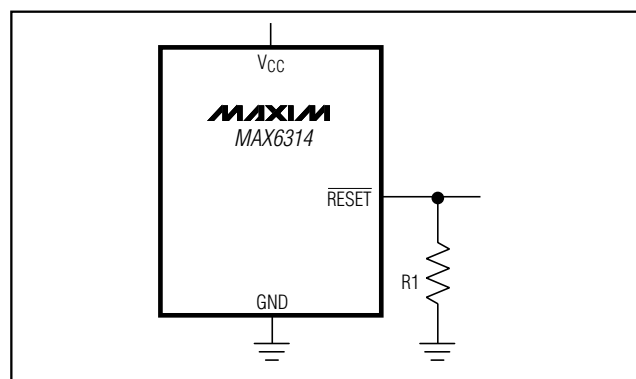


Figure 3.  $\overline{\text{RESET}}$  Valid to VCC = Ground Circuit

# 68HC11/Bidirectional-Compatible μP Reset Circuit

MAX6314

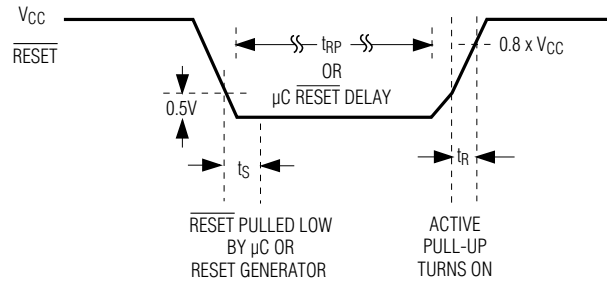


Figure 4. RESET Timing Diagram

## Ordering Information (continued)

| PART†                     | NOMINAL<br>V <sub>TH</sub> (V) | MIN t <sub>RP</sub><br>(ms) | TOP<br>MARK†† |
|---------------------------|--------------------------------|-----------------------------|---------------|
| <b>MAX6314US44D1-T†††</b> | 4.39                           | 1                           | AG_ _         |
| MAX6314US43D1-T           | 4.30                           | 1                           | AH_ _         |
| MAX6314US42D1-T           | 4.20                           | 1                           | AI_ _         |
| MAX6314US41D1-T           | 4.10                           | 1                           | AJ_ _         |
| MAX6314US40D1-T           | 4.00                           | 1                           | AK_ _         |
| MAX6314US39D1-T           | 3.90                           | 1                           | AL_ _         |
| MAX6314US38D1-T           | 3.80                           | 1                           | CA_ _         |
| MAX6314US37D1-T           | 3.70                           | 1                           | CB_ _         |
| MAX6314US36D1-T           | 3.60                           | 1                           | CC_ _         |
| MAX6314US35D1-T           | 3.50                           | 1                           | CD_ _         |
| MAX6314US34D1-T           | 3.40                           | 1                           | CE_ _         |
| MAX6314US33D1-T           | 3.30                           | 1                           | CF_ _         |
| MAX6314US32D1-T           | 3.20                           | 1                           | CG_ _         |
| MAX6314US31D1-T           | 3.08                           | 1                           | CH_ _         |
| MAX6314US30D1-T           | 3.00                           | 1                           | CI_ _         |
| MAX6314US29D1-T           | 2.93                           | 1                           | CJ_ _         |
| MAX6314US28D1-T           | 2.80                           | 1                           | CK_ _         |
| MAX6314US27D1-T           | 2.70                           | 1                           | CL_ _         |
| <b>MAX6314US26D1-T†††</b> | 2.63                           | 1                           | CM_ _         |

| PART†                     | NOMINAL<br>V <sub>TH</sub> (V) | MIN t <sub>RP</sub><br>(ms) | TOP<br>MARK†† |
|---------------------------|--------------------------------|-----------------------------|---------------|
| MAX6314US25D1-T           | 2.50                           | 1                           | CN_ _         |
| MAX6314US50D2-T           | 5.00                           | 20                          | CO_ _         |
| MAX6314US49D2-T           | 4.90                           | 20                          | CP_ _         |
| MAX6314US48D2-T           | 4.80                           | 20                          | CQ_ _         |
| MAX6314US47D2-T           | 4.70                           | 20                          | CR_ _         |
| MAX6314US46D2-T           | 4.63                           | 20                          | CS_ _         |
| MAX6314US45D2-T           | 4.50                           | 20                          | CT_ _         |
| <b>MAX6314US44D2-T†††</b> | 4.39                           | 20                          | CU_ _         |
| MAX6314US43D2-T           | 4.30                           | 20                          | CV_ _         |
| MAX6314US42D2-T           | 4.20                           | 20                          | CW_ _         |
| MAX6314US41D2-T           | 4.10                           | 20                          | CX_ _         |
| MAX6314US40D2-T           | 4.00                           | 20                          | CY_ _         |
| MAX6314US39D2-T           | 3.90                           | 20                          | CZ_ _         |
| MAX6314US38D2-T           | 3.80                           | 20                          | DA_ _         |
| MAX6314US37D2-T           | 3.70                           | 20                          | DB_ _         |
| MAX6314US36D2-T           | 3.60                           | 20                          | DC_ _         |
| MAX6314US35D2-T           | 3.50                           | 20                          | DD_ _         |
| MAX6314US34D2-T           | 3.40                           | 20                          | DE_ _         |
| MAX6314US33D2-T           | 3.30                           | 20                          | DJ_ _         |

† The MAX6314 is available in a SOT143 package, -40°C to +85°C temperature range.

†† The first two letters in the package top mark identify the part, while the remaining two letters are the lot tracking code.

††† Sample stocks generally held on the bolded products; also, the bolded products have 2,500 piece minimum-order quantities. Non-bolded products have 10,000 piece minimum-order quantities. Contact factory for details.

Devices are available in both leaded and lead-free packaging. Specify lead-free by replacing "-T" with "+T" when ordering.

**Note:** All devices available in tape-and-reel only. Contact factory for availability.

# 68HC11/Bidirectional-Compatible μP Reset Circuit

## Ordering and Marking Information (continued)

| PART†                     | NOMINAL<br>V <sub>TH</sub> (V) | MIN t <sub>RP</sub><br>(ms) | TOP<br>MARK†† |
|---------------------------|--------------------------------|-----------------------------|---------------|
| MAX6314US32D2-T           | 3.20                           | 20                          | DK_ _         |
| MAX6314US31D2-T           | 3.08                           | 20                          | DL_ _         |
| MAX6314US30D2-T           | 3.00                           | 20                          | DM_ _         |
| MAX6314US29D2-T           | 2.93                           | 20                          | DN_ _         |
| MAX6314US28D2-T           | 2.80                           | 20                          | DO_ _         |
| MAX6314US27D2-T           | 2.70                           | 20                          | DP_ _         |
| <b>MAX6314US26D2-T†††</b> | 2.63                           | 20                          | DQ_ _         |
| MAX6314US25D2-T           | 2.50                           | 20                          | DR_ _         |
| MAX6314US50D3-T           | 5.00                           | 140                         | DS_ _         |
| MAX6314US49D3-T           | 4.90                           | 140                         | DT_ _         |
| MAX6314US48D3-T           | 4.80                           | 140                         | DU_ _         |
| MAX6314US47D3-T           | 4.70                           | 140                         | DV_ _         |
| <b>MAX6314US46D3-T†††</b> | 4.63                           | 140                         | DW_ _         |
| MAX6314US45D3-T           | 4.50                           | 140                         | DX_ _         |
| <b>MAX6314US44D3-T†††</b> | 4.39                           | 140                         | DY_ _         |
| MAX6314US43D3-T           | 4.30                           | 140                         | DZ_ _         |
| MAX6314US42D3-T           | 4.20                           | 140                         | EA_ _         |
| MAX6314US41D3-T           | 4.10                           | 140                         | EB_ _         |
| MAX6314US40D3-T           | 4.00                           | 140                         | EC_ _         |
| MAX6314US39D3-T           | 3.90                           | 140                         | EG_ _         |
| MAX6314US38D3-T           | 3.80                           | 140                         | EH_ _         |
| MAX6314US37D3-T           | 3.70                           | 140                         | EI_ _         |
| MAX6314US36D3-T           | 3.60                           | 140                         | EJ_ _         |
| MAX6314US35D3-T           | 3.50                           | 140                         | EK_ _         |
| MAX6314US34D3-T           | 3.40                           | 140                         | EL_ _         |
| MAX6314US33D3-T           | 3.30                           | 140                         | EM_ _         |
| MAX6314US32D3-T           | 3.20                           | 140                         | EN_ _         |
| <b>MAX6314US31D3-T†††</b> | 3.08                           | 140                         | EO_ _         |
| MAX6314US30D3-T           | 3.00                           | 140                         | EP_ _         |
| <b>MAX6314US29D3-T†††</b> | 2.93                           | 140                         | ES_ _         |

| PART†                     | NOMINAL<br>V <sub>TH</sub> (V) | MIN t <sub>RP</sub><br>(ms) | TOP<br>MARK†† |
|---------------------------|--------------------------------|-----------------------------|---------------|
| MAX6314US28D3-T           | 2.80                           | 140                         | ET_ _         |
| MAX6314US27D3-T           | 2.70                           | 140                         | EU_ _         |
| <b>MAX6314US26D3-T†††</b> | 2.63                           | 140                         | EV_ _         |
| MAX6314US25D3-T           | 2.50                           | 140                         | EW_ _         |
| MAX6314US50D4-T           | 5.00                           | 1120                        | EX_ _         |
| MAX6314US49D4-T           | 4.90                           | 1120                        | EY_ _         |
| MAX6314US48D4-T           | 4.80                           | 1120                        | EZ_ _         |
| MAX6314US47D4-T           | 4.70                           | 1120                        | FA_ _         |
| MAX6314US46D4-T           | 4.63                           | 1120                        | FB_ _         |
| MAX6314US45D4-T           | 4.50                           | 1120                        | FC_ _         |
| <b>MAX6314US44D4-T†††</b> | 4.39                           | 1120                        | FD_ _         |
| MAX6314US43D4-T           | 4.30                           | 1120                        | FE_ _         |
| MAX6314US42D4-T           | 4.20                           | 1120                        | FF_ _         |
| MAX6314US41D4-T           | 4.10                           | 1120                        | FG_ _         |
| MAX6314US40D4-T           | 4.00                           | 1120                        | FH_ _         |
| MAX6314US39D4-T           | 3.90                           | 1120                        | FI_ _         |
| MAX6314US38D4-T           | 3.80                           | 1120                        | FJ_ _         |
| MAX6314US37D4-T           | 3.70                           | 1120                        | FK_ _         |
| MAX6314US36D4-T           | 3.60                           | 1120                        | FL_ _         |
| MAX6314US35D4-T           | 3.50                           | 1120                        | FM_ _         |
| MAX6314US34D4-T           | 3.40                           | 1120                        | FN_ _         |
| MAX6314US33D4-T           | 3.30                           | 1120                        | FO_ _         |
| MAX6314US32D4-T           | 3.20                           | 1120                        | FP_ _         |
| MAX6314US31D4-T           | 3.08                           | 1120                        | FQ_ _         |
| MAX6314US30D4-T           | 3.00                           | 1120                        | FR_ _         |
| MAX6314US29D4-T           | 2.93                           | 1120                        | FS_ _         |
| MAX6314US28D4-T           | 2.80                           | 1120                        | FT_ _         |
| MAX6314US27D4-T           | 2.70                           | 1120                        | FU_ _         |
| <b>MAX6314US26D4-T†††</b> | 2.63                           | 1120                        | FV_ _         |
| MAX6314US25D4-T           | 2.50                           | 1120                        | FW_ _         |

† The MAX6314 is available in a SOT143 package, -40°C to +85°C temperature range.

†† The first two letters in the package top mark identify the part, while the remaining two letters are the lot tracking code.

††† Sample stocks generally held on the bolded products; also, the bolded products have 2,500 piece minimum-order quantities.

Non-bolded products have 10,000 piece minimum-order quantities. Contact factory for details.

Devices are available in both leaded and lead-free packaging. Specify lead-free by replacing "-T" with "+T" when ordering.

**Note:** All devices available in tape-and-reel only. Contact factory for availability.

### Chip Information

TRANSISTOR COUNT: 519

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

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### Package Information

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