



## General Description

The MAX811xEUS+T is low-power microprocessor ( $\mu$ P) supervisory circuits used to monitor power supplies in  $\mu$ P 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 MAX811xEUS+T also provide a debounced manual reset input. The only difference between the two devices is that the MAX811xEUS+T has an active-low RESET output (which is guaranteed to be in the correct state for VCC down to 1V). Reset thresholds are available for operation with a variety of supply voltages.

## Features

- Precision Monitoring of 3V, 3.3V, and 5V Power-Supply Voltages
- 140ms Min Power-On Reset Pulse Width
- Guaranteed Over Temperature
- Guaranteed RESET Valid to VCC = 1V
- SOT-143 package

## Selection Table

| Part No      | Detectable Voltage | Package                |
|--------------|--------------------|------------------------|
| MAX811LEUS+T | 4.63V              | SOT-143<br>(SOT-143-4) |
| MAX811MEUS+T | 4.38V              |                        |
| MAX811TEUS+T | 3.08V              |                        |
| MAX811SEUS+T | 2.93V              |                        |
| MAX811REUS+T | 2.63V              |                        |

## Pin Assignment



Pin 1

SOT-143(SOT-143-4)

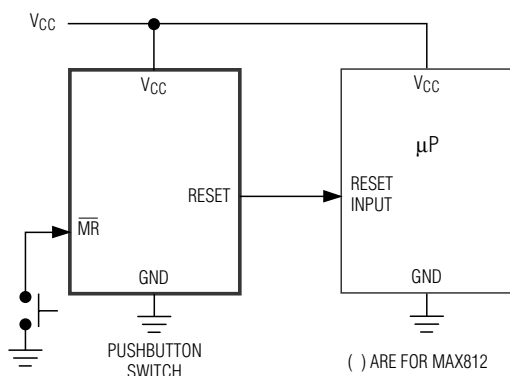
| PIN NO | PIN NAME | FUNCTION                |
|--------|----------|-------------------------|
| 1      | GND      | Ground                  |
| 2      | RESET    | Active-Low Reset Output |
| 3      | MR       | Manual Reset Input      |
| 4      | VCC      | Supply Voltage          |

## Applications

- Computers
- Controllers
- Intelligent Instruments
- Portable/Battery-Powered Equipment



## Application Circuits



## Absolute Maximum Ratings

Input Voltage .....-0.3V to 6.0V      Storage Temperature .....-40°C to 125°C

Operating Temperature .....-40°C to 85°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

## Thermal Information

| Symbol        | Parameter                                                                             | Max. | Unit |
|---------------|---------------------------------------------------------------------------------------|------|------|
| $\theta_{JA}$ | Thermal Resistance (Junction to Ambient)<br>(Assume no ambient airflow, no heat sink) | 260  | °C/W |
| $P_D$         | Power Dissipation                                                                     | 0.32 | W    |

Note:  $P_D$  is measured at  $T_a = 25^\circ\text{C}$

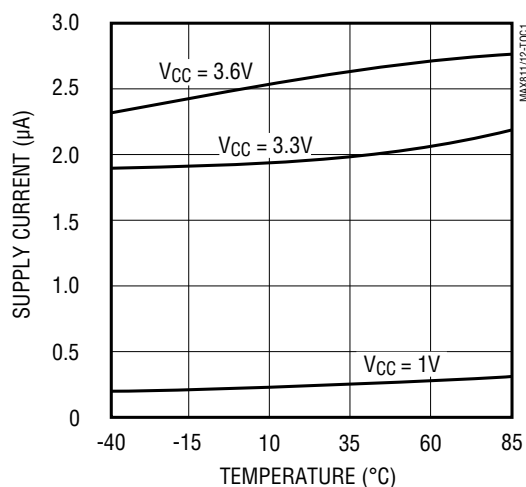


## Electrical Characteristics

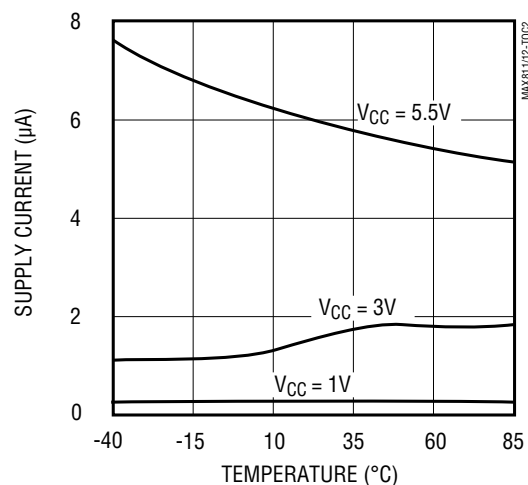
| Symbol           | Parameter                              | Test Conditions                                                                                                                                                                                             | Min.                                        | Typ.     | Max.                 | Unit       |
|------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------|----------------------|------------|
| V <sub>CC</sub>  | Input Voltage (V <sub>CC</sub> ) Range | TA=25°C                                                                                                                                                                                                     | 1.2                                         |          | 5.5                  | V          |
| I <sub>SS</sub>  | Supply Current                         | MAX811L/M: V <sub>CC</sub> < 5.5V<br>MAX811R/S/T: V <sub>CC</sub> < 3.6V                                                                                                                                    |                                             | 6<br>2.7 | 15<br>10             | μA         |
| V <sub>DET</sub> | Reset Threshold                        | MAX811L: TA=25°C                                                                                                                                                                                            | 4.54                                        | 4.63     | 4.72                 | V          |
|                  |                                        | MAX811M: TA=25°C                                                                                                                                                                                            | 4.30                                        | 4.38     | 4.46                 |            |
|                  |                                        | MAX811T: TA=25°C                                                                                                                                                                                            | 3.03                                        | 3.08     | 3.14                 |            |
|                  |                                        | MAX811S: TA=25°C                                                                                                                                                                                            | 2.88                                        | 2.93     | 2.98                 |            |
|                  |                                        | MAX811R: TA=25°C                                                                                                                                                                                            | 2.58                                        | 2.63     | 2.68                 |            |
|                  | Reset Threshold Stability              |                                                                                                                                                                                                             |                                             | 30       |                      | Ppm/<br>°C |
|                  | V <sub>CC</sub> to Reset Delay         | V <sub>OD</sub> =125mV, MAX811L/M:<br>V <sub>OD</sub> =125mV, MAX811R/S/T:                                                                                                                                  |                                             | 40<br>20 |                      | us         |
| t <sub>RP</sub>  | Reset Threshold Tempco                 | V <sub>CC</sub> =V <sub>TH</sub> (MAX)                                                                                                                                                                      | 140                                         |          | 560                  | ms         |
| t <sub>MR</sub>  | MR Minimum Pulse Width Tempco          |                                                                                                                                                                                                             | 10                                          |          |                      | us         |
|                  | MR Glitch Immunity                     |                                                                                                                                                                                                             |                                             | 100      |                      | ns         |
| t <sub>MD</sub>  | MR to Reset Propagation Delay          |                                                                                                                                                                                                             |                                             | 0.5      |                      | us         |
| V <sub>IH</sub>  | MR Input Threshold                     | V <sub>CC</sub> > V <sub>TH</sub> (MAX), MAX811L/M                                                                                                                                                          | 2.3                                         |          |                      | V          |
| V <sub>IL</sub>  |                                        |                                                                                                                                                                                                             |                                             |          | 0.8                  |            |
| V <sub>IH</sub>  |                                        | V <sub>CC</sub> > V <sub>TH</sub> (MAX), MAX811R/S/T                                                                                                                                                        | 0.7xV <sub>CC</sub>                         |          |                      |            |
| V <sub>IL</sub>  |                                        |                                                                                                                                                                                                             |                                             |          | 0.25xV <sub>CC</sub> |            |
| t <sub>MD</sub>  | MR Pull-Up Resistance                  |                                                                                                                                                                                                             | 10                                          | 20       | 30                   | kΩ         |
| V <sub>OL</sub>  | RESET Output Voltage Low               | MAX811L/M: V <sub>CC</sub> =V <sub>TH</sub> min, I <sub>SINK</sub> =1.2mA<br>MAX811R/S/T: V <sub>CC</sub> =V <sub>TH</sub> min, I <sub>SINK</sub> =3.2mA<br>I <sub>SINK</sub> =50uA, V <sub>CC</sub> > 1.0V |                                             |          | 0.4<br>0.3           | V          |
| V <sub>OH</sub>  | RESET Output Voltage High              | MAX811L/M only, I <sub>SOURCE</sub> =150uA<br>MAX811R/S/T only, I <sub>SOURCE</sub> =150uA<br>V <sub>CC</sub> > V <sub>TH</sub> (MAX)                                                                       | 0.8 V <sub>CC</sub><br>V <sub>CC</sub> -1.5 |          |                      | V          |



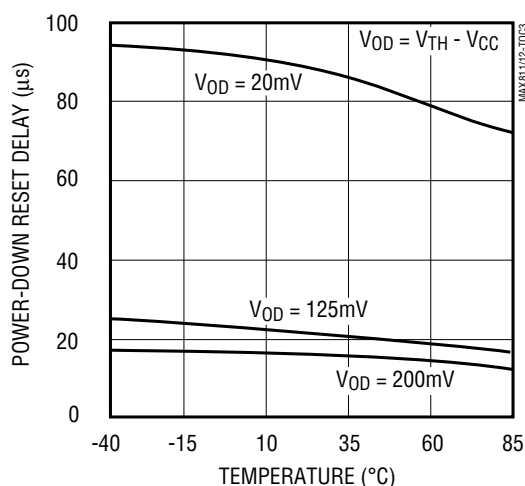
## Typical Characteristics



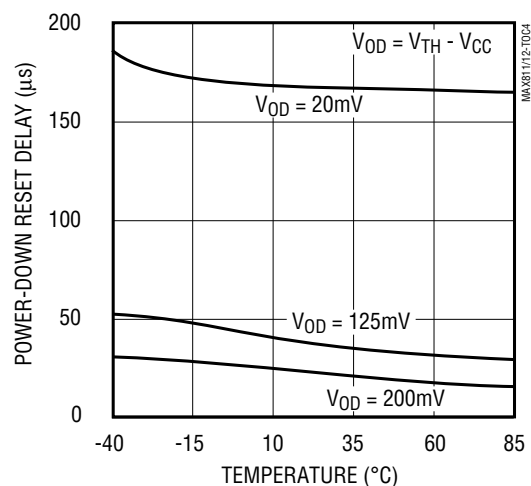
Supply Current vs Temperature  
(No Load, MAX811R/S/T)



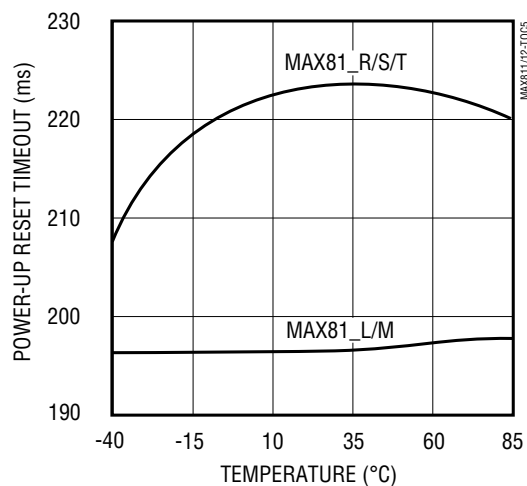
Supply Current vs Temperature  
(No Load, MAX811L/M/I)



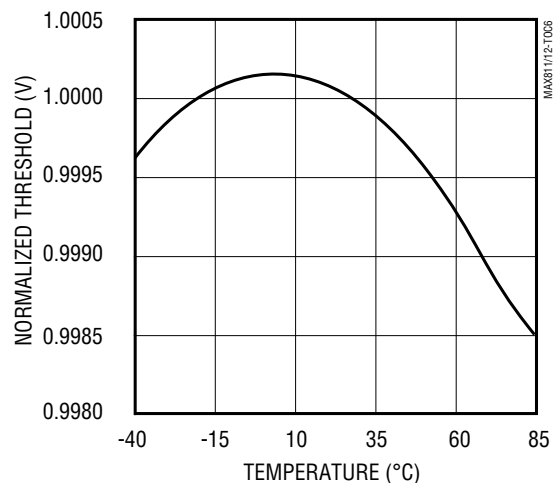
Power-Down Reset Delay vs  
Temperature and (MAX811R/S/T)



Power-Down Reset Delay vs  
Temperature and (MAX811L/M)



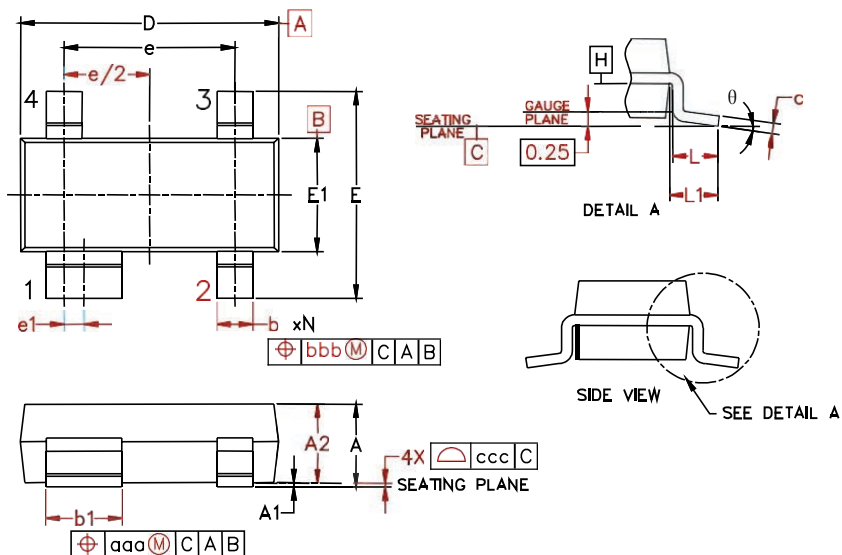
Power-Up Reset Timeout vs  
Temperature



Normalized Reset Threshold vs  
Temperature



## SOT-143(SOT-143-4) Package Outline Dimensions



| Symbol   | Inches  |       |       | Millimeters |      |      |
|----------|---------|-------|-------|-------------|------|------|
|          | Min.    | Nom.  | Max.  | Min.        | Nom. | Max. |
| A        | 0.031   | -     | 0.048 | 0.80        | -    | 1.22 |
| A1       | 0.000   | -     | 0.008 | 0.013       | -    | 0.15 |
| A2       | 0.020   | 0.035 | 0.042 | 0.75        | 0.90 | 1.07 |
| b        | 0.011   | -     | 0.020 | 0.30        | -    | 0.51 |
| b1       | 0.029   | -     | 0.037 | 0.76        | -    | 0.94 |
| c        | 0.003   | -     | 0.008 | 0.08        | -    | 0.20 |
| D        | 0.110   | 0.114 | 0.120 | 2.80        | 2.90 | 3.04 |
| E        | 0.082   | 0.093 | 0.104 | 2.10        | 2.37 | 2.64 |
| E1       | 0.047   | 0.051 | 0.055 | 1.20        | 1.30 | 1.40 |
| e        | 0.075   |       |       | 1.92 BSC    |      |      |
| e1       | 0.008   |       |       | 0.20 BSC    |      |      |
| L        | 0.015   | 0.020 | 0.024 | 0.40        | 0.50 | 0.60 |
| L1       | (0.021) |       |       | (0.54)      |      |      |
| N        | 4       |       |       | 4           |      |      |
| $\theta$ | 0°      | -     | 8°    | 0°          | -    | 8°   |
| aaa      | 0.006   |       |       | 0.15        |      |      |
| bbb      | 0.008   |       |       | 0.20        |      |      |
| ccc      | 0.004   |       |       | 0.10        |      |      |



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