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***μP Reset Circuits with Long Manual Reset Setup Period*****UM807/821/822 SOT143****General Description**

The UM807/821/822 are low-power microprocessor (μP) supervisory circuits used to monitor power supplies in μP and digital systems. They provide excellent circuit reliability and low cost by eliminating external components and adjustments when used with 5V-powered or 3V-powered circuits. The UM807/821/822 also provide a debounced manual reset input with long setup period.

On all devices, the reset output asserts when the V<sub>CC</sub> supply voltage drops below its specified threshold. The reset output remains asserted for the reset timeout period (240ms typ) after V<sub>CC</sub> rises above the reset threshold. The reset output is one-shot pulse asserted for the reset timeout period (140ms min) when manual reset input is held low for a fixed setup timeout period. These devices ignore manual reset transitions of less than the fixed setup timeout period.

The UM807 has an active-low  $\overline{\text{RESET}}$  with open-drain output, the UM821 has an active-low  $\overline{\text{RESET}}$  with push-pull output, and the UM822 has an active-high RESET with push-pull output. These devices, offered in small SOT143 package, are fully guaranteed over the extended temperature range (-40°C to +85°C).

**Applications**

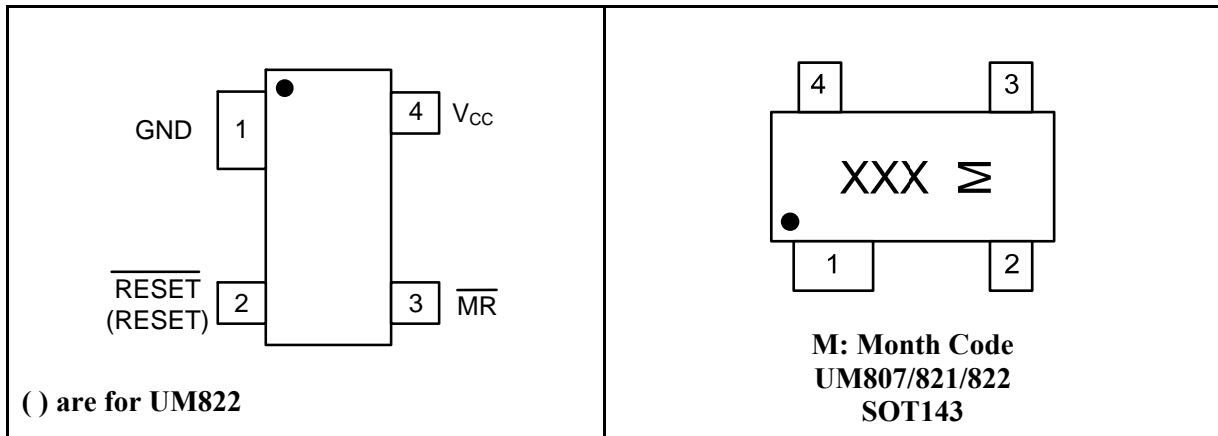
- Set-Top Boxes
- Consumer Electronics
- DVD Players
- Cable/DSL Modems
- MP3 Players
- Industrial Equipments
- Automotive
- Medical Devices

**Features**

- No External Components
- V<sub>CC</sub> Transient Immunity
- Correct Logic Output Guaranteed to V<sub>CC</sub>=1.0V
- Precision V<sub>CC</sub> Monitoring of 3.0V, 3.3V and 5.0V Supplies
- 2μA Supply Current
- 140ms Minimum Power-On Reset Pulse Width
- Available in 3 Manual Reset Setup Periods (t<sub>MR</sub>):  
A: 10.08s  
B: 6.72s  
C: 1.68s
- Available in 3 Output Configurations:  
Open-Drain Active-Low  $\overline{\text{RESET}}$  Output (UM807);  
Push-Pull Active-Low  $\overline{\text{RESET}}$  Output (UM821)  
Push-Pull Active-High RESET Output (UM822)
- 4-Pin SOT143 Package
- Wide Operation Temperature: -40°C to +85°C

## Pin Configurations

## Top View



## Ordering Information

### UM8 XX Z T P

#### XX: Output Type

=07 Open-Drain Active Low

=21 Push-Pull Active Low

=22 Push-Pull Active High

#### Z: Reset Threshold (V)

=L 4.63

=M 4.38

=J 4.00

=T 3.08

=S 2.93

=R 2.63

=Z 2.32

#### T: Manual Reset Setup Period (s)

=A 10.08

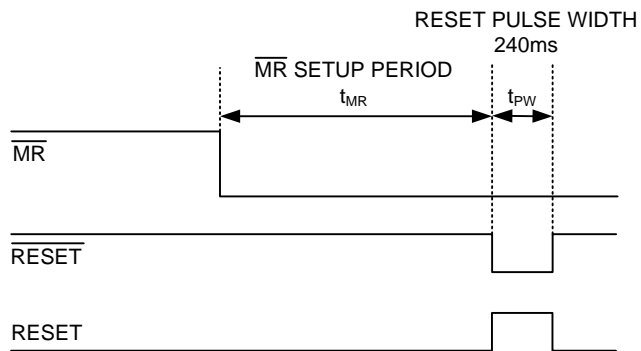
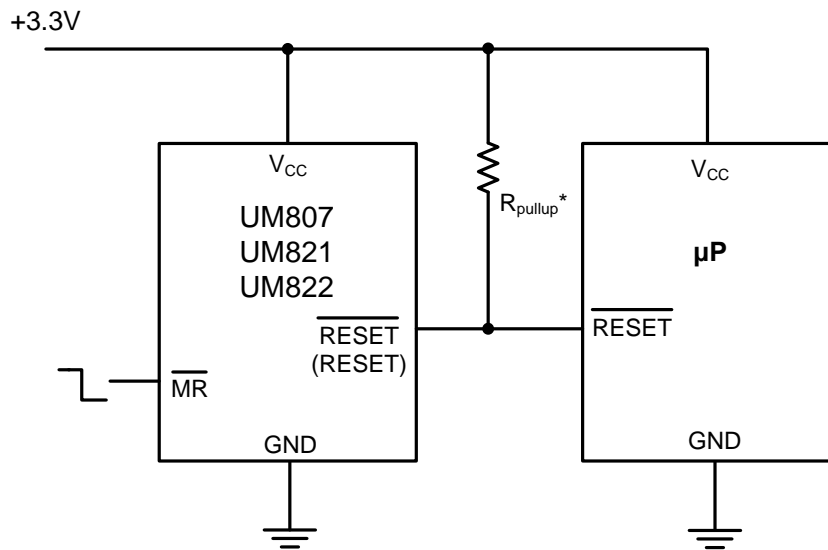
=B 6.72

=C 1.68

#### P: Package Type

=E SOT143

**Typical Operating Circuit**



**\*UM807 ONLY**  
( ) are for UM822

## Pin Description

| Pin Number | Pin Name                                 | Function   |
|------------|--|--|
| 1          | GND                                      | Ground   |
| 2          | $\overline{\text{RESET}}$<br>(UM807/821) | Active-Low Push-Pull or Open-Drain Output. $\overline{\text{RESET}}$ changes from high to low when $V_{CC}$ drops below its reset threshold and remains low for the 240ms reset timeout period after $V_{CC}$ exceeds their reset threshold. $\overline{\text{RESET}}$ is one-shot pulsed low for the reset timeout period (140ms min) after the manual reset input is asserted longer than the specified setup period. For the open-drain output, use a pull-up resistor to $V_{CC}$ . <b>See Figure 1.</b> |
|            | RESET<br>(UM822)                         | Active-High Push-Pull Output. RESET changes from low to high when $V_{CC}$ drops below its reset threshold and remains high for the 240ms reset timeout period after $V_{CC}$ exceeds their reset threshold. RESET is one-shot pulsed high for the reset timeout period (140ms min) after the manual reset input is asserted longer than the specified setup period. <b>See Figure 1.</b>  |
| 3          | $\overline{\text{MR}}$                   | Manual Reset Input, Active Low. Internal 22k $\Omega$ pull-up to $V_{CC}$ . Pull $\overline{\text{MR}}$ low for the typical input pulse width ( $t_{MR}$ ) to one-shot pulse RESET for the reset pulse width ( $t_{PW}$ ). <b>See Figure 2.</b>  |
| 4          | $V_{CC}$                                 | +5V, +3.3V, or +3V Supply Voltage  |

## Absolute Maximum Ratings (Note 1)

| Symbol    | Parameter  | Value                    | Unit               |
|-----------|--|--------------------------|--------------------|
| $V_{CC}$  | Supply Voltage   | -0.3 to +6.0             | V                  |
|           | RESET, $\overline{\text{RESET}}$ (Push-Pull)   | -0.3 to ( $V_{CC}+0.3$ ) |                    |
|           | $\overline{\text{RESET}}$ (Open-Drain)   | -0.3 to +6.0             |                    |
|           | $\overline{\text{MR}}$   | -0.3 to +6.0             |                    |
| $I_{CC}$  | Input Current, $V_{CC}$ , $\overline{\text{MR}}$   | 20                       | mA                 |
| $I_O$     | Output Current, RESET, $\overline{\text{RESET}}$   | 20                       | mA                 |
| $P_D$     | Continuous Power Dissipation (Derate 4mW/ $^{\circ}\text{C}$ above 70 $^{\circ}\text{C}$ ) | 320                      | mW                 |
| $T_A$     | Operating Temperature Range  | -40 to +105              | $^{\circ}\text{C}$ |
| $T_{STG}$ | Storage Temperature Range  | -65 to +160              | $^{\circ}\text{C}$ |
|           | Lead Temperature (Soldering, 10s)  | +300                     | $^{\circ}\text{C}$ |

Note 1: 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 are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Electrical Characteristics

( $V_{CC}=5V$  for L/M/J versions,  $V_{CC}=3.3V$  for T/S versions,  $V_{CC}=3V$  for R version, and  $V_{CC}=2.5V$  for Z version,  $T_A=-40^{\circ}C$  to  $+85^{\circ}C$ , unless otherwise noted. Typical values are at  $T_A=+25^{\circ}C$ .) (Note 2)

| Symbol    | Parameter                                | Conditions   | Min                                  | Typ   | Max                  | Unit             |   |
|-----------|--|--|--------------------------------------|-------|----------------------|------------------|---|
| $V_{CC}$  | Supply Voltage Range                     |  | 1.0                                  |       | 5.5                  | V                |   |
| $I_{CC}$  | Supply Current                           |  |                                      | 2.0   | 5.0                  | $\mu A$          |   |
| $V_{TH+}$ | Reset Threshold                          | L Version  | $T_A=+25^{\circ}C$                   | 4.56  | 4.63                 | 4.70             | V |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 4.50  |                      | 4.75             |   |
|           |  | M Version  | $T_A=+25^{\circ}C$                   | 4.31  | 4.38                 | 4.45             |   |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 4.25  |                      | 4.50             |   |
|           |  | J Version  | $T_A=+25^{\circ}C$                   | 3.93  | 4.00                 | 4.06             |   |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 3.89  |                      | 4.10             |   |
|           |  | T Version  | $T_A=+25^{\circ}C$                   | 3.04  | 3.08                 | 3.11             |   |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 3.00  |                      | 3.15             |   |
|           |  | S Version  | $T_A=+25^{\circ}C$                   | 2.89  | 2.93                 | 2.96             |   |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 2.85  |                      | 3.00             |   |
|           |  | R Version  | $T_A=+25^{\circ}C$                   | 2.59  | 2.63                 | 2.66             |   |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 2.55  |                      | 2.70             |   |
|           |  | Z Version  | $T_A=+25^{\circ}C$                   | 2.28  | 2.32                 | 2.35             |   |
|           |  |  | $T_A=-40^{\circ}C$ to $+85^{\circ}C$ | 2.25  |                      | 2.38             |   |
|           | Reset Threshold Tempco                   |  |                                      | 150   |                      | ppm/ $^{\circ}C$ |   |
| $t_{RD}$  | $V_{CC}$ to Reset Delay (Note 3)         |  |                                      | 10    |                      | $\mu s$          |   |
| $t_{RP}$  | Reset Active Timeout Period              |  | 140                                  | 240   | 560                  | ms               |   |
| $t_{MR}$  | $\overline{MR}$ Minimum Pulse Width      | A  | 6.04                                 | 10.08 | 14.11                | s                |   |
|           |  | B  | 4.03                                 | 6.72  | 9.41                 |                  |   |
|           |  | C  | 1.01                                 | 1.68  | 2.35                 |                  |   |
| $t_{PW}$  | RESET Pulse Width                        |  | 140                                  | 240   | 560                  | ms               |   |
|           | $\overline{MR}$ Glitch Immunity (Note 4) |  |                                      | 100   |                      | ns               |   |
| $V_{IH}$  | $\overline{MR}$ Input Threshold          | $V_{CC}>V_{TH(MAX)}$<br>UM807/821/822L_E/M_E/J_E     | 2.3                                  |       |                      | V                |   |
| $V_{IL}$  |  |  |                                      |       | 0.8                  |                  |   |
| $V_{IH}$  |  | $V_{CC}>V_{TH(MAX)}$<br>UM807/821/822T_E/S_E/R_E/Z_E | $0.7 \times V_{CC}$                  |       |                      |                  |   |
| $V_{IL}$  |  |  |                                      |       | $0.25 \times V_{CC}$ |                  |   |
|           | $\overline{MR}$ Pull-Up Resistance       |  | 10                                   | 20    | 30                   | k $\Omega$       |   |

## Electrical Characteristics (Continued)

( $V_{CC}=5V$  for L/M/J versions,  $V_{CC}=3.3V$  for T/S versions,  $V_{CC}=3V$  for R version, and  $V_{CC}=2.5V$  for Z version,  $T_A=-40^{\circ}C$  to  $+85^{\circ}C$ , unless otherwise noted. Typical values are at  $T_A=+25^{\circ}C$ .) (Note 2)

| Symbol   | Parameter            | Conditions  | Min                 | Typ | Max | Unit |
|----------|----------------------|---|---------------------|-----|-----|------|
| $V_{OH}$ | RESET Output Voltage | $I_{SOURCE}=150\mu A$ , $1.8V < V_{CC} < V_{TH(MIN)}$<br>UM822L_E/M_E/J_E/T_E/S_E/R_E/Z_E | $0.8 \times V_{CC}$ |     |     | V    |
| $V_{OL}$ |                      | $I_{SINK}=1.2mA$<br>UM822T_E/S_E/R_E/Z_E  |                     |     | 0.3 |      |
|          |                      | $I_{SINK}=3.2mA$<br>UM822L_E/M_E/J_E  |                     |     | 0.4 |      |
| $V_{OH}$ | RESET Output Voltage | $I_{SOURCE}=500\mu A$ , $V_{CC} > V_{TH(MAX)}$<br>UM821T_E/S_E/R_E/Z_E                    | $0.8 \times V_{CC}$ |     |     | V    |
| $V_{OL}$ |                      | $I_{SOURCE}=800\mu A$ , $V_{CC} > V_{TH(MAX)}$<br>UM821L_E/M_E/J_E                        | $V_{CC}-1.5$        |     |     |      |
|          |                      | $I_{SINK}=1.2mA$ , $V_{CC}=V_{TH(MIN)}$<br>UM807/821T_E/S_E/R_E/Z_E                       |                     |     | 0.3 |      |
|          |                      | $I_{SINK}=3.2mA$ , $V_{CC}=V_{TH(MIN)}$<br>UM807/821L_E/M_E/J_E                           |                     |     | 0.4 |      |
|          |                      | $I_{SINK}=50\mu A$ , $V_{CC} > 1.0V$  |                     |     | 0.3 |      |

**Note 2:** Production testing done at  $T_A=+25^{\circ}C$ ; limits over temperature guaranteed by design only.

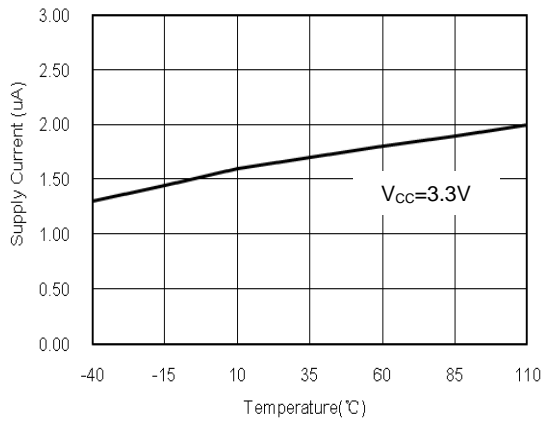
**Note 3:** RESET output for UM807/821; RESET output for UM822.

**Note 4:** "Glitches" of 100ns or less typically will not generate a reset pulse.

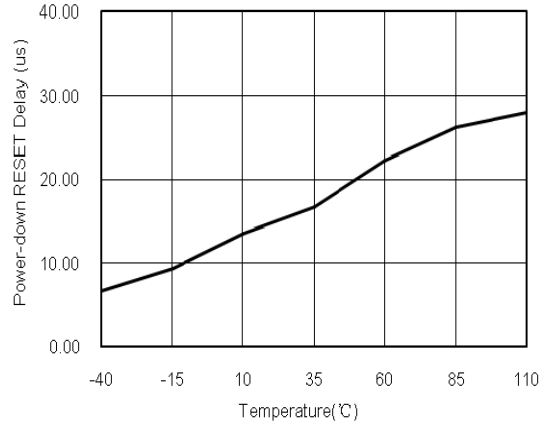
## Typical Operating Characteristics

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

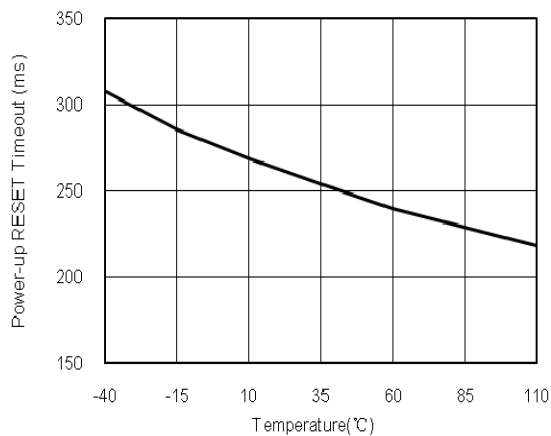
**Supply Current vs. Temperature  
(UM821R\_E)**



**Power-down RESET Delay vs. Temperature  
(UM821R\_E)**



**Power-up RESET Timeout vs. Temperature**



## Detailed Description

### RESET Timing

The reset signal is asserted LOW for the UM821 and HIGH for the UM822 when the power supply voltage falls below the threshold trip voltage and remains asserted for at least 140ms after the power supply voltage has risen above the threshold.

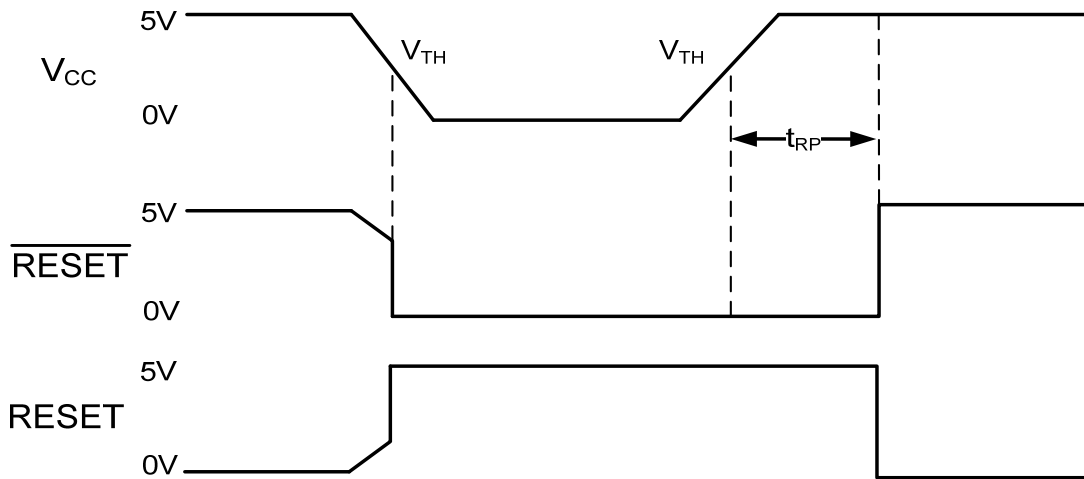


Figure 1. RESET vs.  $V_{CC}$  Timing Diagram

Pull  $\overline{MR}$  low for the typical input pulse width ( $t_{MR}$ ) to one-shot pulse  $\overline{RESET}$  for the reset pulse width ( $t_{PW}$ ).

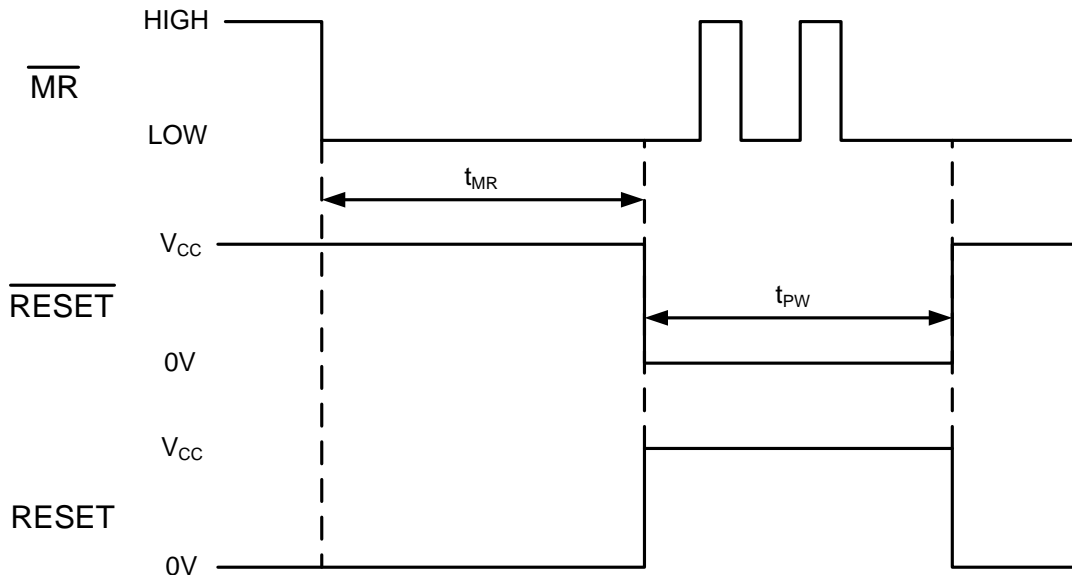


Figure 2. RESET vs.  $\overline{MR}$  Timing Diagram

### Reset Output

A microprocessor's ( $\mu P$ 's) reset input starts the  $\mu P$  in a known state. These  $\mu P$  supervisory circuits



assert 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  $V_{CC} > 1V$ . Once  $V_{CC}$  exceeds the reset threshold, an internal timer keeps  $\overline{\text{RESET}}$  low for the reset timeout period; after this interval,  $\overline{\text{RESET}}$  goes high.

If a brownout condition occurs ( $V_{CC}$  dips below the reset threshold),  $\overline{\text{RESET}}$  goes low. Any time  $V_{CC}$  goes below the reset threshold, the internal timer resets to zero, and  $\overline{\text{RESET}}$  goes low. The internal timer starts after  $V_{CC}$  returns above the reset threshold, and  $\overline{\text{RESET}}$  remains low for the reset timeout period.

The manual reset input ( $\overline{\text{MR}}$ ) can also initiate a reset. See the *Manual Reset Input* section.

The UM822 has an active-high RESET output that is the inverse of the UM807/821's  $\overline{\text{RESET}}$  output. The UM807 uses an open-drain output, and the UM821/822 have a push-pull output stage. Connect a pull-up resistor on the UM807's  $\overline{\text{RESET}}$  output to any supply between 0 and 6V.

### Manual Reset Input

Each device in the UM807/821/822 family includes one manual reset input, which must be held logic-low for an extended setup period ( $t_{MR}$ ) before the  $\overline{\text{RESET}}$  output asserts. When valid manual reset input conditions/setup periods are met, the  $\overline{\text{RESET}}$  output is one-shot pulse asserted low for a fixed reset pulse width (140ms min). Existing front-panel pushbutton switches (i.e., power on/off, channel up/down, or mode select) can be used to drive the manual reset inputs. The extended manual reset setup period prevents nuisance system resets during normal front-panel usage or resulting from inadvertent short-term pushbutton closure.

This input has an internal 20k $\Omega$  pull-up resistor, so it can be left open if it is not used.  $\overline{\text{MR}}$  can be driven with TTL or CMOS-logic levels, or with open-drain/collector outputs. 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 0.1 $\mu\text{F}$  capacitor from  $\overline{\text{MR}}$  to ground provides additional noise immunity.

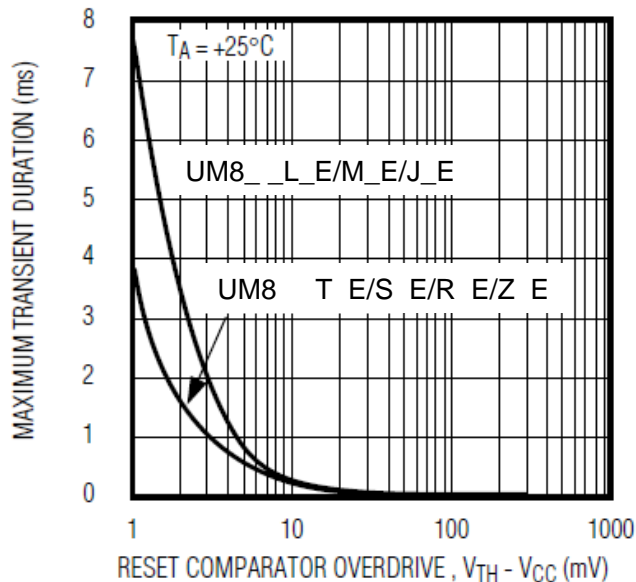
### Reset Threshold Accuracy

The UM807/821/822 are ideal for systems using a 5V $\pm$ 5% or 3V $\pm$ 5% power supply with ICs specified for 5V $\pm$ 10% or 3V $\pm$ 10%, respectively. They are designed to meet worst-case specifications over temperature. The reset is guaranteed to assert after the power supply falls out of regulation, but before power drops below the minimum specified operating voltage range for the system ICs. The thresholds are pre-trimmed and exhibit tight distribution, reducing the range over which an undesirable reset may occur.

## Applications Information

### Negative-Going $V_{CC}$ Transients

In addition to issuing a reset to the  $\mu P$  during power-up, power-down, and brownout conditions, the UM807/821/822 are relatively immune to short-duration negative-going  $V_{CC}$  transients (glitches). Figure 3 shows typical transient duration vs. reset comparator overdrive, for which the UM807/821/822 do not generate a reset pulse. The graph was generated using a negative-going pulse applied to  $V_{CC}$ , starting above the actual reset threshold and ending below it by the magnitude indicated (reset comparator overdrive). The graph indicates the typical maximum pulse width a negative-going  $V_{CC}$  transient may have without causing a reset pulse to be issued. As the magnitude of the transient increases (goes farther below the reset threshold), the maximum allowable pulse width decreases. Typically, for the UM8\_\_L\_E/M\_E/J\_E, a  $V_{CC}$  transient that goes 125mV below the reset threshold and lasts 40 $\mu s$  or less will not cause a reset pulse to be issued. A 0.1 $\mu F$  capacitor mounted as close as possible to the  $V_{CC}$  provides additional transient immunity.

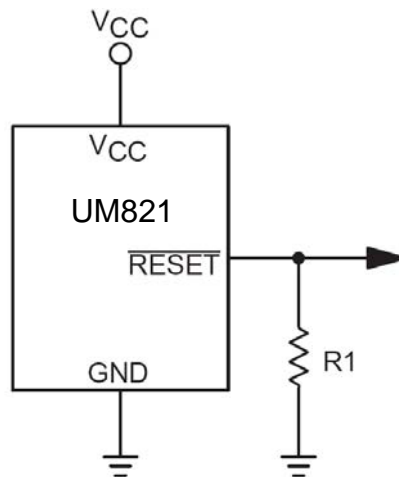


**Figure 3. Maximum Transient Duration without Causing a Reset Pulse vs. Reset Comparator Overdrive**

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

When  $V_{CC}$  falls below 1V, the UM821  $\overline{\text{RESET}}$  output 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  $\mu P$  and other circuitry is inoperative with  $V_{CC}$  below 1V. However, in applications where  $\overline{\text{RESET}}$  must be valid down to 0V, adding a pull-down resistor to  $\overline{\text{RESET}}$  pin will cause any stray leakage currents to flow to ground, holding  $\overline{\text{RESET}}$  low (Figure 4). R1's value is not critical; 100k $\Omega$  is large enough not to load  $\overline{\text{RESET}}$  and small enough to pull  $\overline{\text{RESET}}$  to ground.

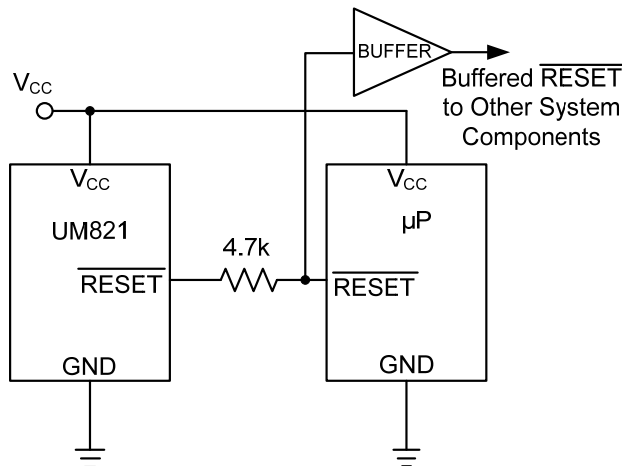
A 100k $\Omega$  pull-up resistor to  $V_{CC}$  is also recommended for the UM822 if  $\overline{\text{RESET}}$  is required to remain valid for  $V_{CC} < 1V$ .



**Figure 4.  $\overline{\text{RESET}}$  Valid to  $V_{CC}=\text{Ground}$  Circuit**

### Interfacing to $\mu\text{Ps}$ with Bidirectional Reset Pins

$\mu\text{Ps}$  with bidirectional reset pins (such as the Motorola68HC11 series) can contend with the UM821/822 reset outputs. If, for example, the UM821  $\overline{\text{RESET}}$  output is asserted high and the  $\mu\text{P}$  wants to pull it low, indeterminate logic levels may result. To correct such cases, connect a 4.7k $\Omega$  resistor between the UM821  $\overline{\text{RESET}}$  (or UM822  $\overline{\text{RESET}}$ ) output and the  $\mu\text{P}$  reset I/O (Figure 5). Buffer the reset output to other system components.



**Figure 5. Interfacing to  $\mu\text{Ps}$  with Bidirectional Reset I/O**

## UM807 Open-Drain $\overline{\text{RESET}}$ Output Allows Use with Multiple Supplies

Generally, the pull-up connected to the UM807 will connect to the supply voltage that is being monitored at the IC's  $V_{CC}$  pin. However, some systems may use the open-drain output to level-shift from the monitored supply to reset circuitry powered by some other supply (Figure 6). Note that as the UM807's  $V_{CC}$  decreases below 1V, so does the IC's ability to sink current at  $\overline{\text{RESET}}$ . Also, with any pull-up,  $\overline{\text{RESET}}$  will be pulled high as  $V_{CC}$  decays toward 0. The voltage where this occurs depends on the pull-up resistor value and the voltage to which it is connected.

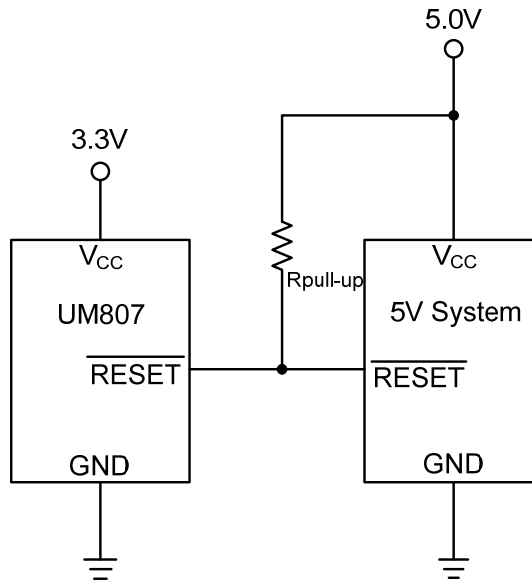
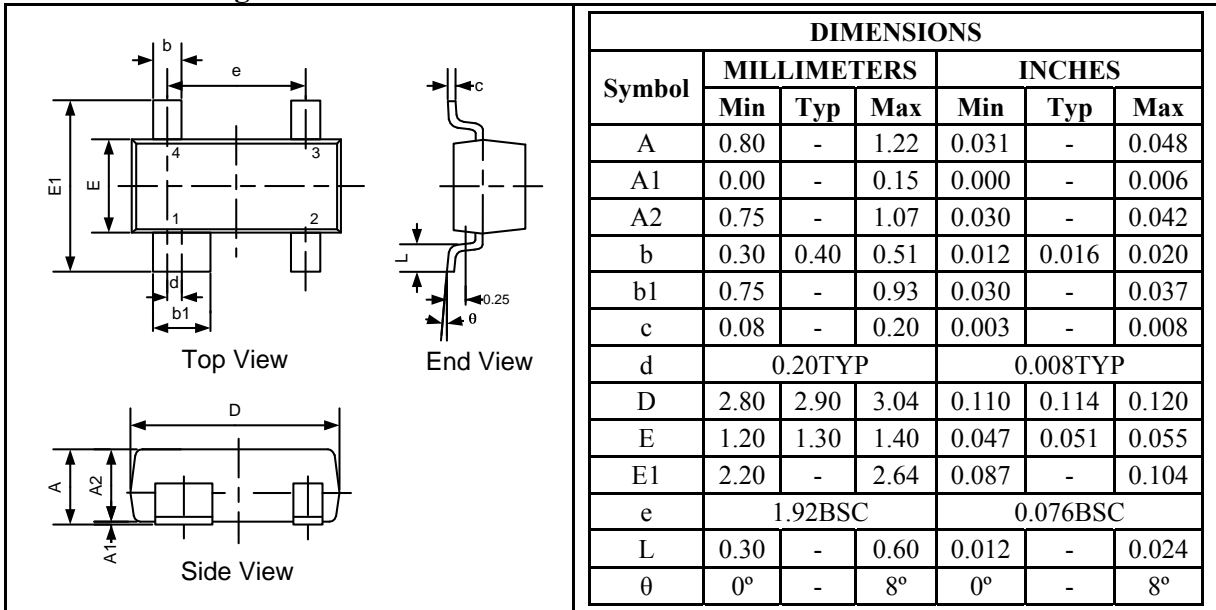


Figure 6. UM807 Open-Drain  $\overline{\text{RESET}}$  Output Allows Use with Multiple Supplies

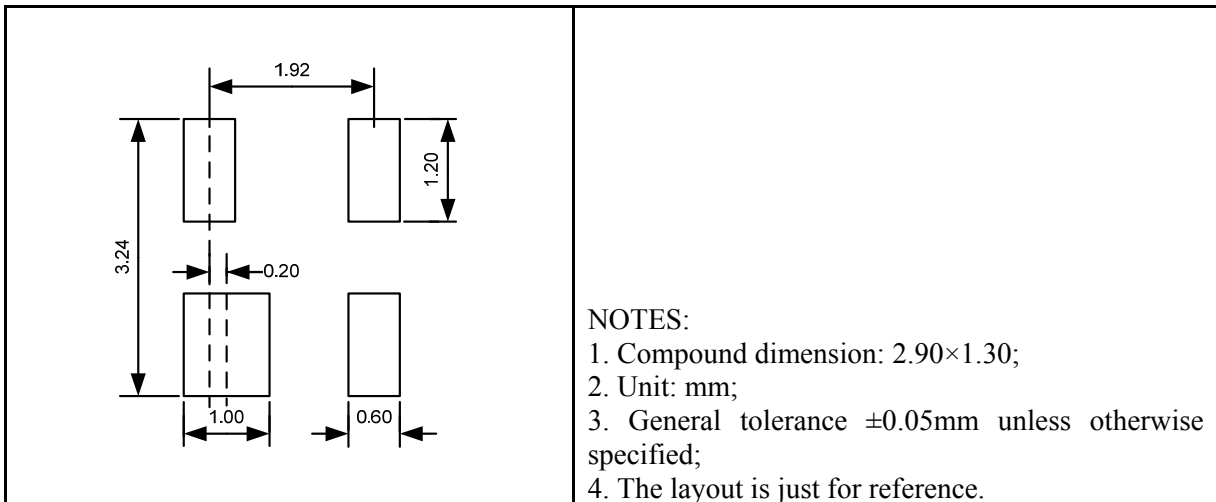
## Package Information

### UM807/821/822 SOT143

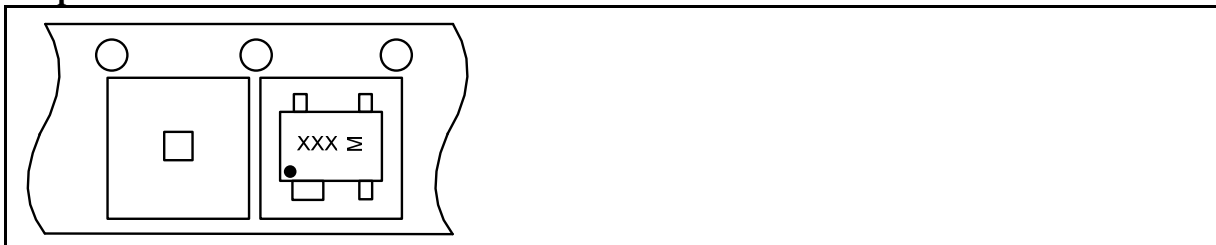
#### Outline Drawing



#### Land Pattern



#### Tape and Reel Orientation



**Selection Table**

| Part Number | RESET Threshold (V) | Timeout Period (ms) | Manual Reset Setup Period (s) | Output Type            | Marking Code | Package Type | Shipping Qty              |
|-------------|---------------------|---------------------|-------------------------------|------------------------|--------------|--------------|---------------------------|
| UM807LAE    | 4.63                | 240                 | 10.08                         | Open-Drain, Active Low | 7LA          | SOT143       | 3000pcs/7Inch Tape & Reel |
| UM807MAE    | 4.38                | 240                 |                               | Open-Drain, Active Low | 7MA          |              |                           |
| UM807JAE    | 4.00                | 240                 |                               | Open-Drain, Active Low | 7JA          |              |                           |
| UM807TAE    | 3.08                | 240                 |                               | Open-Drain, Active Low | 7TA          |              |                           |
| UM807SAE    | 2.93                | 240                 |                               | Open-Drain, Active Low | 7SA          |              |                           |
| UM807RAE    | 2.63                | 240                 |                               | Open-Drain, Active Low | 7RA          |              |                           |
| UM807ZAE    | 2.32                | 240                 |                               | Open-Drain, Active Low | 7ZA          |              |                           |
| UM807LBE    | 4.63                | 240                 | 6.72                          | Open-Drain, Active Low | 7LB          |              |                           |
| UM807MBE    | 4.38                | 240                 |                               | Open-Drain, Active Low | 7MB          |              |                           |
| UM807JBE    | 4.00                | 240                 |                               | Open-Drain, Active Low | 7JB          |              |                           |
| UM807TBE    | 3.08                | 240                 |                               | Open-Drain, Active Low | 7TB          |              |                           |
| UM807SBE    | 2.93                | 240                 |                               | Open-Drain, Active Low | 7SB          |              |                           |
| UM807RBE    | 2.63                | 240                 |                               | Open-Drain, Active Low | 7RB          |              |                           |
| UM807ZBE    | 2.32                | 240                 |                               | Open-Drain, Active Low | 7ZB          |              |                           |
| UM807LCE    | 4.63                | 240                 | 1.68                          | Open-Drain, Active Low | 7LC          |              |                           |
| UM807MCE    | 4.38                | 240                 |                               | Open-Drain, Active Low | 7MC          |              |                           |
| UM807JCE    | 4.00                | 240                 |                               | Open-Drain, Active Low | 7JC          |              |                           |
| UM807TCE    | 3.08                | 240                 |                               | Open-Drain, Active Low | 7TC          |              |                           |
| UM807SCE    | 2.93                | 240                 |                               | Open-Drain, Active Low | 7SC          |              |                           |
| UM807RCE    | 2.63                | 240                 |                               | Open-Drain, Active Low | 7RC          |              |                           |
| UM807ZCE    | 2.32                | 240                 |                               | Open-Drain, Active Low | 7ZC          |              |                           |

**Selection Table (Continued)**

| Part Number | RESET Threshold (V) | Timeout Period (ms) | Manual Reset Setup Period (s) | Output Type           | Marking Code | Package Type | Shipping Qty              |
|-------------|---------------------|---------------------|-------------------------------|-----------------------|--------------|--------------|---------------------------|
| UM821LAE    | 4.63                | 240                 | 10.08                         | Push-Pull, Active Low | 1LA          | SOT143       | 3000pcs/7Inch Tape & Reel |
| UM821MAE    | 4.38                | 240                 |                               | Push-Pull, Active Low | 1MA          |              |                           |
| UM821JAE    | 4.00                | 240                 |                               | Push-Pull, Active Low | 1JA          |              |                           |
| UM821TAE    | 3.08                | 240                 |                               | Push-Pull, Active Low | 1TA          |              |                           |
| UM821SAE    | 2.93                | 240                 |                               | Push-Pull, Active Low | 1SA          |              |                           |
| UM821RAE    | 2.63                | 240                 |                               | Push-Pull, Active Low | 1RA          |              |                           |
| UM821ZAE    | 2.32                | 240                 |                               | Push-Pull, Active Low | 1ZA          |              |                           |
| UM821LBE    | 4.63                | 240                 | 6.72                          | Push-Pull, Active Low | 1LB          |              |                           |
| UM821MBE    | 4.38                | 240                 |                               | Push-Pull, Active Low | 1MB          |              |                           |
| UM821JBE    | 4.00                | 240                 |                               | Push-Pull, Active Low | 1JB          |              |                           |
| UM821TBE    | 3.08                | 240                 |                               | Push-Pull, Active Low | 1TB          |              |                           |
| UM821SBE    | 2.93                | 240                 |                               | Push-Pull, Active Low | 1SB          |              |                           |
| UM821RBE    | 2.63                | 240                 |                               | Push-Pull, Active Low | 1RB          |              |                           |
| UM821ZBE    | 2.32                | 240                 |                               | Push-Pull, Active Low | 1ZB          |              |                           |
| UM821LCE    | 4.63                | 240                 | 1.68                          | Push-Pull, Active Low | 1LC          |              |                           |
| UM821MCE    | 4.38                | 240                 |                               | Push-Pull, Active Low | 1MC          |              |                           |
| UM821JCE    | 4.00                | 240                 |                               | Push-Pull, Active Low | 1JC          |              |                           |
| UM821TCE    | 3.08                | 240                 |                               | Push-Pull, Active Low | 1TC          |              |                           |
| UM821SCE    | 2.93                | 240                 |                               | Push-Pull, Active Low | 1SC          |              |                           |
| UM821RCE    | 2.63                | 240                 |                               | Push-Pull, Active Low | 1RC          |              |                           |
| UM821ZCE    | 2.32                | 240                 |                               | Push-Pull, Active Low | 1ZC          |              |                           |

**Selection Table (Continued)**

| Part Number | RESET Threshold (V) | Timeout Period (ms) | Manual Reset Setup Period (s) | Output Type            | Marking Code | Package Type | Shipping Qty              |
|-------------|---------------------|---------------------|-------------------------------|------------------------|--------------|--------------|---------------------------|
| UM822LAE    | 4.63                | 240                 | 10.08                         | Push-Pull, Active High | 2LA          | SOT143       | 3000pcs/7Inch Tape & Reel |
| UM822MAE    | 4.38                | 240                 |                               | Push-Pull, Active High | 2MA          |              |                           |
| UM822JAE    | 4.00                | 240                 |                               | Push-Pull, Active High | 2JA          |              |                           |
| UM822TAE    | 3.08                | 240                 |                               | Push-Pull, Active High | 2TA          |              |                           |
| UM822SAE    | 2.93                | 240                 |                               | Push-Pull, Active High | 2SA          |              |                           |
| UM822RAE    | 2.63                | 240                 |                               | Push-Pull, Active High | 2RA          |              |                           |
| UM822ZAE    | 2.32                | 240                 |                               | Push-Pull, Active High | 2ZA          |              |                           |
| UM822LBE    | 4.63                | 240                 | 6.72                          | Push-Pull, Active High | 2LB          |              |                           |
| UM822MBE    | 4.38                | 240                 |                               | Push-Pull, Active High | 2MB          |              |                           |
| UM822JBE    | 4.00                | 240                 |                               | Push-Pull, Active High | 2JB          |              |                           |
| UM822TBE    | 3.08                | 240                 |                               | Push-Pull, Active High | 2TB          |              |                           |
| UM822SBE    | 2.93                | 240                 |                               | Push-Pull, Active High | 2SB          |              |                           |
| UM822RBE    | 2.63                | 240                 |                               | Push-Pull, Active High | 2RB          |              |                           |
| UM822ZBE    | 2.32                | 240                 |                               | Push-Pull, Active High | 2ZB          |              |                           |
| UM822LCE    | 4.63                | 240                 | 1.68                          | Push-Pull, Active High | 2LC          |              |                           |
| UM822MCE    | 4.38                | 240                 |                               | Push-Pull, Active High | 2MC          |              |                           |
| UM822JCE    | 4.00                | 240                 |                               | Push-Pull, Active High | 2JC          |              |                           |
| UM822TCE    | 3.08                | 240                 |                               | Push-Pull, Active High | 2TC          |              |                           |
| UM822SCE    | 2.93                | 240                 |                               | Push-Pull, Active High | 2SC          |              |                           |
| UM822RCE    | 2.63                | 240                 |                               | Push-Pull, Active High | 2RC          |              |                           |
| UM822ZCE    | 2.32                | 240                 |                               | Push-Pull, Active High | 2ZC          |              |                           |



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## **GREEN COMPLIANCE**

Union Semiconductor is committed to environmental excellence in all aspects of its operations including meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.

All Union components are compliant with the RoHS directive, which helps to support customers in their compliance with environmental directives. For more green compliance information, please visit:

[http://www.union-ic.com/index.aspx?cat\\_code=RoHSDeclaration](http://www.union-ic.com/index.aspx?cat_code=RoHSDeclaration)

## **IMPORTANT NOTICE**

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Union Semiconductor, Inc

Add: Unit 606, No.570 Shengxia Road, Shanghai 201210

Tel: 021-51093966

Fax: 021-51026018

Website: [www.union-ic.com](http://www.union-ic.com)